

live export

LIVE.105

Quality assurance for live goats exports to Saudi Arabia

Final Report prepared for MLA and Livecorp by:

Dr Tony Brightling

Alwani Pty Ltd

PO Box 116

Parkville 3052

Ph: (03) 9347 3099

Fax: (03) 9347 3137

Email: alwani@tpgi.com.au

JUNE 2001

Meat & Livestock Australia Ltd

Locked Bag 991

North Sydney NSW 2059

Tel: 02 9463 9333 Fax: 02 9463 9393

ISBN 1 740 364 104

MLA makes no representation as to the accuracy of any information or advice contained in this document and excludes all liability, whether in contract, tort (including negligence or breach of statutory duty) or otherwise as a result of reliance by any person on such information or advice.
© Meat and Livestock Australia (2000)



The livestock export program is jointly funded by the livestock exporters and producers of Australia

Quality assurance for live goat exports to Saudi Arabia



Tony Brightling

Alwani Pty Ltd
PO Box 116
Parkville 3052

alwani@tpgi.com.au

Executive summary

There is a small but significant market opportunity for live goat exports to Saudi Arabia. However, it is important that a fledgling live goat export trade does not put the Saudi live sheep trade at risk.

This project involved close observation of 12,773 goats in four commercial shipments exported to Saudi Arabia in January to March 2001. The aim was to adapt the SLEPP quality assurance program to ensure industry, government and customer requirements were met with the commercial export of live goats to Saudi Arabia.

The four trial shipments demonstrated that large numbers of young goats can be exported to Saudi Arabia and delivered in accordance Saudi requirements.

There was not a single case of scabby mouth detected at sea in any of the trial shipments. It seems that the risk of scabby mouth is very low and there may be scope to streamline pre-export vaccination procedures for goats.

Most of the goats in the trial shipments were feral goats that entered the export system without going through a prior domestication program. Adaptation and stress-related diseases were a serious concern after arrival at the export feedlot, with goats not eating, dehydration and clinical salmonellosis apparent. The light body weight and limited fat reserves on young goats made them particularly vulnerable if they did not eat or drink for a few days. The transition from feral to domestic life was the weakest link in the export chain. Minimum standards for the domestication of feral goats are urgently needed.

Mortalities at sea were slightly lower than for goats exported to other Middle East destinations. However, a voyage mortality rate of 2.0% to arrival at the port of discharge was still too high. The main causes of death at sea were inanition and salmonellosis.

More work is needed to establish best practice management procedures. The highest priorities are to further investigate feeding practices and management to minimise dominance behaviour.

Developing a quality assurance program for live goat exports to Saudi Arabia

Background:

During the 1980s, Saudi Arabia was Australia's largest live sheep export market, taking more than two million sheep per year. However, live sheep exports to Saudi Arabia ceased in 1990 following a series of rejected consignments. Sheep quality and disease, especially scabby mouth, were central issues of dispute. A deep mistrust developed on both sides.

An attempt to resume live sheep exports to Saudi Arabia in 1995 failed when the first shipment was rejected on arrival because of scabby mouth.

Live sheep exports to Saudi Arabia resumed in January 2000, with a series of seven trial voyages. A quality assurance program (the 'Saudi Live Export Preparation Program' or SLEPP) was developed to ensure that sheep exported to Saudi Arabia consistently met strict health and age requirements on arrival. The SLEPP program required, among other things, that sheep were vaccinated against scabby mouth twice, with the second vaccination given by a trained, accredited vaccinator. Sheep were also mouthed to ensure compliance with age requirements and were individually eartagged to allow traceback to the property of origin. Other SLEPP requirements included a reduced stocking density on the ship, additional feed during the voyage, and a veterinarian to accompany each shipment.

