Topic

Animal welfare

Sand Bedding in freestalls

Background

Sand provides a comfortable lying surface and provides extra grip when getting up and lying down. Cows lie down longer on sand than on harder surfaces. In addition, sand is an inorganic material in which environmental bacteria growth is limited, and the prevalence of lameness and mastitis problems is low. However, management of sand in cubicle housing has its challenges.

How does the strategy work?

To keep the sand in the cubicle, the cubicle should have an edge (curb) of 15-20 cm deep (no sharp edges). The cubicle should be cleaned twice a day by removing any manure, refreshed with new sand as needed to maintain at least 30 cm bedding and managed well to ensure an even depth of bedding in the entire cubicle.

Because manure processing and its separation from the sand is the biggest challenge when using sand bedding, the preference is to have barns with a solid rubber floor. Barns with a slatted floor and a manure pit underneath are deemed unsuitable for sand bedding because in these barns settled "cake" of sand and manure cannot be mixed.

Manure chute Settling tank

To remove sand and manure from the solid floor of the barn, a manure chute is recommended. Approximately every 2 hours, it is recommended that a mechanical manure scraper pushes sand and manure toward the manure chute.

In order to separate the sand from the manure, the mixture is flushed through the manure chute to a simple settling tank placed adjacent to the barn. Here, the sand settles in the wide section whilst the thin fraction flows and is removed via an overflow system.

The thin fraction is then used to flush the manure chute. As a manner of speech, the mixture falls into a fast-flowing 'river' which enables the sand to settle. The fraction that has not settled is pumped to the manure silo when the settling tank is filled.

The settled sand is scooped out of the settling tank by crane 3 to 4 times yearly. The sand can then be spread on the land or put into storage. Machines that can wash and dry the sand in order to be reused in the cubicles are commercially available. Note that the recovered sand becomes increasingly coarser.

Positive features

Compared to mattresses, sand in cubicles improves cow comfort, increase lying time and support the lying down movement. Sand also reduces the risk of hook injuries, as well as the risk of mastitis, thanks to low bacterial counts and increased cow hygiene (Gastelen et al., 2011).

Be careful, especially on these points

Consider the barn design: settling tanks that are too small and/or bends in the manure chute will cause problems in the long run.
To ensure lying time and lying comfort :

- The curb should be 15-20 cm deep, no sharp edges
- At least 30 cm of sand bedding should be provided
- Management of sand should ensure an even depth of bedding in the entire cubicle (Drissler et al., 2011)

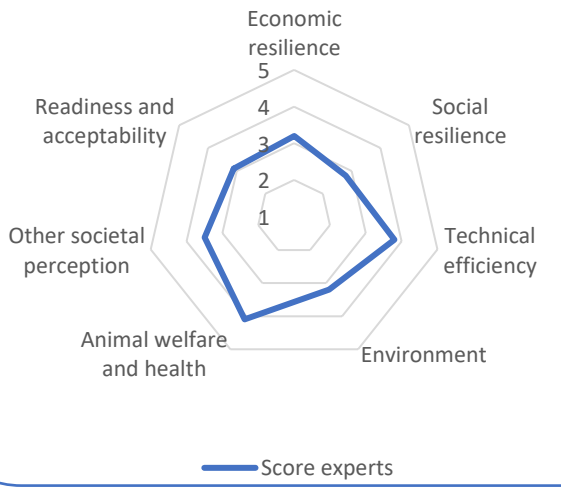
Equipment involved and investments

Each cow requires 2 to 3 cubic meters of sand per year. Each cubic meter of sand costs € 12.50, resulting in a total cost per cow per year of € 37.50. Rubber floors provide a soft surface for the cows to walk and/or stand on comfortably.

Specific advises

Use fine masonry sand originating from 15 to 20 feet deep. Do not use shallow excavated (forest) sand as this may contain the bacteria Klebsiella. Use a cable or rope, rather than a chain to pull the manure scraper as the sand quickly wears the chain links out.

Assessment of method



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Quote of the farmer:

"Sand is foolproof!"

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