RECYCLED MANURE SOLIDS (RMS) AS BEDDING IN CUBICLES FOR DAIRY CATTLE

Background

Interest in the separation of manure to produce cattle bedding has been increasing in Great Britain. This Q&A aims to provide dairy farmers, vets, suppliers of separation equipment and other interested parties with an overview of the requirements and recommendations which will permit use of recycled manure solids (RMS) as bedding for cattle in England and Scotland. Currently, the authorities in Wales and Northern Ireland have decided that RMS as cattle bedding will not be permitted.

Question and Answer Guidance

Q1. What is green bedding?

In the UK, the term “Green bedding” or “Recycled Manure Solids” refers to bedding made from the solid fraction of slurry using specialised slurry separation technology that produces dry matter levels above 34%.

Q2. Is it legal?

Current users and those considering using RMS as bedding need to be aware of the legal requirements. Livestock manure is classified as a Category 2 animal by-product under the EU Animal By-Products (ABP) regulation. As such, the ABP regulation does not directly permit the use of manure, as bedding. However, the regulation has provisions which permit animal by-products and derived products to go for technical uses provided these do not pose an unacceptable risk to public or animal health. Currently, there is insufficient data available for Defra and devolved administrations to make a definitive decision on whether this practice poses an unacceptable risk.

To tackle this gap in knowledge, further research studies are required to gather data under British conditions. While industry leads on filling this research gap, Defra and the Scottish Government will permit the use of RMS as bedding for cattle in England and Scotland provided farmers comply with a set of prescribed management conditions to mitigate the potential risks (further detail under Q6).

If at any point, unacceptable risks emerge that cannot be sufficiently mitigated through changes in practices or management, Defra and Scottish Government may no longer permit the use of RMS as bedding. This fail safe is essential to ensure the good reputation of the dairy industry, and consumer confidence in its production methods, are maintained.

Q3. What are the benefits and risks associated with the use of RMS as cattle bedding?

The perceived advantages of using manure solids as cattle bedding include improved cow comfort, increased lying times, improved cow cleanliness, and reduced costs.

In terms of risks, there is a general lack of information in relation to the presence of different pathogens, their survival and replication in the bedding material. Diseases which could cause concern and have been studied include mastitis, salmonella and Johne’s disease, but mastitis is the only disease that has been studied in any detail.

Q4. Why have specific conditions of use been prescribed?

These have been agreed by Defra/Scottish Government in consultation with industry stakeholders (DairyCo, NFU, NFUS, Red Tractor, British Cattle Veterinary Society, DairyUK)
to mitigate any potential risks to public and animal health, provide guidance to farmers, and to protect the reputation of the industry. Specifically:

- The evidence suggests that the success or otherwise of RMS is highly dependent on how it is managed on-farm
- As this is a new technique to the UK, taking a precautionary approach based on known best practice, means any health, welfare and reputational risks to the industry can be reduced

Farmers should be aware that AHVLA veterinary inspectors acting on behalf of Defra and devolved administrations may decide to prevent the use of RMS on an individual farm altogether, or require additional mitigation measures, during a period where the risk of notifiable disease spread within a herd from use of RMS is considered likely to be unacceptable, such as in a particularly serious TB herd breakdown.

**Q5. How long a period of study is envisaged?**

A report was produced for DairyCo in February 2014, which reviewed the available evidence from around the world. The report highlighted that much of the existing knowledge on the subject has been acquired through practical experience and case study rather than rigorous scientific evaluation. A period 2 years, starting from 1st July 2014 will be required to collect robust field data.

During this 2 year period, Defra and Scottish Government will not act to prevent use of RMS under the regulation, provided industry adheres to the prescribed conditions set out below in Q6. However, regulators reserve the right to review their position. If at any point, unacceptable risks emerge that cannot be sufficiently mitigated through changes in practices or management, Defra and Scottish Government may no longer permit the use of RMS as bedding.

**Q6. What are the controlled conditions I must comply with?**

The requirements in this section must be followed at all times. By complying with these conditions you can ensure that action will not be taken against farmers under the Animal By-Products and Animal Welfare regulations. Requirements are either based on the need to mitigate risks to an acceptable level as required under regulation or a consensus agreement by industry stakeholders about good management practice. Although the assumption is that use of RMS will mainly be for dairy cattle, beef farmers which can comply with the required conditions (1-14) may also use RMS bedding for beef cattle.

1. **RMS must only be produced using raw cattle manure/slurry from housing and/or yards.**
   Manure from other livestock species must not be included for the production of RMS, to avoid introducing external pathogens which may affect cattle health.

