

Research work at Newton Rigg College, Penrith, is looking at achieving a better understanding of the 'green bedding' concept and in particular the legal position with regard to its use. **Jennifer MacKenzie** reports.

# Future of green bedding under test at Newton Rigg

**T**he agricultural college opened its £2 million state-of-the-art dairy unit just over a year ago and part of the original plan was to use 'green' bedding.

The unit was designed for 240 pedigree Holstein cattle, and planned for a greenfield site at the college's Sewbor-

wens Farm. The thinking behind the set-up came from a committee of Cumbrian milk producers and was headed by college farm manager Jonathan Fisher and vet David Black of the Paragon Veterinary Group.

Like a number of milk producers, the committee chose to install a slurry separator to produce a renew-



The group of trial cows on deep green bedding at Sewborwens Farm.

able source of cattle bedding – commonly referred to as green bedding or recycled manure solids (RMS).

"Under current EU animal by-products regulation, it is not permissible to use manure as animal bedding, but recycled manures could potentially be used as a 'technical product', provided it can be shown to have 'safe use' for both human and animals," says David Black.

"The Government has given two years for the industry to gain more information about RMS, to assess its safety and to identify best practice for its use.

"Importantly, the research is also giving us more information on other commonly used dairy cow bedding materials which have had

little work done on them to date," he adds.

The 16-week long research which began at the end of January is being led by Quality Milk Management Systems (QMMS) and is being funded by the Welsh Government.

## Research groups

The research involves four groups of 40 cows which are separated by gates and use four different types of bedding – deep sand beds, deep RMS, shallow RMS with mattresses, and sawdust on mattresses.

The green bedding is topped up twice a week, the sand once a week and the sawdust twice daily. No conditioners are used.

For the research, 80 cubi-

cles have been concreted and fitted with mattresses. Previously, all cubicles had hardcore floors with deep RMS bedding which saved on initial building costs.

Cows are moved every two weeks onto a different bedding material. Each week students are involved with the taking of every cow's quarter milk and samples sent for bacteriological testing. The students also test condition score the cows.

There is flexibility to take dry cows out of a group and introduce newly-calved animals, although during each two-week period animals would only be re-

moved if it is an emergency.

"The research will compare what effect the different beddings have on the milk bacterial quality," says Mr Fisher.

## Activity

"We are also monitoring individual cow's activity through pedometers so we can see her lying and cud-ding time, her standing time, walking to the parlour time, and heat detection. This may demonstrate different behaviours on different bedding designs and materials."

Alongside the main bedding comparison work, students are carrying out a separate RMS bed trial.

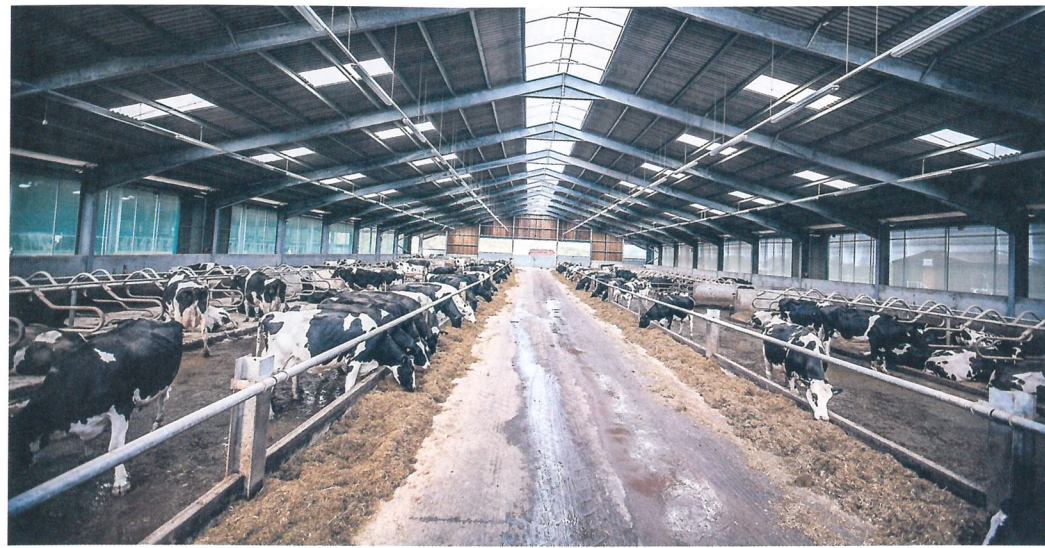
The main aim of the trial is to find out if there is a difference in temperature, dry matter % and bacterial level of the RMS-bedded cubicles at deep bedding or slow fill, and also any difference between cubicles cows can lay on to those with no cow access.

