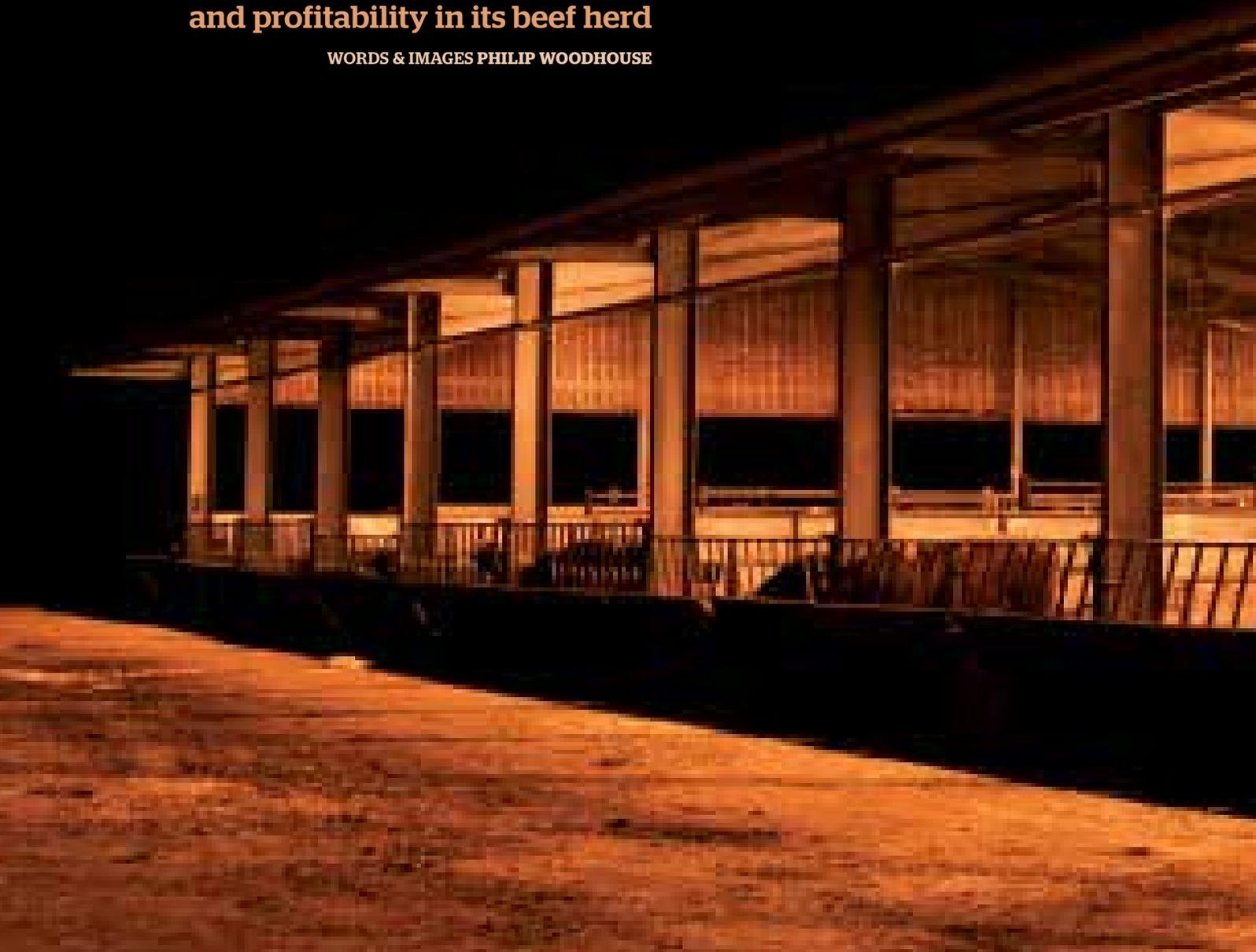


Grand designs

There might not be high-powered engines involved, but advanced farming methods and a custom-built barn are helping one Oxfordshire farm harness the latest technology to boost efficiency and profitability in its beef herd

WORDS & IMAGES PHILIP WOODHOUSE



Harnessing a range of machinery and innovations is helping William Cumber (Theale) Ltd run a profitable beef unit at Manor Farm, Marcham, Oxfordshire.

The unit is located on a 2500-acre farm, sharing it with arable crops, a free-range egg unit and sheep. The beef cattle - 150 Stabiliser cows and their progeny - use 200 acres of grassland during the summer, much of it River Thames floodplain and in Higher Level Stewardship.