2. **Material that has been composted or digested must not be used**
   The spores of certain bacteria, particularly those that are heat-resistant may be encouraged by composting. Too high a concentration of spores can lead to losses during the manufacture of cheese and reduce the shelf life of pasteurised milk.

   Putting manure through a digester will also increase temperatures, which can affect pathogen load. Until further information is available, use of RMS produced from the output of a digester is not permitted. Equally, use of digestate which contains feedstock from non-farm sources could cause an additional unacceptable risk, and is not permitted.

3. **RMS must only be used as bedding for cattle which are in the same epidemiological unit as those cattle from which it is generated**
To minimise the risk of disease transfer, RMS must only be produced on the unit on which it is to be used and only from slurry originating from that unit. Slurry or manure must not be moved between units either before or after processing. An epidemiological unit comprises animals which come into contact with each other directly or indirectly (e.g. shared facilities or personnel) as part of the same farm business. They may not necessarily be housed on the same site or premises.

4. **Movement of RMS between epidemiological units is not permitted**
   Similarly, to reduce the risk of transferring pathogens, slurry or manure to be used to produce bedding must not be moved between units, either before or after processing.

5. **RMS must not be produced from manure/slurry of herds which are subject to official restriction for notifiable diseases, other than TB**
   The main notifiable disease of concern is foot and mouth disease, as the infective agent can occur in faeces and urine up to four days before clinical signs appear. A list of notifiable diseases is available on Defra's website ([http://www.defra.gov.uk/animal-diseases/notifiable/](http://www.defra.gov.uk/animal-diseases/notifiable/)).

6. **Manure from TB Inconclusive reactors and TB reactors must be excluded from the use of RMS**
   As yet the specific risk of TB spread has not been studied. However, unless TB is advanced in an animal, there are unlikely to be large numbers of organisms shed in faeces. With regular testing, the chances of reaching this stage of infectivity are much reduced. However, if TB were present in slurry, it is not likely to be reduced by physical separation. Therefore, manure from TB inconclusive reactors and TB reactors must be excluded from RMS.

7. **Manure from aborted cattle under brucellosis investigation must be excluded from use as RMS**
   On farms where RMS are being used for bedding, rigorous biosecurity is even more important in relation to suspected brucellosis cases as it is a zoonosis.

8. **Other materials, such as birthing fluids and placental material, manure from calving areas, and waste milk must not be disposed of by adding these to manure/slurry going for RMS**
   Afterbirth and other fluid materials are a potential risk for disease transmission. Waste milk, subject to withdrawal period, must not be added to the slurry pool, as there is an increased risk of developing antibiotic resistance. Anecdotally, inclusion of waste milk in material used for bedding has been associated with increased cell count/mastitis problems.

9. **There should be no shared equipment for the handling and processing of feed and RMS**
   If any equipment is shared (loaders etc.) it must be thoroughly cleaned between uses. Designed to prevent cross contamination of feed or forage.

10. **Should any separation equipment be moved between different epidemiological units, it must be thoroughly cleaned and disinfected before moving and subsequent re-use**
    On the continent, movement of contaminated equipment has been linked to transfer of pathogens from one farm to another.

11. **RMS must only be used as bedding for housed cattle over six months old**
    Regulations on calf health and welfare (Council Directive 2008/119/EC and the Welfare of Farmed Animals Regulation 2007) state that calves must have access to a lying area which is ‘clean, comfortable and adequately drained and which does not adversely affect the calves’. Youngstock are particularly susceptible to disease and if infected may be highly contaminating themselves. Risks of disease transmission will
be minimised by preventing calves less than six months old from having contact with faeces and slurry from adult cattle. Any calves that are inadvertently born in areas bedded on RMS must be removed as soon as possible from the area, to a location where suitable alternative bedding is provided.

12. **Milk from herds using RMS must be pasteurised**
   All bedding materials are potential sources of contamination for milk. Micro-organisms and their spores can get on to the teat from the bedding and through the milking process end up in the milk bulk tank. As a precautionary measure, use of RMS is not permitted on farms selling unpasteurised milk.

13. **RMS must be produced from a slurry separator unit, designed for the purpose, which produces manure solids of at least 34% DM**
   Slurry is mechanically separated into a liquid fraction and a “solid” fraction, typically by using a screw or roller press action. The equipment needs to be capable of extracting sufficient water to make the solid fraction at least 34% dry matter. If the material is too wet (below 34%) it is unsuitable for use as bedding.