The trial shipments were subject to close scrutiny throughout export preparation and at sea, and there was no more than one trial shipment on the water at any time. These trials clearly demonstrated that large numbers of young sheep can be delivered to Saudi Arabia with low mortalities at sea and a very low prevalence of scabby mouth on arrival. Each of the trial shipments was inspected by the Saudi veterinary authorities on arrival and allowed to discharge.

Given the success of the trial shipments, the live sheep export trade to Saudi Arabia was opened on a commercial basis in November 2000, with all sheep to be exported under the SLEPP quality assurance program. From January to March 2001 there were 498,071 sheep exported to Saudi Arabia, with all consignments accepted on arrival.

Live sheep exports to Saudi Arabia for the 2001 calendar year are expected to number about 1½ million, with an FOB value of \$70-80 million.

There is a significant market for live goat exports to Saudi Arabia (and the United Arab Emirates and Oman). In the short-term, Australia could not meet market demand, because of the limited number of goats available for export. At present there are perhaps fifty to sixty thousand goat bucks available for live export each year, with an FOB value of about \$2½-3 million. However, if a profitable and on-going live goat export trade were established, producers would gear up to supply greater numbers and the trade could expand.

The Saudi requirement for young animals that are healthy and free from clinical signs of scabby mouth applies to both sheep and goats.

A fledgling live goat export trade to Saudi Arabia must not put the Saudi live sheep trade at risk. Live goat exports to Saudi Arabia should involve a quality assurance program to ensure customer requirements are fully and consistently met.

Objective:

The objective of this project was to adapt the SLEPP quality assurance program to ensure that industry, government and customer requirements are fully and consistently met with the commercial export of Australian live goats to Saudi Arabia.

Method:

This project involved close observation of 12,773 goats in four commercial shipments exported to Saudi Arabia in January to March 2001.

Table 1. Goat trial shipments

Shipment	Number of goats
A	2,168
B	6,224
C	3,426
D	955
Total	12,773

Shipments A and C loaded in Fremantle. Shipments B and D loaded in Adelaide. All four shipments were consigned to Jeddah.

The goats were prepared and exported in accordance with the SLEPP program for sheep plus some additional requirements intended to further enhance export performance and minimise any risk to the Saudi live sheep trade. These additional requirements are listed in Appendix A.

Shipments A, B and D were observed during preparation prior to export. All four shipments were accompanied by an Australian shipboard veterinarian who observed the goats at sea. On arrival in Jeddah, shipments A, B and C were observed by the MLA veterinarians in the Middle East.

Observations:

Domestication of feral goats

The vast majority of goats in shipments A, B and C were feral goats. The goats exported from Fremantle were sourced from pastoral areas around Canarvon and the WA Goldfields. Those exported from Adelaide were mainly sourced from north-western NSW.

The goats in shipment D were a mixture. There were some goats of feral origin that had been prepared for shipment B but were rejected from export and held over in the feedlot. They were in the export feedlot for about ten weeks prior to the departure of shipment D and by the time of export were well accustomed to eating and drinking from troughs and to being handled. About a third of shipment D comprised domesticated Boer-cross goats. The balance of shipment D were feral goats.

For at least the next few years, if large numbers of goats are exported to Saudi Arabia, they will be goats of feral origin.

Most of the feral goats in the four trial shipments were trapped and transported to the export feedlot without going through a prior domestication program. Some had been behind wire on the properties where they had been trapped, but grazing large paddocks with little human contact.

Adaptation and stress-related diseases were a serious concern after arrival at the export feedlot, with goats not eating, dehydration and clinical salmonellosis apparent. Similar problems occur in abattoir lairage areas with feral goats trapped and sent for slaughter without prior domestication. The additional handling required under the SLEPP program, with two scabby mouth vaccinations, mousing and eartagging, no doubt added to the stress of transition from feral to domestic life.

The light body weight and limited fat reserves on the young feral goats made them particularly vulnerable if they did not eat or drink for a few days.