In winter, the herd is housed in a purpose designed building that is packed with new ideas and technology, and which enables animals of all ages to share the same airspace safely.

The 'Stabiliser' breed combines genes from Canadian Red Angus, Gelbvieh, Simmental and American Hereford bloodlines, with the aim being to produce a highly efficient animal that

"The building is designed from the cattle's point of view rather than the human"

finishes quickly and economically.

The unit is one of the breed's multiplier units in the UK, with heifers being retained to build herd numbers or sold via the Breed Society to other breeders. Male calves are sold for breeding or finished.

The building was designed along the principles outlined by Dr

Mary Temple Grandin, Professor of Animal Science at Colorado State University and includes a range of innovations, including a handling system designed by her. ▶



Farm facts

William Cumber (Theale) Ltd

Where Marcham, Oxfordshire

Size 2500 acres

Manager Neil Rowe

What Beef cattle, sheep, arable crops, eggs



Right: Low walls enable animals to satisfy their natural inquisitiveness and see the animals with which they are sharing the building

► Handle with care

Dr Temple Grandin's handling system greatly reduces the labour taken up by everyday tasks. "We estimate these take one hour and 40 minutes, whereas on a conventional unit they might be a full-time job.

"The building is designed from the cattle's point of view rather than the human, the aim being to ensure they feel as at home in it as they do when at pasture," says Neil.

"For example, walls lower than those in conventional buildings separate the pens so the animals can see in all directions - that is proven to cut stress."

That principle is reversed in two key areas: the handling race and the loading ramp. Here solid side panels ensure cattle are not distracted, which makes handling and movements easier.

"Cattle can see a very wide field, so the race turns back at an angle of 153 degrees, which enables the cattle to see the gate through which they are meant to walk and follow their natural instincts to turn towards it rather than trying to turn round and go back up the race."

Feed troughs are big enough to hold the whole day's food so feeding via the Keenan wagon is a once-a-day job. Troughs are suspended on chains, which cattle can nudge with their chins so the outer panel raises to nudge feed back towards them when it has been pushed away.

The yokes through which the cattle access the troughs are of three different designs, with a special wide opening for stock bulls, a slimmer 'tombstone' shape for cows and a much narrower version for calves.

"This enables mothers and calves to eat together without the risk of the calves escaping. The system lets timid cows feed without being bullied by bigger, bossier animals. As a result our herd's body scores are far more consistent.

"The yokes prevent animals from taking a mouthful of food and immediately stepping backwards and dropping food in the bedding, as they might at a conventional feed barrier," says Neil.

Where calves and cows are housed together with the stock bull, 'creep gates' enable calves to escape to the next door pen to avoid crushing and injury risks.

Growing up quickly

Freshly weaned calves are housed in the pen alongside their mothers, which helps them settle down very quickly and continue growing - something that does not happen on most units.

"We have just weaned a group of bulls at 10 months old and while they were quite a handful in the field, they settled down very easily a couple of days after being housed. Our calves usually carry on gaining one kilogramme a day in the month after weaning, whereas on conventional units they might stand still or actually lose some weight," says Neil.

Avoiding that check in growth has tangible benefits, enabling them to



Above: Accurate ration measurement and mixing helps attain optimum growth rates

Centre: Different sized yokes let calves feed alongside their mothers, and smaller or timid animals feed alongside bigger ones without fear of bullying

finish animals at 14 months old and 600kg, which greatly improves profitability. "Every day an animal is on the unit it is using resources and costing money, so getting them finished swiftly is key."

Bedding down is also a daily operation using a Spread-a-Bale, made by Thos Storey Fabrications Ltd, which strips entire straw out of bales and throws it the full length and width of their pens, which measure 14m by 6m.

"We don't want the dust that other machines make, or the risk of spitting out stones at the animals or



Above: Curious cows don't mind posing for a photo when they need to

Left: This corner in the cattle race matches the limit of the cattle's vision so they are naturally drawn to the crush gate

Below left: Electronic identification of animals aids health care and condition checking



"The 'Stabiliser' breed combines genes from Canadian Red Angus, Gelbvieh, Simmental and American Hereford bloodlines"

the building. Bedding down every day is important for animal comfort and hygiene, and being able to do it without having to enter the pens - especially with the bulls - is important.