14. **RMS must only be used on cubicle beds, and not as a deep bed in pens or yards**
   RMS must only be used in cubicles, either as a layer on top of mattresses, or as a cubicle bed up to 15 cm in depth. It should not be used in calving areas, due to the susceptibility of newborn calves to Johnes disease.

**Recommended best practices**

In addition, to the requirements above which **must** be followed at all time, the twelve recommendations in this section should be followed as current best practice.

1. Users of RMS as dairy cow bedding should actively monitor cow health, in particular intramammary health, as well as bulk tank milk, quality
2. Farm personnel should be made aware of the importance of personal hygiene during and following the handling of RMS
3. RMS should be prepared and stored under cover to avoid an increase in water content prior to application
4. Manure/slurry from animals under treatment should not be incorporated into RMS (this includes dry cow treatment)
5. Manure/slurry from animals/herds showing clinical signs of infection, enteric condition or outbreaks of clinical disease (e.g. Salmonella, VTEC E.coli. etc.) should not be incorporated
6. There should be excellent cow preparation at milking time (e.g. pre-milking teat preparation and pre-dipping), sanitation of milking equipment and cow hygiene
7. There should be excellent bedding/cubicle management, including
   - Adding RMS to the beds in limited quantities to allow further drying to take place
   - Managing beds to minimise ‘heating’ and therefore bacterial multiplication after application
   - Designing and managing beds to minimise contamination with urine and fresh faecal material
   - Frequent removal (at least daily) of freshly soiled material from bedding
8. Ventilation should be adequate and overstocking avoided, to ensure further drying of RMS once applied to bedding and to minimise the levels of ammonia in the housed atmosphere
9. Freshly separated RMS should be used as soon as practically possible (normally within 12 hours)
10. Newly introduced adult animals to the herd should not have their manure mixed into the RMS system (for a period of one month), i.e. material from isolation pens should not be added to the pool for separation
11. Water and/or solutions used in footbath wash should not be disposed of in the slurry/manure to be used as RMS bedding.
12. Manure/slurry from cattle less than 12 months old should not be used as a raw material for RMS. The material should only be used to bed cattle older than 12 months old.

Q7. If I am thinking about implementing RMS as cattle bedding, what should I do?

- **Comply with the RMS conditions of use at all times**
  The supplier of the separation equipment or your vet should have sign-posted you to the list of fourteen requirements and best practice recommendations.
- **Complete the RMS self-assessment checklist (using the Red Tractor template)**
  For RMS to be considered a safe and suitable bedding material, all users of RMS must complete a self-assessment checklist. Keep a copy of the checklist for your own records. This self-assessment is downloadable from [www.redtractorassurance.org.uk](http://www.redtractorassurance.org.uk) or [www.dairyco.org.uk/rmsbedding](http://www.dairyco.org.uk/rmsbedding).
- **Ask your vet to annually review and discuss the use of RMS bedding on-farm (using the Red Tractor template).**
  Consult with your vet on the suitability of your farm and system. Download the vet review form [www.redtractorassurance.org.uk](http://www.redtractorassurance.org.uk) or [www.dairyco.org.uk/rmsbedding](http://www.dairyco.org.uk/rmsbedding).
- **Keep a copy of the self-assessment checklist and vet review to show to your Red Tractor assessor**

Q8. How does this link in with Red Tractor and my farm assurance?

Red Tractors revised dairy standards come into force on 1st October 2014 and state that bedding materials must be safe, suitable and legal. Alongside the revised Red Tractor standards is an interim position on the use of RMS by members of their scheme. Users of RMS must inform Red Tractor that they are using the equipment either by E-mail: dairy@redtractor.org.uk, or phone 02476 478 630 and users must complete the self-assessment template and also have a vet on-farm to review the use of rms (see Q7 above). Failure to follow these requirements will result in a non-conformance against Red Tractor standards and may also result in enforcement action being taken by regulatory authorities under the Animal by-products regulations.

Q9. Where can I get further guidance and information?

Animal By-Products Regulation (EC) NO 1774/2002


DairyCo [www.dairyco.org.uk/rmsbedding](http://www.dairyco.org.uk/rmsbedding)

Red Tractor Assurance [www.redtractorassurance.org.uk](http://www.redtractorassurance.org.uk)

Film on 14 legal requirements when recycling cattle manure for bedding [http://youtu.be/b14NWSlJzEe](http://youtu.be/b14NWSlJzEe)
