Innovative temperature controlled mattress offers cow comfort

According to studies conducted in France and Europe, dairy cows suffer from heat as much as 6-15 hours per day in summer, even in 'adapted' animal housing. This heat stress leads to loss of production of more than 3.5kg of milk per cow per day. In addition to this loss, heat stress has a negative impact on the behaviour, physiology and the balance of anti-oxidant elements in the animal organism. Thus, a prolonged exposure to heat stress may have important consequences short term, in particular on the health of dairy cows, their reproduction and, therefore, their longevity.

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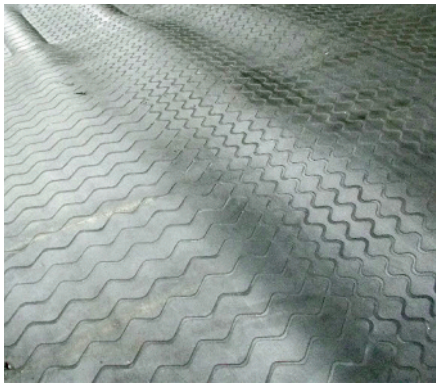
Holstein cows spend an average of 12.5 hours per day lying down.

A decrease in rumination and an alteration of nourishing behaviour increases the risk of sub-acidosis. An anti-oxidant status increases the risk of mastitis and somatic cells in milk and also reduces fertility (rate of conception). A negative energy balance (related to the balance of thermo-regulation) can affect the physical state of the animal.

Mid to long term issues related to health and performance can lead to permanent somatic cells in milk, mastitis, or fertility problems. A cow with high milk production having faced a heat stress index of 80 THI will be 'internally damaged' and will not recover its initial production rate. This problem can limit or reduce the production and genetic potential of some animals.

Bioret Agri's innovative rubber mattress.



Bioret Agri, specialists in mattresses and comfort solutions, is doing research to reduce the impact of heat stress.

The R&D department is currently working on the development of innovative mattress products that aim to reduce temperature variations via direct contact with the animal. A Holstein cow, for example, spends an average of 12.5 hours per day lying down.

Therefore, a temperature controlled mattress allows a direct effect on the body temperature of the animal and thus improves its well-being and contributes to maintaining milk production.

The ideal outside temperature for a dairy cow should be between 5°C to 15°C which, even in well insulated buildings, is difficult to obtain in some areas and some periods of time.

Thanks to Bioret Agri's innovation and the integration of a temperature controlled channel system inside of a rubber mattress adapted to a cow's morphology, the temperature around cows while lying down will be adjusted according to environmental conditions such as the outside temperature combined with the humidity rate.

In the system developed by the engineers, the heat transfer fluid mattress exchanger works in a similar way to heated flooring and contributes to maintaining milk production by reducing heat stress. In the event of high temperatures, the mattress may be cooled down on the surface to refresh the animal – thus limiting the increase in body temperature. Alternatively, in the event of extreme cold, the mattress can be heated up to save energy for the rumination and, therefore, help to maintain optimised milk production.

The flow of the fluid works the same way as water heated flooring, which makes the technology simple, reliable, easy to install and affordable.

The 'Clim Cover' and the 'Pacific Clim' are currently installed on test farms and are at their last stage of validation by the R&D department.

While some data concerning animal cooling and its impact on milk production require further analysis, the testing has already proven that use of the Clim mattress concept reduces pressure points compared with traditional mattresses allowing better blood circulation leading to higher milk yields.

Additionally, other benefits of water make such mattresses resistant to deformation and, therefore, long lasting and more hygienic thanks to the slope created by the water at the rear of the cubicle.

These innovative products can also be equipped with electronic components to measure the resting time and can fit any type of renovation of cubicles, such as individual floor mats, mattresses or linear deep bedding. ■