Across the four trial shipments, the mortality rate for feral goats prior to export was of a similar order to the mortality rate that occurred at sea. This is in stark contrast to the live sheep export trade, where there are very few mortalities prior to export.

The consensus amongst the stockmen preparing these and other shipments of feral goats was that:

At least two weeks 'domestication' is needed for feral goats to overcome the stress of capture and transportation and become accustomed to eating and drinking from troughs and to being handled.

This project did not examine domestication procedures prior to delivery to the export feedlot. However, the key outcome required is that feral goats are accustomed to eating and drinking from troughs and to being handled. Whilst this can be achieved with an extended stay in an export feedlot, an export feedlot is not the ideal place for domesticating feral goats. It is preferable that feral goats have been domesticated prior to entering the export system, and that the export feedlot is not used as a sorting house for feral goats that are not going to make the grade.

Domestication cannot reasonably be achieved if feral goats are kept behind wire, but graze large paddocks with little or no human contact. If feral goats are to become accustomed to eating and drinking from troughs and to human contact, they need to be kept in reasonably small paddocks or pens and fed and watered from troughs.

Recommendation 1

Goats of feral origin exported to Saudi Arabia complete a domestication program for at least sixteen days immediately prior to receipt at the export feedlot. (A sixteen day domestication program means the day of commencing the domestication program, fourteen days of domestication and the day of completing the domestication program).

Recommendation 2

During the domestication program, goats of feral origin are kept in paddocks or pens with an area of no more than two hectares and are fed and watered from troughs.

Vaccination site

The SLEPP program requires that for sheep, the second scabby mouth vaccine must be applied to the bare skin under the front leg. This vaccination site proved unsuitable for most of the trial goats, as they did not have bare skin under the front leg, but rather haired skin that made vaccination difficult.

Some of the trial goats were vaccinated in the ear. Most were vaccinated on the bare skin under the tail. Both seemed satisfactory vaccination sites.

With the first trial shipment of sheep, some animals were given their second scabby mouth vaccine in the ear. This site was abandoned because there a few cases of scabby ear, with infection getting established in the cut skin around the eartag and developing cauliflower ears. Another problem was that if an animal is vaccinated in the ear and an eartag is inserted at the same time, blood from the eartag wound might interfere with the vaccine take. The ear is also not a vaccination site recommended by CSL.

Although there were no problems observed in any of the trial goats that were vaccinated in the ear, it is preferable that this site not be used. This is partly because of the problems seen in sheep, and partly to avoid the ear being used once again as a vaccination site for sheep.

Recommendation 3

For all goats exported to Saudi Arabia, the second scabby mouth vaccine is applied to the bare skin beneath the tail.

Prevalence of scabby mouth

Many of the goats exported in the trial shipments received their first scabby mouth vaccination in the high-challenge environment of an export feedlot. Despite this, only a handful of goats in shipments A and B developed clinical scabby mouth in the feedlot.

Each of the trial shipments was closely observed during the voyage by an Australian shipboard veterinarian, and there was not a single case of scabby mouth detected in any of the trial shipments at sea.

Although goats can develop scabby mouth, they are much less susceptible than sheep.

There is a good case for investigating a single vaccination regime for goats. It may be that a single scabby mouth vaccination, applied by an accredited vaccinator at least 14 days before export, provides adequate protection. If so, this would streamline preparation procedures and reduce handling stress on the goats.

Recommendation 4

The possibility of a single scabby mouth vaccination, applied to goats by an accredited vaccinator, at least 14 days before export, is investigated further.

Note: AFFA has approved two trial shipments to Saudi Arabia, of up to 2,000 goats each, with a single scabby mouth vaccination, applied by an accredited vaccinator at least 14 days before export. Preparation of these consignments is in progress, with export scheduled for late May 2001.

Mortalities at sea

Shipboard mortalities to arrival at Jeddah, Saudi Arabia are shown in table 2. The number of mortalities shown is the number advised by the shipboard veterinarian.