The research will monitor if the bedding dries out more with the body heat of the cows, if there are higher bacteria levels in cubicles with cows on, or whether there will be a higher level in the cubicles left alone.

To achieve this, students have cleaned out the old bedding going down to the hard core and levelled the



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**Jonathan Fisher**



Research involves four groups of 40 cows which are used to assess the different bedding materials.

beds of 18 cubicles (on one side of the shed).

Then roping off eight middle cubicles from the cows, a cubicle either side as a buffer (not sampled) and four cubicles at either end of the row for cows to have access.

Cubicles were then filled as 1-8 with rapid fill depth of RMS (four to allow cows to lie on and four roped off), and 9-16 with 2.5cm bedding added (slow fill) and again four to allow cows to lie on and four roped off.

Cubicles were then bedded every day with a normal layer of bedding. Each day for seven days the students took temperature readings at 2.5cm and 5cm, bedding samples from the

top layer of a specified area, and the depth of the bedding in the cubicle was also recorded.

The bedding samples for the first six days were tested for dry matter %, and, on the seventh day, samples were tested for bacteriology.

For the five weeks from the start of the trial, each Monday the same process will be done. Samples will be taken for dry matter and bacteriology, and the cubicles will be bedded up as normal routine (three times a week) and temperatures taken.

Leading the students in this research is senior dairy lecturer Natalie Parker. She says: "The trial is great for the students to get involved with – and fairly rare in a FE

college – especially with so much interest in RMS and its long-term effectiveness.

"Some have hypothesised the bedding, which is topped up daily, will maintain lower temperatures – and we assume warm and damp bedding will grow bacteria much quicker."

### Cow comfort

"On the other hand, the immediate deep bedding may give better cow comfort and encourage lying time and possibly prevent hock damage. This part of the trial will hopefully prove this one way or the other," adds Ms Parker.

The de-watering separator at Newton Rigg, developed by Austrian slurry handling specialist Bauer's German



The new slurry separator produces the high fibre bedding.

subsidiary, FAN Separator, was officially launched onto the UK market in 2013.

Liquid from the separator is stored in a 5000cu m lagoon which is gravity fed and gives eight months storage.

Dr Jenny Gibbons, research and development manager with DairyCo, which secured the funding for the research, explains the background to the work.

"New improved slurry separators producing fibre with dry matter levels of 34-38% have led some farmers to consider turning the material into a renewable source of cattle bedding.

"The perceived advantages of using fresh recycled manure solids (RMS or green bedding) as bedding

include improved cow comfort, lying times, cow cleanliness, and reduced costs.

"Despite these benefits, there are some concerns over potential risks, and an industry consensus on the importance of getting the practice right to safeguard health, and most importantly, the reputation of our industry," she says.

In 2013, a DairyCo funded study collated the available evidence to help assess risks and benefits of RMS under British conditions.

"The report found a major lack of scientific data, with most of our existing knowledge drawn from practical experience and case study,

rather than rigorous scientific investigation.

"There were gaps in knowledge on health risks, including mastitis, salmonella and Johne's disease, and how best to mitigate these risks."

After consideration of the initial report, the position of Government regulators in England and Scotland was to adopt a precautionary approach which allows the use of RMS as bedding, but only under a set of prescribed conditions. See [www.dairyco.org.uk/rms-bedding](http://www.dairyco.org.uk/rms-bedding).

This applies for a period of two years from July 1, 2014.



Sampling bedding (from left): Tom Gorst, Ellie Ashcroft and Phillipa Burton.