

## Climate change and animal science – outcome of a panel discussion between animal scientists

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### Abstract

This article reports on the outcomes of a panel discussion on climate change during the 45<sup>th</sup> Congress of the South African Society for Animal Science. The impact of global warming and continued uncontrolled release of greenhouse gasses has two-fold implications for the livestock industry, since climate change represents a feedback-loop within which livestock production both contributes to the problem and suffers from the consequences. The challenges for animal scientists and the livestock industries are discussed and aspects that should be taken note of listed. Although the net effect from livestock is only a 5% contribution to greenhouse gasses, the livestock industries should be aware of the effect of livestock on climate change and therefore it is important that mechanisms are put in place to mitigate this effect. Animal scientists can support the livestock industries in developing new and adapted technologies to attain this goal. The improvement of production efficiency through increased production will reduce the carbon footprint of livestock. Animal scientists should also support decision-making through bridging the interface between livestock production and policy. Livestock production can be severely affected by climate change. Incidence of diseases, water shortage and poor graze conditions are some of the challenges facing the livestock sectors as a result of climate change. Both adaption and mitigation strategies should be put in place so as to reduce the impact of climate change on livestock production. Mitigation strategies are however difficult to put in place due to the fact that they involve efforts of all nations whose objectives and economic background vary significantly.

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### Introduction

South Africa is currently experiencing average high temperatures and low precipitation, frequent droughts and scarcity of both ground and surface water. It can be accepted that global temperature increases will have a more severe effect on the livelihoods of people on the rural areas of South Africa where the majority of them depend on rain-fed livestock production which is more vulnerable to climate change. It is against this backdrop that the South African Society for Animal Science decided to hold a special session on climate change and animal science during the 45<sup>th</sup> Congress of the South African Society for Animal Science held in East London, South Africa, from the 9<sup>th</sup> to the 12<sup>th</sup> July 2012. This article is reporting on the outcomes of an intensive panel discussion that was held during this session.

### Discussion

Climate change represents a feedback-loop within which livestock production both contributes to the problem and suffers from the consequences. The impact of global warming and continued uncontrolled release of greenhouse gasses (GHG) thus has twofold implications for the livestock industry, and consequently food security. Firstly, the continuous increase in temperature is predicted to have a direct effect on water supplies, the future distribution of livestock species and breeds, their adaptability to increased heat load, incidence and type of diseases, feed supplies, grazing potential, and food (nutrition) security. This is because of changes associated with temperature itself, relative humidity, rainfall distribution in time and space, altered disease distribution, changes in ecosystem and biome composition, woody species encroachment and alien plant invasion.

Secondly, the responsibility from livestock production is to limit the release of GHG (i.e. the carbon footprint) and water use (i.e. the water footprint) in order to ensure future sustainability. This can be done by implementing new or adapted production systems, by use of known and new technologies that can limit GHG emissions, water use and waste, by employing technologies to turn waste into assets, and by promoting sustainable human diets with low environmental impacts.

The challenge for animal scientists is to support livestock farmers in developing new and adapted technologies to attain this goal. The major role players should accept climate change and take note of the following:

- How will it affect human health and life?
- How will it affect food production from both animals and plants?
- How will it affect the major sources of life (earth, water and air)?
- What are the common challenges to humans, animals, plants and the resources (earth, water and air)?
- How to improve scientific understanding of climate change?
- How to communicate or disseminate climate change risks and adaptation strategies?

The participants in the panel discussion agreed that:

- We need accurate statistics on animal numbers in South Africa to better understand the effect of livestock on climate change and to develop mitigation strategies.
- The effect of livestock on climate change should be recognized and not denied by livestock industries and initiatives to reduce the carbon footprint from livestock production should be supported.
- Livestock should not be singled out as the only or major contributors to GHG's. The aim should be to reduce it at all levels, including the use of fossil energy.
- The training of animal scientists is currently too narrow and aspects relating to climate change should be included in the curriculum.
- The way to reduce methane emissions from livestock is to reduce the livestock numbers and increase the production per animal thereby improving their productivity. There is sufficient genetic variation in our livestock genetic resources to facilitate breeding for improved production efficiency.
- The generation of information on climate change and the communication thereof to both the livestock industries and the general public should get specific attention.
- Embracing a proactive participatory approach in responding to the challenges posed by global warming.
- The use of indigenous and locally developed breeds, which can survive under extreme climatic conditions and are resistant to pests and diseases, can also reduce the effect of climate change on livestock production.
- Use of sheds through planting trees can also improve the production capacity of livestock through minimization of heat stress on animals and improved feed utilisation. In addition this will also reduce the carbon foot-print due to the fact that trees utilise the carbon dioxide produced by livestock
- Animal scientists should be proactive in supporting decision-making through bridging the interface between livestock production and decision on mitigation policies.
- Mitigation strategies will be difficult to put in place due to the fact that they involve efforts of all nations whose objectives and economic background vary significantly.

## Statement

The animal scientists attending the panel discussion recognize the effect of livestock on greenhouse gas (GHG) production and climate change; and that the anticipated global warming will have a negative effect on the livestock production environments. It is therefore important that through research, development and management interventions, methods or innovative ways are developed and put in place to reduce the

GHG production from livestock and to mitigate the effects of climate change on livestock production. The livestock industries should also recognize the effect of livestock on climate change and actively support strategies to mitigate it.

It must be remembered that ruminants are important to mankind since most of the world's vegetation biomass is rich in fibre. Only ruminants can convert this high fibre containing vegetation into high quality protein sources (i.e. meat and milk) for human consumption and this will need to be balanced against the concomitant production of methane. Despite this important role of livestock, in particular food security, they are targeted and singled out as producing large quantities of GHG that contribute to climate change, since enteric fermentation is responsible for 28% of global methane emissions. However, its total contribution to GHG's is only 5%.

With this statement animal scientists hope to present a balanced view to ensure that decision makers and the public are properly and correctly informed about the impact of livestock on GHG production and climate change.