Table 2. Voyage mortalities

Shipment	Goats loaded	Mortalities	% Mortalities
A	2,168	29	1.3%
B	6,224	159	2.6%
C	3,426	57	1.7%
D	955	5	0.5%
Total	12,773	250	2.0%

Table 3. Goat voyage mortalities to the Middle East

	Voyages	Goats	Mortality #	Mortality %
Saudi trials	4	12,773	250	2.0%
Goat exports to the ME, other than Saudi, during year 2000	10	4,327	114	2.6%

Mortality to arrival at last port of discharge – the system used by AMSA in 2000.

The voyage mortality rate for the four trial shipments was slightly lower than reported for goats exported live to Middle East destinations other than Saudi Arabia. However, when mortalities during export preparation and during discharge of the ship are added, total mortalities throughout the export chain remain unacceptably high.

Live goat export mortalities are unacceptably high.

It is worth noting that shipment D, which had the highest proportion of domesticated goats, had the lowest mortality rate.

The principal causes of goat deaths reported by the shipboard veterinarians were salmonellosis and inanition – the same diseases that cause the majority of sheep deaths. Other conditions reported included pneumonia, pulpy kidney, phytobezoars and trauma from being ridden by other goats. The diagnoses were based on clinical signs and gross post-mortem examination, without confirmatory testing.

Two of shipboard veterinarians diagnosed coccidiosis as a cause of scouring and reported a clinical response to treatment.

Dominance behaviour

Most of the goats in the trial shipments were bucks, with a small proportion of wethers. There were no nannies.

Dominance behaviour was a problem in the export feedlots, with smaller submissive goats being continuously ridden by larger bucks. The problem was reduced but not eliminated by drafting on weight and keeping the larger bucks separate from other smaller goats. Segregation of the small submissive goats being continuously ridden by others gave the victims some respite, but simply transferred the problem to the next lowest goats in the pecking order.

The problem continued at sea. One of the shipboard veterinarians reported that ... *'Dominance, competition, aggression, and rampant sexual activity amongst the goats was constant and sustained throughout the voyage.'*

The bucks exhibited dominance behaviour and overt sexual activity throughout the export process.

There are clear animal welfare concerns associated with keeping large numbers of sexually mature bucks confined closely together. It is less clear what impact dominance behaviour had on the voyage mortality rate. Smaller goats were over-represented in the mortalities that occurred. Possibly bullying resulted in restricted access to feed and water. However, the smaller, submissive goats survived okay if they were removed from the pen and kept in a separate recovery area.

The trial goats were required to be penned on the ship in lines segregated by weight, with a weight range in each line of no more than ten kilograms. Observations during this trial suggest that segregation of the bigger bucks is desirable, as this helps reduce dominance behaviour.

Recommendation 5

Goat bucks exported to Saudi Arabia are penned on the ship in lines segregated by weight, with a weight range in each line of no more than ten kilograms.

Following shipment C, it was suggested that mixed pens of sheep and goats should be investigated. The rationale was that boxing sheep and goats together may give the smaller goats a better opportunity to escape being ridden. Sheep and goats delivered to Saudi Arabia from Somalia and the Sudan have historically been boxed, with the Saudis quite relaxed about the two species penned together.

Shipment D included a group of 140 small goat bucks boxed with 800 Damara ram lambs. The sheep and goats were boxed at the feedlot seven days before export and were trucked to the port and loaded on the ship as a mixed group. This did not present any real problem at the feedlot. If anything there was an advantage as the Damaras were mustered and driven more easily when boxed with goats. At sea, the Damara:goat mob and another pen with goat bucks of a similar weight were each observed for 15 minutes per day and the number of mounting incidents recorded. Unfortunately the goats boxed with Damaras were as sexually active as the goats penned by themselves.

