Adopting protocols which centre on the use of a pasteuriser and defrosting system to clean colostrum has led to improved calf health on one Yorkshire farm, as **Farmers C**

Use a colostrum code to strengthen calves

Having battled with pre-weaning mortality rates of about 2.5 per cent, the decision to pasteurise colostrum as part of a fine-tuned calf rearing strategy has seen mortality drop to 0.9 per cent and cryptosporidiosis become a thing of the past at Lowfields Farm, Northallerton.

Calf rearer Kate Spark is largely to thank for the shift in performance. Having had no experience of working on farms until November last year, psychology and counselling graduate Mrs Spark has taken a fresh approach to calf rearing.

Protocols designed to ensure the whole farm team consistently feeds quality colostrum underpin her strategy, with everything focused on hygiene and treating each calf 'like a baby' *(see panel)*.

She explains: "Soap and water and colostrum management are so much cheaper than antibiotics. If they are getting colostrum and it is clean, that is the main thing."

Producing quality heifers is essential at Lowfields Farm as it plans to increase cow numbers from 650 to 750 cows next year. Farmer Chris Spence says freshly-calved heifers also represent a significant source of income, which has proved essential during low milk price.

As a result, Mr Spence and his father Geoff, who won the Gold Cup in 2009, have placed greater emphasis on colostrum management as a means of getting heifers off to a good start.

With the herd doubling in the last seven years and employing six eastern European staff, most of whom have no farming background, it has been essential to develop protocols everyone can follow. This is particularly relevant for calves born in the night to ensure they receive adequate colostrum.

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>
> CHRIS SPENCE

Warming

Before the farm expanded and took on staff, Mr Spence says calf management was far from consistent, with colostrum commonly kept out in the warm and stored and fed in dirty buckets. Warming colostrum for feeding was also a problem, as they commonly used a small bucket submerged in a larger bucket of boiling water.

He says: "The bottom bit would be red hot and then we would mix it together and feed it. You would skim the flies off the top. It was good for catching flies. We then started storing more colostrum, freezing it, and chucking it into red hot water to defrost. It was killing the quality."

As a result, he decided to invest in a colostrum thawing system.

The water bath system can be heated to varying temperatures, with about 40-45degC generally used for defrosting colostrum so it avoids damaging the immunoglobulins. It is also the ideal temperature for feeding.

Mrs Spark says: "Because the milk comes out at 45degC, you know it is only 5degC off drinking temperature, so by the time I have got it to the calf shed, it is at the right temperature. And this helps with scours, as it is consistent. The fact it is quick to defrost and reheat colostrum also means the calf can be fed within an hour of birth."

Despite addressing colostrum feeding and environmental hygiene around calving, the farm team continued experiencing issues with cryptosporidiosis and mycoplasma. Consequently, they decided to buy a second machine and pasteurise colostrum as a means of reducing disease transfer risk from the dam.

> "Pasteurisation does not sterilise colostrum. The key is to harvest clean colostrum and put it into a fridge or freezer pretty quickly
>
> GILL DICKSON

Responsibility

This machine is set at 60degC for 60 minutes for pasteurisation. The purchase coincided with Mrs Spark joining the business and taking responsibility for calf management.

She has taken her role seriously, attending a rearing workshop and designing simple protocols which everyone can follow. However, much of what she does is thanks to her natural instincts and experience working with special needs children.

She explains: "It is about the non-verbal cues you get from animals, babies and non-verbal, special needs children. You have to read all those signs.

"If they are not happy, they will display signs a lot of people would miss, unless they are looking for it.

CALF REARING PROTOCOLS

COLLECTION

- Colostrum collected from dam at next milking after calving, with cows managed in clean and dry environment
- Colostrum kept in fridge in see-through bucket
- Tested using refractometer
- Only supplies testing more than 18-19 per cent are frozen
- Colostrum for freezing transferred into special four-litre bags, labelled with date and quality
- Pasteurised for one hour at 60degC
- Bag cooled in cold water bucket and then put in freezer
- Second milk also collected from dam, pasteurised and kept in fridge

FEEDING

- Frozen colostrum bag put in colostrum thawing system for 45 minutes at 45degC to defrost
- Four litres hand fed to calf within two hours of birth, via teat
- Supplies testing more than 23 per cent for immunoglobulins are prioritised for heifers
- Two litres of second milk fed within 24 hours of birth
- Second milk is hand fed for four to five days at two litres, twice-a-day

n to deliver consistent,
's **Guardian** reports.