"Speed is also important. Even when the house is full to its 350-head capacity we can bed the entire building down in 20 minutes, whereas manual spreading might take two members of staff four hours several times a week. We also reckon we are saving 40 per cent on straw usage," Neil adds.

Breath of fresh air

The atmosphere in the sheds is kept fresh by over-head fans that draw air through the ridge and push it down to the animals. The fans are low energy 110-volt three-phase fans with torque converters.

"We can change the air in the shed every three minutes. We have had no pneumonia or New Forest Eye in the unit since we started using it. In a unit where one might expect 40 medical situations requiring antibiotics in a year we have had

one in four years," says Neil.

Drinking water - both for the house and the pastures - comes from a water harvesting system, with separate mains serving the house and the pasture area.

The house main's insulated pipes enclose a wire trace heater that prevents freezing, while the pastures are served by small troughs that can be filled quickly, so the cattle always have access to fresh water.

Minerals and trace elements are supplied via the water. "That is far more efficient than adding it to their feed. This spring we had an instance of sub-clinical hypomagnesaemia after turnout, which we treated very quickly using the system," comments Neil.

The house's lighting also aids performance, with an automated control system ensuring 16 hours' daylight every day, and low-level red lights working through the night, which optimises the cows' fertility, and the growth rates of all animals.

"We achieve up to 96 per cent pregnancy in 60 days, against a national average of 86 per cent in 180 days. That is 10 more calves per 100 cows and 10 fewer culls. You cannot afford cows that produce nothing for a year.

On the wagon

The farm's innovative approach extends to forage production, where Neil insists contractors use forage wagons rather than mowers/mower-conditioners and trailers because he feels he gets better quality.

"Cattle don't want forage reduced ▶



Right: System relies on Manitou telehandler for bedding down



“We are looking at using thermal imaging cameras as bio-sensors, so we can pick out sick animals”



Above right: Mains water can be supplied if harvested rainwater runs short



Right: Efficient consolidation of grass and maize silage improves quality

▶ to tiny lengths - that is not suitable for ruminants. We want the longer fibre that forage wagons produce.

“The wagons also take half an hour to fill. With two of them working they give the man loading and compacting the clamp time to do his job properly.”

Neil aims to take a single cut of grass silage and compact it with a Silapactor from Kelvin Cave Ltd. “That puts it down like a road which is brilliant. When we feed the silage we get 700kg of crop in each shear grab load, when we used to get about 550kg. The machine also works very well with the maize too.”

Quality feed

This year’s grass silage - taken in one cut in late May - analysed at 30 per cent dry matter, 16 per cent protein and had an ME of 11.8mj per kg. “You could argue that it is too good for beef cattle - we will dilute it with some straw,” says Neil.

Grass and maize silage are combined with crimped maize, oilseed rape straw, which acts as

a rumen stimulant, molasses, slow-release urea and a protein blend, this being fed via Keenan mixer wagon, which is connected to Keenan’s inTouch service.

“This measures everything we put in the wagon and ensures we get the right volume of each ingredient in the wagon and mix it for the right time to improve our feed conversion efficiency”.

And the farm can check how well the system is working using an Electronic ID system, which they are testing for PTS Technologies.

“We have developed an app-based management system that enables us to check on every animal and make key management decisions with all the information available.

“We use the information for management decisions, but it could be turned into a consumer-facing information system, enabling customers to check where their beef has come from and how it was produced.”



Who is Neil Rowe?

Neil completed a Nuffield Scholarship into Voluntary Milking Systems and Automated Milk Harvesting. He managed dairy and beef units for William Cumber (Theale) Ltd until the dairy herd was dispersed and now combines managing the beef unit with working as a beef and dairy consultant for a range of organisations and farmer clients. Neil is happy to answer questions by email at neil.rowe.nsch@gmail.com.

Modern methods

Neil has his eye on other innovations too. “We are looking at using thermal imaging cameras as bio-sensors, so we can pick out sick animals or those achieving higher growth rates, as both will show up as having higher body temperatures.

“We are also looking at using ear tags that include a small wire sensor that locates into the animal’s ear and provides an accurate core body temperature measurement that would quickly alert us to sub-clinical health problems.”

Sales results show the system works. “We are aiming for R4L, which is the specification that supermarkets demand, and achieving it very consistently. We are getting 14-month-old bulls away at 600kg and getting £1000

to £1200 for them, when the average finishing age is nearer 24 months,” Neil concludes.

FMJ