

ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD
UPDATE ON THE USE OF RECYCLED MANURE SOLIDS (RMS) AS BEDDING
FOR DAIRY CATTLE

Issue

1. A reduced availability and increasing cost of more traditional bedding materials has, over a period of time, led to the use of Recycled Manure Solids (RMS) as bedding for dairy cattle on a limited number of farms across the UK.
2. In January last year ACMSF were asked to consider the issue. The committee provided comments highlighting a number of significant concerns mainly associated with the significant data gaps and a lack of understanding of microbial behaviour in RMS.
3. Since then further research into specific aspects of risks, benefits and optimal management of RMS for use as cubicle bedding for dairy cattle in the UK has been carried out by a consortium led by Quality Milk Management Services Ltd (QMMS) and overseen by AHDB Dairy (formally DairyCo). The study provides greater technical understanding to help inform further consideration of the associated risks and the legal position with regard to the safe use of RMS as bedding. The research findings were presented to dairy industry stakeholders at a meeting in December (see Annex 1 for overview of study).
4. Defra and devolved Governments within Scotland and Wales have revised and broadly aligned their policy positions in light of the study findings and are drafting a joint statement that will be communicated to industry stakeholders via AHDB shortly. In NI DARD also plans to review and confirm its position.
5. Based on current evidence the FSA has indicated its support for the cautious approach to continued use of RMS that will be adopted within the UK, while at the same time noting that significant data gaps and uncertainties remain, particularly in relation to longer-term impacts, including on antimicrobial resistance (see Annex 2). This takes ACMSF's previously expressed views into account.

Background

6. At its meeting on 29 January 2015, ACMSF were presented a paper¹ to facilitate discussion on the potential microbiological food safety risks associated with the use of RMS as bedding for dairy cattle in farms across the UK and were asked to

¹ ACM/1165

http://acmsf.food.gov.uk/sites/default/files/ACM_1165%20Recycled%20Manure%20Solids%20Paper.pdf

consider the research that may be required to allow those risks to be further assessed. As part of this the committee was asked to consider the results of an initial scoping study on the use of RMS by AHDB Dairy².

7. ACMSF advised that it was unable to carry out a risk assessment due to the significant data gaps and lack of understanding of microbial behaviour in RMS. The committee provided comments highlighting a number of specific concerns³.

Updated policy position

8. Following a review of the new research, Defra, Scottish Government and Welsh Government are set to authorise the continued use of RMS as bedding for dairy cattle provided farmers comply with a revised set of mandatory conditions and follow best practice management criteria. These conditions are currently being revised and tightened in order to mitigate potential risks to public and animal health, provide guidance to farmers, and to protect the reputation of the industry.
9. It is acknowledged that further knowledge gaps exist relating to the medium to long term risks associated with the use of RMS as a bedding material and the situation will continue to be monitored and kept under review. Should new research identify further risks to public or animal health that cannot be sufficiently mitigated by amendment of the conditions, then Defra, Scottish Government and Welsh Government may no longer permit the use of RMS under the EU Regulation.
10. The FSA will request that ACMSF establishes a new working group to consider AHDB Dairy's research in detail and provide recommendations for consideration by the main Committee in June 2016.

Secretariat
January 2016

² ACM/1165 Annex 1: Scoping Study on the Potential Risks (and Benefits) of using Recycled Manure Solids as Bedding for Dairy Cattle.

http://acmsf.food.gov.uk/sites/default/files/ACM_1165_Annex%201.pdf

³ ACMSF Minutes: 29 January 2015 <http://acmsf.food.gov.uk/acmsfmeets/acmsf-meeting-29-january-2015-0/acmsf-meeting-29-january-2015/acmsf-minutes-29-january-2015>

RISKS, BENEFITS AND OPTIMAL MANAGEMENT OF RECYCLED MANURE SOLIDS FOR USE AS BEDDING FOR DAIRY CATTLE

Aims and Structure of the Project

The project aimed to:

