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The welfare of sheep during sea transport

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ABSTRACT

The export of live sheep by sea to the Middle East is an area of public concern due, in part, to the high death rates on some voyages, and to perceptions of poor animal welfare during transport. This paper reviews the history of sea transport of sheep, the practice, investigations, welfare guidelines, and management progress in the New Zealand live sheep trade. A recent study of sheep exported to the Middle East has identified important behavioural indicators of stress and welfare. The results of this study have led to the implementation of new management systems to meet the identified behavioural characteristics and requirements of British breed sheep. Voyage mortalities consistently less than 1% in sheep transported from NZ to the Middle East can be expected.

Keywords Behaviour, welfare, live sheep export, sea transport, sheep.

BACKGROUND

Recently, New Zealand exporters re-entered the live sheep trade to the Middle East and other parts of the world. In the early 1970's the initial attempt to enter the trade was strongly opposed by animal welfare groups and trade unions and Government banned the export of live sheep for slaughter at that time.

In the mid 1980's the opposition was just as strong (Wells, 1985) but a market for live sheep existed, the economic situation of the New Zealand sheep farmer had deteriorated, and in a climate of deregulation the Government removed the ban. The first shipment left New Zealand in December 1985 for Mexico, and nearly 4 million live sheep had been shipped for slaughter to the end of 1990, mainly to the Middle East.

Although other countries including Australia have been involved in the trade for much longer periods there were few scientific reports until recently. A summary of Australian experience is presented in Farquharson *et al.* (1988) and in three reports on shipments from Western Australia (Norris and Richards, 1989; Norris *et al.*, 1989; Richards *et al.*, 1989). These included studies of feedlot preparation, pelleted feed composition, causes of mortalities and voyage trends and risk factors. Kelly and Beers (1989) and an article by the Department of Agriculture, Western Australia

(1990) list some Australian research and management priorities.

The specifications under which NZ sheep were transported were derived from the Australian Marine Transport Orders (Taylor, 1983) for the shipping phase, and a MAF NZ Code of Welfare for Sea Transport of Sheep (MAFQual, 1988) which concentrated on the pre-shipping phases of stock assembly and preparation.

In practice the sheep are assembled on a feedlot for about one week where they adapt to the pelleted diet. They are then loaded over 2 to 3 days onto ships with either open or enclosed decks at two levels per deck and a density of approximately 0.3 m²/animal. Shipping takes about three weeks to destination, usually Saudi Arabia. Here they are unloaded usually within three days into feedlots where they await slaughter for 1 day to 1 month.

Analyses of NZ voyage reports have shown some differences between NZ and Australian sheep during shipping (Black, 1989; Ryan, 1990). Smothering and pneumonia are two major causes of mortality on shipments originating from NZ but seldom encountered on Australian voyages. Salmonellosis is common on Australian shipments but not those from NZ. Inanition occurs in shipments from both countries but is of lower prevalence in the younger (less than three year old) sheep predominantly exported from NZ.

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A high percentage of sheep exported from NZ gain weight and arrive in the Middle East in good condition, but there is much concern for the health and welfare of the animals because:

- (1) significant death rates occur (average 2% range 0.5-10%) (Ryan, 1990).
- (2) some animals lose weight, arrive dirty or in ill-health, and
- (3) there is behavioural evidence of heat stress on most voyages.

Some of the risk factors and causes of the mortalities and poor welfare have been described in pathological examinations (Richards *et al.*, 1989; Black, 1989, 1990), and epidemiological studies (Norris and Richards, 1989; Norris *et al.*, 1989; Ryan, 1990; Journal of Agriculture Western Australia, 1990). Risk increases with increasing age and fatness of animals, with decreasing acceptability of pelleted feed, and with increasing duration of voyage.

BEHAVIOURAL INDICATORS OF WELFARE

It is commonly assumed that sheep are stressed on long sea voyages and that stress is a significant factor in inanition and some diseases such as salmonellosis and pneumonia.

Behaviour changes are good indicators of stress (Broom, 1988) but no detailed studies of behaviour patterns of sheep on ship voyages have yet been published. A recent behaviour study (Black *et al.*, 1991) examined the daily patterns of maintenance and comfort activities in two shipboard pens. It was noted that as the voyage progressed the amount of feeding activity decreased, drinking and lying increased, and social interactions decreased.

These changes are probably due to an increase in ambient temperature. From these and other observations some early behavioural indicators of reduced well-being were recognised. These include plunging at food/water, increased lying time, absence of riding and butting, panting, and altered posture indicative of illness.

Management changes resulting from observations of factors indicating reduced wellbeing should help avoid unnecessary mortalities. Recommendations from this behavior study have been

used in a new voyage report system which provides a comprehensive assessment of animal welfare. This information will be used to determine future improvements to shipboard conditions.

The voyage report is used in conjunction with the new MAF Code of Welfare for the Sea Transport of Sheep from New Zealand to relate voyage management to the behavioural characteristics and requirements of NZ sheep. Exporters and shipping companies have been responsive to the proposed changes and mortalities of consistently less than 1% can be expected on voyages from NZ to the Middle East.

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