Stocking density

The goats in the trial shipments were nominally provided with more pen area per head (ie a lower stocking density) than would otherwise be required under SLEPP. The extra pen area required was SLEPP plus 10% for goats weighing up to 35 kg and SLEPP plus 25% for goats more than 35kg. In practice however, stock are shifted about at sea to even out the stocking rate between pens.

It was also difficult to assess what pen area was actually available, as goats moved between pens and into the alleyways, which added to the area in effective use. There was merit in allowing access to the ship's alleyways, as this not only increased the effective pen area, it also gave the smaller goats an opportunity to escape being ridden by the larger more dominant bucks.

The additional pen area provided to the trial goats added to transportation costs. The 10% extra pen area for goats weighing up to 35 kg added about A\$2 per head to delivery costs. The 25% extra pen area for goats weighing more than 35 kg increased delivery costs by about A\$6 per head.

Feedback from the shipboard veterinarians suggests there was more pen space allocated to the trial goats than was really necessary.

We don't yet have a good enough handle on the management of goats at sea to set firm stocking density requirements. Further research is needed.

The SLEPP standards require that extra pen space is provided over and above that set out in the *Australian Livestock Export Standards*. In the absence of firm research data, it is proposed that the minimum pen area per head stipulated in the SLEPP standards applies equally to sheep and goats.

Recommendation 6

The minimum pen area per head stipulated in the SLEPP standards applies equally to sheep and goats.

Pen security

Observations during the course of the four trial shipments suggest that, whilst at sea, it is best practice to keep large bucks in secure goat-proof pens, but allow smaller goats to move freely between pens and into the alleyways. This is to minimise the effect of dominance behaviour, giving smaller goats an opportunity to escape being ridden by larger more dominant bucks.

Recommendation 7

Bucks weighing more than 35 kg are penned on the ship in secure goat-proof pens. Whilst at sea, goats weighing 35 kg or less are allowed to move freely between pens and into the alleyways.

Roughage

For the trial shipments, exporters were required to provide at least ten per cent of the goat's feed as chaff or hay. This requirement was based on anecdotal evidence that goats 'do better' if roughage is available.

The goats in shipments A and C were provided with oaten chaff. The goats in shipments B and D were provided with hay.

As all goats were fed roughage, and there were no controls fed only pellets, it is not possible to provide an objective assessment of feeding roughage. However, the subjective consensus of the shipboard vets accompanying the trial goats was that feeding roughage was beneficial.

This was based on the observation that the goats consumed roughage in preference to pellets, and that throughout the day they picked at whatever chaff or hay was available. Placing a punctured chaff bag in each pen and simply allowing the goats to help themselves whenever they wanted apparently worked well.

Research in the early 1980s demonstrated that inanition in live export sheep is virtually eliminated if sheep are fed good quality hay, and that most of the sheep that refused to eat pellets would eat good quality hay if it was provided to them before the rumen flora was disrupted irretrievably. However, feeding hay on board was not pursued further because of storage, handling and fire risk considerations.

Given the higher mortality rate for goats, vulnerability of goats with limited fat reserves, anecdotal evidence that goats fed roughage perform better, and observation that roughage was preferred to pellets – it seems likely that feeding roughage to feral goats is indeed best practice management. However, further research is needed to confirm this and determine the optimum type and amount of roughage in the diet.

Feeding roughage to feral goats is probably best practice management, but further research is needed to confirm this and determine the optimum type and amount of roughage in the diet.

Pending further work, it is proposed that goats exported to Saudi Arabia continue to be provided with a small quantity of chaff or hay.

Recommendation 8

Goats exported to Saudi Arabia are provided during the voyage with at least 3 kg per head of chaff or hay.

Female goats

Although there was provision for female goats to be exported for the haj, none of the trial shipments included nannies. As a result, there were no observations on issues such as pregnancy testing, the risk of abortion prior to export, or the comparative performance of nannies and bucks during export.