- Assess the presence (and in some cases, levels) of selected pathogens and milk spoilage bacteria in cubicles bedded with RMS in comparison with other bedding materials.
- Assess the transfer of pathogens and milk spoilage bacteria from different bedding types to bulk milk and potential mitigating factors.
- Provide robust information on the relationships between bedding (including RMS) and udder health in dairy cows under UK conditions.
- Increase our understanding of factors influencing the success of use of RMS as a bedding material for UK dairy cows.
- Assess the potential to mitigate possible adverse impacts of the use of RMS as bedding.
- Assess specific aspects of welfare and comfort of cows on RMS and other bedding.
- Predict the likely levels of MAP and Salmonella spp in slurry and RMS bedding over time, in farms with different disease levels, by modelling literature based values of cow excretion patterns alongside the dynamics of slurry storage and removal.
- Provide information on antimicrobial resistance patterns in organisms isolated from farms using RMS and other bedding materials.
- Contribute to information on best practice for building and managing beds using RMS.
- Provide a cost calculator enabling farmers to evaluate a variety of bedding options.
- Enable exchange of information and experiences on RMS use between the UK and the Netherlands.

The work involved collection and analysis of data from:

- An epidemiological survey of 125 farms using RMS, sawdust and sand as bedding.
- A controlled study of different bedding materials and depths.

- An observational study of different methods of initial build-up of deep RMS beds.
- In silico modelling to predict the likely levels of MAP and Salmonella spp in slurry and RMS bedding over time, in farms with different disease levels.

The project also incorporated:

- Development of an economic cost calculator to allow evaluation of the cost of converting to, and subsequent use of RMS bedding.
- Analysis of bacterial isolates collected on the survey to assess implications for antimicrobial resistance.

Overview of research findings

- The study demonstrated that the mandatory conditions and best practice measure put in place at the start of the study were appropriate risk mitigation measures.
- The RMS user population in the study was self-selecting and represented 'successful users' employing best practice methods. There is a risk that farmers not following similar best practice methods would generate different findings.
- The study was limited to winter/ spring and did not represent a full calendar cycle. This was thought to be a significant limitation of the study.
- There is no association between bacterial counts in 'used' bedding and bulk milk samples however, based on the survey results, farmers who stopped using RMS in the past had given the reasons as udder health problems (a likely consequence of not applying good milking/ management practice).
- Lower leg cleanliness in cows in RMS bedded herds was seen to be better than sawdust; upper leg and flank cleanliness was best on deep RMS; udders were cleanest on deep RMS and sand.
- No significant difference in udder health was recorded in any bedding type based on SCC or clinical mastitis in the study.
- Bacillus counts were significantly higher in deep RMS beds but this was not transferred into milk at significant levels.
- Both in-silico studies supported the requirement to prohibit use for younger animals.
- Antimicrobial resistance data had been presented. It was noted that the aim of the study was purely to provide a baseline for future study of resistance changes.

- Caution should be applied when drawing conclusions from the data.
- The rate of accumulation of AMR genes will mean that the full impact of RMS use may not be recognised in the short term and further monitoring would be necessary.
- Further analysis of the baseline data was recommended along with ongoing monitoring at farm level.
- Overall, the report did not generate any conclusive evidence to prohibit the use of RMS (when compared to other bedding types) but did acknowledge that further work was needed.
- Continuing evidence gaps relate to use in Summer/autumn periods; impacts of longer term use; mid to long term impacts of RMS use on AMR; further analysis of baseline AMR data (including direct comparison with published environmental data) and multi-drug resistance.

FSA position

- The FSA supports Defra in its precautionary approach to allowing use of RMS which balances the need for exploring the use of sustainable, alternative sources of cubicle bedding/reducing waste and managing the potential risks to public and animal health.
- The evidence on use of RMS under British conditions is currently limited and insufficient to allow the FSA to reach a definitive view on whether this practice poses unacceptable risks to food safety. While evidence gathered to date tends to indicate that strict compliance with the prescribed conditions of use and best practice recommendations may be effective at mitigating potential risks over the short term, further research and on-going monitoring is essential to investigate longer term implications.
- We consider that the main risks associated with use of RMS to be microbiological, as chemical risks are likely to be relatively minor, comparatively easy to mitigate and generally no worse than alternative bedding materials.
- The FSA considers that the main food safety risk is likely to be associated with raw milk and strongly supports pasteurisation of all milk produced on RMS farms, as currently required. For this reason farm workers and their families should not consume raw milk produced on RMS farms.
- While we are not aware of any RMS farms supplying raw milk cheese-makers, until it is shown that the production process effectively mitigates potential risks it would seem sensible to follow a precautionary approach and advise that all milk from RMS farms used in cheese-making should be pasteurised.
- The potential risks associated with meat should be sufficiently-well mitigated by normal hygiene practices in handling and through cooking.
- FSA will keep this position under review as further evidence is gathered