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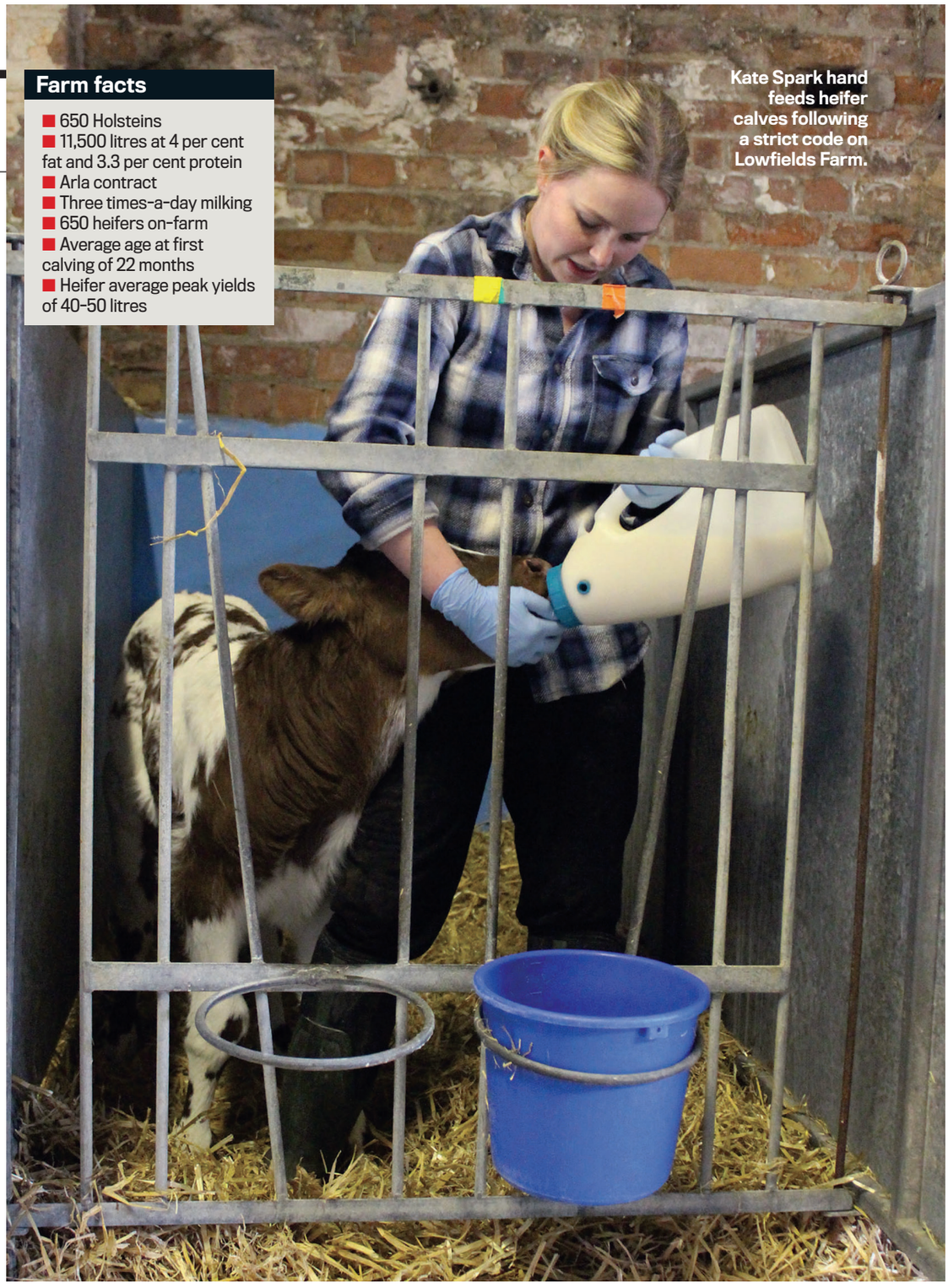
- Natural probiotic powder included in milk for first seven days to prevent cryptosporidiosis
- Calves move onto calf milk replacer fed out of buckets from day five, up to five litres per day
- Calves receive a maximum of 750g of calf milk replacer a day and ad-lib pellets

GENERAL APPROACH

- Dedicated 'calf kitchen' adjoining the calf shed
- Boots have to be washed in dedicated bucket before entering calf shed
- 'Newborn baby' related equipment, such as teats, put in disinfectant against cryptosporidiosis
- Acid wash used for cleaning buckets
- Quality of colostrum fed, treatments, birth weight and weekly weigh band readings for individual calves recorded and input into a software programme
- Pens power-washed and disinfected between calves
- Shed kept clean, dry and well ventilated
- Any calf which is off colour is temperature checked and given a non-steroidal anti-inflammatory if temperature is elevated

Farm facts

- 650 Holsteins
- 11,500 litres at 4 per cent fat and 3.3 per cent protein
- Arla contract
- Three times-a-day milking
- 650 heifers on-farm
- Average age at first calving of 22 months
- Heifer average peak yields of 40-50 litres



Kate Spark hand feeds heifer calves following a strict code on Lowfields Farm.

"I will feed the calf, smell the pen, look at the ears and eyes and check everything."

Mrs Spark's attention to every aspect of rearing, combined with pasteurisation, means cryptosporidiosis and mycoplasma are a thing of the past.

Pyon Products calf specialist Gill Dickson says pasteurising colostrum could aid gut transfer of immunoglobulins.

However, she believes the first priority for farmers is to harvest clean colostrum from the start, as dirty colostrum will reduce immunoglobulin absorption by the calf.

She says: "Pasteurisation does not sterilise colostrum. The key is to harvest clean colostrum and put it into a fridge or freezer pretty quickly. At ambient temperature, bacteria will double every 20 minutes."

Colostrum can then be pasteurised as a means of reducing disease challenge further, particularly from pneumonia and scour causing bugs. For example, mycoplasma is killed after 30 minutes of pasteurising and a large proportion of cryptosporidiosis is likely to be killed within an hour.

Mrs Dickson says: "Pasteurising is a trade off, as heating at 60degC will kill about a third of immunoglobulins, but as the colostrum is cleaner, the net result is the immunoglobulins transfer across the gut membrane better, so calves are better able to fight off disease."

This has been realised at Lowfields Farm. Before overhauling overall calf feeding strategies and introducing pasteurisation, calf blood proteins – an indication of immunoglobulin absorption – 'never hit the mark'.

However, at the last sampling, all eight calves sampled were above average. This is likely to form part of the health improvements seen.