Project overview

MEAT & LIVESTOCK AUSTRALIA

Heat Management in the Middle East Phase Three

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Brief summary

Annually, thousands of live sheep are exported from Australia to the Middle East (ME). Excessive heat load of sheep exported from the Australian winter to the ME summer (June-September) continues to be a health and welfare concern. Large numbers of sheep are housed at the feedlots, especially at the times of high demand such as at Ramadan, Eid Al Fitr, and Eid Al Adha to ensure constancy of supply. When these religious festivals occur in summer, the sheep can be exposed to high environmental temperatures and humidity, with increased risk of losses due to heat stress. This project has built on the work undertaken in the earlier phases of the work and compared and evaluated different shade structures and interventions, with a focus on identifying which option/s will significantly cool the sheep in hot and humid conditions.

Objectives

Numbered list below:

1. Monitor rumen temperatures of sheep under different shade types and structures to assess the effectiveness of such structures in reducing heat load of the sheep.

2. Monitor rumen temperatures of sheep subjected to cooling interventions, including ground wetting, in hot and humid environments, without and with the provision of additional air flow such as provided by fans, to determine the effectiveness and practicality of such interventions.

3. Monitor the clinical condition of sheep under high heat load, and test whether supplementation of electrolytes in the water to animals under risk of severe clinical heat stress improves their short term clinical condition and blood measures of acid-base balance and hydration, so they can be sent for slaughter.

4. Monitor sheep through the export chain for clinical disease, analysing samples as indicated by clinical condition, to provide feedback for best practice management of sheep in the process, including:

   - investigate the presence of respiratory pathogens and development of respiratory disease, to provide information regarding respiratory disease and potential for alleviation.

   - investigate Vitamin E and selenium status of export sheep throughout the chain, and develop appropriate supplementation regime, which may include provision of supranutritional doses.

   - observe and sample as necessary post mortem and through abattoir surveillance.

Project outcomes

The project outcomes are intended to assist feedlot operators in the Middle East as well as Australia or elsewhere in designing and using structures and interventions that will limit excessive heat load of sheep, as well as continued improvements in best practice management based on scientific evidence. It is not possible to estimate the costs for feedlots in implementing the designs and interventions, because they will use combinations as appropriate for their specific needs. However, the financial benefits will be in fewer sheep deaths and fewer animals requiring emergency slaughter, and such an outcome has social and ethical benefits as well.

Benefits to industry

Mortality in the summer throughout the Gulf countries may be double than that of the milder months. The aim from this research has been implementation of the industry lead moratorium thus resulting in reduced numbers of animals being exposed to high levels of heat and humidity thus resulting in improved animal welfare.

Future research and recommendations

1. Update understanding of climatic risks and challenges along routes and at destination markets. And to develop near real-time predictors of weather risk using meteorology data (such as sea surface temperature, wind speed and direction, climate cycles such as El Nino).
2. Intervention studies into controls for ambient conditions (e.g. dehumidifiers, air-conditioning, coolants etc.) on vessels and in market to provide relief to animals under periods of high climatic stress.