Combined with restricted water resources (drought and below average rainfall) animals are under strain in this environment. While it is acknowledged that farmers do their best under trying conditions to protect farmed animals, it remains a topic of concern in the face of global climate change.

Animal welfare
There has been a paradigm shift from simply considering declines in animal production as a measure of stress to also taking animal welfare into account. It is generally accepted that small ruminants (sheep and goats) are more resistant to higher temperatures (heat stress/hyperthermia) and can adapt to widely ranging rainfall patterns, compared to cattle which are relatively more susceptible to heat stress responses that negatively affect production.

Mitigating effects
A commonsense solution to mitigating the effects of heat stress on sheep under extensive conditions is to provide shade and adequate water to the animals. Under perfect circumstances so-called “bioshelters” or naturally growing trees and hedges would provide shelter for sheep. But these take years to establish and may interfere with the growth of pasture. Constructed shelters can be built, but the use of these structures is variable depending on the material used and design owing to the behaviour of sheep; utilisation of shelter even varies between and within sheep breeds.

The way forward to address some of these issues is to start with a simple solution; test designs for a sheep shelter structure and monitor usage.

A more advanced approach would involve
- precision-farming instruments to track animal movement
- temperature loggers for constant monitoring of the animal
- mini weather stations for environmental data
- intensive behavioural monitoring, and
- a genetic study to detect the more heat-resistant animals.

Conclusion
An increase in small-stock numbers is expected as a result of increased temperatures owing to climate change making areas unsuitable for other types of agriculture. With this in mind, and increasing awareness about animal welfare issues, studies examining animal responses to climate change will be required to allow agriculture to adapt to the changing environment.