



WHAT DO THE HEAT STRESS RISK ASSESSMENT REVIEW RECOMMENDATIONS MEAN?

Introduction

- The department has prepared this paper to provide industry and stakeholders with early advice on likely implications arising from the heat stress risk assessment (HSRA) technical reference panel's (the panel) recommendations.
- The panel's draft report and recommendations have been released for public consultation via the department's 'Have Your Say' web page. This summary paper has been released at the same time. The panel is seeking comments and feedback on its report and recommendations, while the department welcomes any comments on this paper.
- The panel's final recommendations on HSRA in the live sheep export trade are subject to a regulation impact statement (RIS), which should be finalised in 2019.
- As a result of the panel's recommendations the department will announce in early 2019 additional arrangements to be put in place to ensure the welfare of any sheep that may be exported during the next northern summer.

Definitions

- Wet bulb temperature (WBT) is an environmental measure dependent on dry bulb temperature and humidity. It provides a measure of temperature adjusted for the cooling effect of evaporation and air movement. It is an appropriate measure of the thermal environment for sheep on ships.
- The Heat Stress Threshold (HST) is the maximum ambient WBT at which heat balance of the deep body temperature can be controlled using the body's own mechanisms of heat loss.

Summary of recommendations

- The panel recommends a HSRA framework focused on animal welfare, moving away from the current framework focused on mortality. This means using the HST in assessing the risk of heat stress occurring in the various categories of sheep being shipped from Australia rather than assessing the risk of mortality to determine space allocation on ships.
- The panel recommends using the current HST utilised in the industry model as the WBT welfare limit for exported sheep based on weight, breed, condition score, acclimatisation, fibre length and where they are sourced from. The recommended WBT welfare limit for a standardised shipper sheep (56 kg adult Merino wether, body condition score 3, zone 3, winter acclimatised, recently shorn) is 28°C.
- The panel recommended that the model use a 98 per cent probability that the deck temperatures the sheep would be exposed to during a planned voyage would remain at or below the WBT welfare limit.



- The base space allowance for sea voyages should be determined by the Australian Standards for the Export of Livestock, which is then subject to the HSRA adjustments. The panel also recommends that environmental conditions in the destination ports be taken into account, and recognises the ongoing need to measure and record environmental conditions accurately and at a sufficient number of relevant locations on board vessels to provide transparent monitoring and protection of livestock welfare.

The WBT welfare limit

- Different classes of sheep experience the onset of heat stress at different temperatures (for example, lighter sheep with lower body condition scores have a higher WBT heat stress threshold). The HSRA model would take the animal variables into account and adjusts the threshold for the applicable class of sheep.
- The figure in attachment A illustrates 98th percentile WBTs that may be experienced on voyages to Gulf ports in Middle East from southern Australia and shows a peak in temperatures during the northern hemisphere summer. The figure is based on historical weather data. The figure includes the HST for particular classes of sheep. The lines at 28°C, 30.6°C and 31.9°C show the ambient WBT heat stress threshold limits for a 56kg Merino adult (body condition score 3, shorn, acclimatised to 10°C); 40kg Merino adult (body condition score 3, shorn, acclimatised to 15°C); 40kg Awassi adult (body condition score 3, shorn, acclimatised to 15°C).

Impact on exports

- The panel's recommendations on Australia's trade in live sheep have not yet been analysed using the HSRA model to determine the effect on shipping capacities for each month and class of sheep.
- Comparison with analysis undertaken during the McCarthy review suggests live Merino sheep exports from Australia during the hottest months of the year in the northern hemisphere (May to October) may not meet the WBT animal welfare criterion. It is also likely that decks on ships will carry reduced numbers of sheep during other months of the year, depending on the effectiveness of shipboard ventilation and the class of sheep to be exported.
- It may not be economic to export sheep to the Middle East during the northern summer, leading to a cessation of trade during this period. Depending on the effectiveness of shipboard ventilation and the class of sheep to be exported, the recommended changes to the model could result in a reduced number of sheep on voyages during other months of the year (outside the northern hemisphere summer months).



What it means for those in the export chain

- The impact on the broader industry over the course of a year remains to be determined. The impact will be dependent on the class of sheep available for export and the effectiveness of shipboard ventilation, including pen air turnover rates.
- It is likely that the numbers of sheep exported will decline and the trade will become more seasonal than it has been in the past. The bulk of sheep exports to the Middle East may take place between November and April.
- It is apparent that lighter, heat tolerant sheep breeds have a higher HST and may be able to be exported for more months of the year. This could mean an increase in demand for these types of sheep by exporters. This may, in turn, predicate a move by some farmers towards producing these types of sheep, depending on relative prices of wool, meat and live export sheep.
- The change in trading patterns for live sheep will also impact on incomes for shipowners, exporters, agents, livestock land transporters, operators of registered premises, stockfeed manufacturers, stevedores, AAVs and stockpersons and others involved in the livestock export chain.
- A change towards a risk assessment based on animal welfare might provide a competitive advantage to those in the export chain who exercise appropriate management and care of livestock. For example, exporters using the best engineering solutions to provide ventilated ships, or farmers breeding classes of sheep with a higher tolerance for hot conditions, might represent the future of the live animal trade.



WET BULB TEMPERATURE IMPACTS ON ROUTES TO THE MIDDLE EAST

Attachment A

Figure: Southern Australia to Middle East voyages 98th percentile temperatures

