



CASE STUDY: HUW REES (BEEF)

How wholecrop bean TMR bales performed against haylage and blend in a Wagyu system

When Huw Rees decided to finish cattle for the first time on his farm in Ceredigion, he was keen to explore feeding options that would suit a relatively simple system and limited land base. With no cropping ground available and all land required for grazing and silage, flexibility and ease of feeding were key considerations.

“We’d never fattened cattle before,” explains Huw. “We’d always sold them on at 18-20 months, but with this group we decided to take them through and finish them ourselves.”

Huw operates what he calls a simple beef system – purchasing Wagyu steers and heifers at around six months of age and managing two batches of approximately 80 head, six months apart. Cattle are grazed through the summer, with younger stock receiving just over 1kg of concentrate, before being housed for winter on silage and concentrates.

It was during this transition to finishing that Huw saw an opportunity to work with nutritionist Lizz Clarke (LC Beef Nutrition) to trial wholecrop bean total mixed ration (TMR) bales against a more conventional haylage and blend system as part of the NCS project.

Testing wholecrop beans in a finishing ration

The trial ran from 27 March to 7 July 2025 and compared two groups of Wagyu cattle:

- A wholecrop beans TMR bale group, fed ad-lib alongside some dry haylage or hay
- A haylage and blend group, fed big-bale silage with a dry blend

With 80 cattle on site, Huw was able to split the shed evenly, making the trial straightforward to manage. “That was the main thing,” he says.

“It was easy to split them 40 and 40 and just see what happened.”

While there was little visible difference at the start, changes became clearer as the trial progressed. “As time went on, you could see the cattle on the beans coming on a bit faster,” says Huw. “They were getting fleshier sooner, and the weighing backed that up.”

The results

Looking at the figures, the wholecrop beans TMR group outperformed the haylage and blend group, achieving a higher daily liveweight gain and greater overall weight increase over the 102-day trial. More specifically, the wholecrop beans TMR provided significantly higher starch, supporting improved energy supply for growth. In fact, cattle fed the bean-based diet gained 0.23kg/day more than those on haylage and blend. Although the TMR bales were more expensive per head per day, the improved performance resulted in a lower cost per kilogram of liveweight gain. Huw also found the TMR bales simpler to manage day-to-day.

“It was easy feeding,” he explains. “You just open the bale and leave them to it. Compared with feeding silage and blend separately, there was definitely less work.”

Carbon metrics were also measured during the trial, courtesy of Farm Carbon Toolkit. Looking at the total carbon footprint of each feeding system, the wholecrop beans TMR recorded 9.81kg CO₂e per kilogram of liveweight gain, compared with 12.03kg CO₂e/kg LWG for the haylage and blend system. While the wholecrop beans TMR had marginally higher feed-related emissions, the improved growth rates achieved during the trial resulted in an overall carbon footprint around 18% lower than the haylage and blend system.

Table 1: Analysis of wholecrop beans TMR bale vs haylage and blend

	Wholecrop beans TMR		Baled silage and blend	
	Fresh weight	Dry matter	Fresh weight	Dry matter
Ruminant ME MJ/KJ		12.2		12.12
Total Oil (Oil B) %	1.16	2.18	0.85	3.2
Crude Protein (Nx6.25) %	7.3	13.7	3.52	13.3
Moisture %	46.9	53.1	26.5	73.5
Sugars	0.58	1.09	1.53	5.8
Starch	29.5	55	10.09	38.1
Ash %	2.1	3.95	1.00	3.8
NCGD (DM) %		83.2		

Table 2: Weight and growth summary across groups

	Start weight (kg)	Final weight (kg)	Total gain (kg)	DLWG (kg/day)	% weight increase
Wholecrop beans TMR	421.2	543.9	122.7	1.20	29%
Haylage and blend	423.4	522.8	99.4	0.97	23%

Table 3: Cost comparison

	Cost per day (£/head)	DLWG (kg/day)	£/kg DLWG
Wholecrop beans TMR	£3.40	1.20	£2.83
Haylage and blend	£3.00	0.97	£3.09

Table 4: Total carbon footprint (diet + cattle emissions)

	Wholecrop beans TMR	Haylage and blend
Cattle emissions (t CO ₂ e)	44.12	44.01
Diet emissions (t CO ₂ e)	6.31	5.99
Total group footprint (t CO ₂ e)	50.43	50.00
Total liveweight gain (kg)	5,141	4,156
Carbon footprint (kg CO ₂ e/kg LWG)	9.81	12.03

Next steps

Huw is keen to continue using wholecrop beans in future finishing rations, but availability remains the main challenge. "If I could source them again, I probably would," he says. "But they're not easy to get around here, and we haven't got the land to grow them ourselves."

With limited cropping ground and a challenging climate, he will continue to keep an open mind, monitoring performance closely and looking for practical, cost-effective feeding options that suit the system.



Huw Rees

- Ceredigion
- Beef-only enterprise
- Wagyu steers and heifers
- Around 80 cattle per batch
- 33ha, plus rented land
- Summer grazing with winter housing
- No arable land – all ground used for grazing and silage

NCS Project

Nitrogen efficient plants for Climate Smart arable cropping systems (NCS) is a four-year £5.9m research programme aiming to enable UK farming to bring about a reduction of 3.4MtCO₂e p/a or 54% of the maximum potential for the industry through increased production and use of pulses. Led by PGRO it involves 200 UK farms and 17 partners. The project is funded by the Farming Futures R&D Fund: Climate smart farming, part of Defra's Farming Innovation Programme. Defra is working in partnership with Innovate UK who are delivering the programme.