Most feral nannies are either pregnant or lactating at the time they are trapped. Reproductive status is very likely to compound the stress of adaptation from feral life. Until the export of nannies is examined in more detail, it is proposed that female goats are not exported to Saudi Arabia.

Recommendation 9

Female goats are not exported to Saudi Arabia.

Assessment on arrival

Shipments A, B and C were met on arrival in Jeddah and inspected by the MLA veterinarians in the Middle East. Their advice was that the goats presented well, posed little risk to the Saudi live sheep trade, and were well suited to Saudi market requirements.

Discussion:

There is a market for Australian goats in Saudi Arabia. This series of trial shipments has demonstrated that large numbers of young goats can be exported to Saudi Arabia and delivered in accordance Saudi requirements.

There was not a single case of scabby mouth detected at sea in any of the trial shipments. It seems that the risk of scabby mouth is very low, and there may be scope to streamline pre-export vaccination procedures for goats.

Most of the goats in the trial shipments were of feral origin and entered the export system without going through a prior domestication program. Some had been behind wire on the properties where they had been trapped, but grazing large paddocks with little human contact. Adaptation and stress-related diseases were a serious concern after arrival at the export feedlot, with goats not eating, dehydration and clinical salmonellosis apparent. The light body weight and limited fat reserves on the young feral goats made them particularly vulnerable if they did not eat or drink for a few days.

The transition from feral to domestic life was the weakest link in the export chain. Minimum standards for the domestication of feral goats are urgently needed.

Mortalities at sea were slightly lower than occurred with the small number of goats exported to other Middle East destinations during the year 2000. However, shipboard mortalities were still too high. The voyage mortality rate needs to be reduced further if the live goat export trade to Saudi Arabia is to continue long-term. The main causes of death at sea were inanition and salmonellosis.

More work is needed to better define best practice management procedures for the export of goats. The live goat export trade is at a similar stage of development to the live sheep trade in the early 1980s, with evolving procedures based on sound practical experience without supporting scientific observations. The highest priorities are to further investigate feeding practices and management to minimise dominance behaviour.

Additional requirements for trial goats

These requirements are additional to those in SLEPP. Where these requirements are different from those in SLEPP eg time in the feedlot and stocking density, these more conservative additional requirements apply.

1. Each Exporter must ensure that all goats exported to Saudi Arabia spend at least fourteen (14) days in a live export feedlot immediately prior to loading on the ship. Fourteen days in the feedlot means the day of feedlot receipt, twelve clear days in the feedlot and day of feedlot loadout.
2. Each Exporter must ensure that during the last seven (7) days immediately prior to loading on the ship, all goats exported to Saudi Arabia are fed a ration similar to that which will be provided on the ship.
3. Each Exporter must ensure that goats exported to Saudi Arabia are penned on the ship in lines segregated by liveweight, and that the liveweight range in each line of goats does not exceed ten (10) kilograms.
4. Each Exporter must ensure that goat bucks with a liveweight of more than 35 kg are:
 - (a) penned on the ship separately from other goats; and
 - (b) penned on the ship in single tier pens.
5. Each Exporter must ensure that the pen area available to each line of goats loaded on the ship is at least that calculated by multiplying the number of animals in that line of goats by the minimum pen area per head shown in the table below.

Average weight (kg)	Minimum pen area per head (m ²)	Average weight (kg)	Minimum pen area per head (m ²)
22	.295	37	.363
23	.298	38	.377
24	.301	39	.391
25	.304	40	.406
26	.307	41	.410
27	.310	42	.413
28	.312	43	.417
29	.315	44	.420
30	.318	45	.424
31	.321	46	.427
32	.324	47	.431
33	.327	48	.434
34	.330	49	.438
35	.334	50	.441
36	.348		

6. Each Exporter must ensure that goats with horns are fed and watered on the ship in troughs that are readily accessible to horned goats.
7. Each Exporter must ensure that at least ten (10) per cent of the feed provided for the goats on the ship consists of chaff and/or hay.