

## BEDDING TREATMENTS/ADDITIVES

Bedding treatments or chemical disinfectants, as they are sometimes referred to, are designed to be added to the bedding material to limit the growth of bacterial populations associated with environmental mastitis. They accomplish this action by reducing the moisture levels of the bedding as well as attempting to alter the pH from the optimal level individual bacterial species prefer. One of the most common bedding treatments is the addition of calcium powders such as calcium hydroxide (hydrated lime), calcium carbonate (agricultural lime) or calcium sulfate (gypsum) to the bedding material or alternately the purchase of one of the commercial products available from farm supply companies.

### Advantages:

- **Calcium hydroxide** or hydrated lime (*Svenska: Släckt kalk*) is commonly used with wood based bedding materials and if properly used:
  - Elevates pH i.e. makes the bedding material more alkaline and reduces moisture content of the bedding which together act to inhibit bacterial growth.<sup>16</sup>
  - Has been shown to reduce coliform and Klebsiella bacterial species.
  - adds lime to the soil
- **Calcium sulfate or gypsum** (*Svenska: krita/foderkalk*) can be used as a bedding treatment as it:
  - has a neutral pH thus carries less risk of producing skin irritation on the cow's teats.
  - adds calcium sulfate to the soil

### Disadvantages:

Bedding treatments varied in their effectiveness and the type of bacteria that they effectively reduce:

- In one study which compared hydrated lime, a commercial acidic conditioner, **coal fly ash** and kiln-dried wood shavings as bedding treatments on mattresses, only the bedding samples and teat swabs from the hydrated lime treatment showed reduced bacterial counts. Furthermore, coliforms and Klebsiella species were the only species that were significantly reduced.<sup>25</sup>
- Another study showed the persistence of the benefits of adding chemical disinfectants to organic bedding materials was relatively short. Specifically, the use of chemical disinfectants significantly reduced populations of bacteria for the first day only after application in the bedding treated with conditioners and on the teat ends of cows housed in stalls. Subsequently on day 2 and day 6 post application the antibacterial effects of disinfectants were greatly diminished, and mastitis pathogen populations were comparable between cows on treated bedding and those on untreated bedding.<sup>16,20</sup>
- Other studies have demonstrated the antibacterial effectiveness of disinfectants was related to the original pH of the bedding for example.<sup>20</sup>
  - alkaline products work best in products with a higher pH e.g. recycled manure with a pH of 6 than in kiln-dried sawdust with a pH of 4
  - acidic products work best in bedding with a lower pH e.g. kiln-dried sawdust with a pH of 4
- Excessive levels of some additives such as lime can actually blister the skin on teats and cause irritation of the animal's respiratory system.

### Guidelines for Use:

- **Gypsum or agricultural lime** (*Svenska: krita/foderkalk*):  
It is recommended it be used at an initial rate of 0.50 kg) to 0.75 kg per stall with a maintenance application of 0.25 kg per stall per day.
- **Hydrated lime** (*Svenska: Släckt kalk*):  
It is recommended to be used at an initial rate of 0.25 kg to 0.37 kg per stall with a maintenance application of 0.125 kg per stall per day. Hydrated lime should be covered by fresh bedding whenever possible to avoid direct contact with teat skin.

**Hälsopaket Mjök**