

## Session 2: Animal husbandry

# The climate change challenge for livestock keepers is moving northwards

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The climate resilience of future livestock production shows commonalities as well as disparities among different agroecological as well as economical regions in the world. Commonalities are that increased resilience in terms of diversified production often mean less efficient use of resources and economic return, whereas the opposite maybe true for specialized production with higher productivity, but also with higher risks. This conversation is often missing at SLU as are insights of the social and economic dimensions of sustainability.

Three aspects of livestock production that are affected by the climate change and often highlighted are the access to feed and water, reproduction and emergence of infectious diseases.

The summer of 2018 exposed livestock to the droughts that are common on southern latitudes with shortage of feed and forage. This pushed more farmers to construct ponds for collecting rainwater, a practise that has been applied for some time on islands of Öland and Gotland. One challenge more prominent in the global south are the climate change induced disruption of seasonal rains, this is affecting all kinds of farming. A specific northern aspect is the freezing thawing cycles occurring in the sub-arctic – where the temperature increase is faster than elsewhere on the planet – creating an ice surface so the reindeer cannot graze from the ground. The substitute feeding is may cause digestive disorders in the animals and the concentration of animals to a feeding spot increases the risk of disease transmission.

It is for a long time known that increased ambient temperature causes so called heat stress in domestic animals. Effects could be death, lowered growth or milk and egg production as well as reduced fertility. The reduced fertility due to poor semen production in the males and embryonic death in females. Preliminary data indicate that there was pronounced effects on pig as well as cow reproduction in the summer of 2018 in Sweden. In resource rich settings this can be circumvented by using reproductive technologies such as artificial insemination or embryo transfer. Other mitigation means, to reduce heat-stress over all, are sprinkler systems with fans commonly used in larger pig farms in SE Asia or wind-catching funnels used in cattle farms in the US.

Due to changes in rainfall (increased humidity) and increased temperature, infectious diseases may emerge to new areas – often spreading northwards – where the entire livestock population is non-immune and where farming practices may not be adapted to the new disease scenario. The most rapid emergence is seen among vector borne diseases – where the infectious agent is transmitted by an insect, tick or another arthropod. This is currently ongoing in several European countries and there might be “tipping-points” where a hot summer period is long enough to allow the vector to complete a full lifecycle. This mean that the number of adult vectors capable of transmitting the infection increases. Also, bacteria that thrives in a wet environment – like in certain regions in the tropics and

after flooding - will likely emerge into new areas and cause disease in livestock kept in humid environments.

Other aspects are the relocation of production of livestock and feed in the world affecting global trade and the climate change-triggered public anti-livestock campaigns in high income-countries affecting the willingness of farmers to produce animal source foods.

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