Heat stress in livestock

The degree of heat stress experienced by animals is estimated by the temperature-humidity index (THI) which includes both ambient temperature and relative humidity.

The THI is divided into categories that potentially indicate the level of heat stress, but definitions vary between researchers and conditions.

# Heat stress in sheep

THI = db ◦C − {(0.31 − 0.31 RH)(db ◦C − 14.4)}

where db ◦C is the dry bulb temperature (◦C) and RH is the relative humidity (RH%)/100

|  |  |  |  |
| --- | --- | --- | --- |
|  | Heat stress level | | |
| Moderate | Severe | Extreme severe |
| Sheep/goat 1,2 | 22.2 – 23.3 | 23.3 – 25.6 | > 25.6 |

# Heat stress in cattle/pigs/horses

THI = (1.8 x T +32) – (0.55 - 0.0055 x RH) x (1.8 x T – 26)

T = ambient or dry-bulb temperature in °C, RH=relative humidity expressed as a proportion

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Heat stress level | | | |
| Mild | Moderate | Severe | Dead |
| Cattle3 | 72-78 | 79-88 | 89-98 | > 98 |
| Sows4 | 74-78 | 78-84 | > 84 |  |
| Horses5 | 68-72 | 72-80 | 80-90 | > 90 |

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