2

Pre-departure planning and management of stock on arrival

This chapter covers planning the consignment of imported dairy stock.

The main points in this chapter

- What the customer wants is not always what the customer needs. Furthermore, what the customer needs may even differ from what the customer eventually gets.
- The process of importing stock can be best described through the eight steps of the livestock export chain.
- The exporting agent, the Australian Government, and importing governments all have obligations to ensure the live export process is correctly undertaken.
- There are a series of criteria for rejecting dairy stock for live export and these are summarised in this chapter.
- Transportation introduces many stresses to the stock, requiring a period of recuperation that coincides with any post-arrival veterinary healthy checks.
- Immediate post-arrival management can have long-term effects on the survivability, wellbeing, and hence the subsequent performance of these dairy stock.

This chapter discusses some of the key issues to be considered by the agents representing the country importing high genetic merit dairy stock. Details refer specifically to agents importing stock from Australia, but the principles should not greatly differ to those of other exporting countries.

2.1 Satisfying customer demands

The importing country makes a valued judgement as to the type of dairy stock it needs to purchase. However, it must be emphasised that what the customer **wants** is not always what the customer **needs**. Furthermore, what the customer needs may even differ from what the customer actually **gets**.

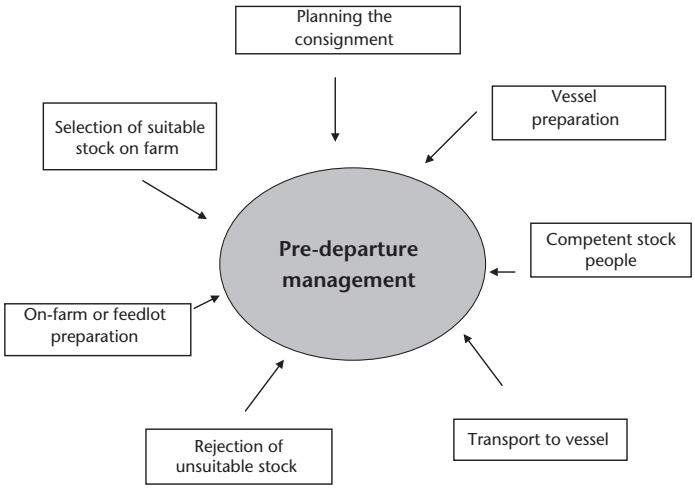


Figure 2.1. The key factors to consider when planning pre-department management of export dairy stock

2.1.1 What the customer wants

Generally speaking, the importer wants, firstly, to increase herd numbers in the region being serviced and, secondly, to improve the genetic merit of the milking cows in that region. The first can be achieved by importing any type of dairy animal that will produce milk and reproduce under the existing environmental and production constraints.

Depending on the market demand for the raw product, the imported stock can produce:

1. relatively low quantities of high solids milk, if it is destined for industrial processing to yield dairy products such as milk powder
2. higher yields of milk with lower milk solids, if it destined for consumption within a few days or even if it is to be processed into long-shelf-life products to which imported milk powder can be added.

Milking cows must also routinely produce calves, either as herd replacements or for sale, plus have a disposal value as a cull cow. This can influence the preferred breed because purebred and crossbred Friesians have a higher value for dairy beef than Jerseys or Zebus.

The purchaser may have a set of specifications, some of which are poorly related to production, such as coat colour (e.g. four white feet and white tip of tail) and udder shape (particularly for cows being milked by hand rather than machines). Large body size should be less of a selection criterion with poorer feeding management and may even impair performance and longevity in some small holder milking herds. It should be explained to the purchaser which of these selection criteria are the most relevant to the farming system to which the stock will eventually be subjected.

Some contracts may require printed proof of the cow's ancestry, such as the pedigree of its Friesian sire and proof of some stipulated minimum milk yield of its dam. Because many of the farmers supplying export stock do not record such data (whose value to the

importing country must frequently be questioned), this can limit the number of stock acceptable to such purchasers.

Rather than seeking pregnant heifers, some importers prefer younger virgin heifers, with minimum live weights, such as 9–16-month-old Friesian heifers weighing from 200 to 360 kg.

2.1.2 What the customer needs

The purchaser usually requires an 'all round performer'. Initially the imported stock may be well managed, but eventually their progeny will enter the general dairy population hence be subjected to more normal farming systems. The ideal imported heifer and her progeny should then be able to perform equally well, compared with local stock, in both well and poorly managed systems. Therefore heifers from 'average' rather than 'superior' dams may be better suited to purchaser requirements.

There is always debate regarding whether it is better to source genotypes to suit existing systems rather than try and 'fit the system' around the genotype. The challenge of the importer is to match the genetic merit of the stock to those farms most likely to benefit from it.

New tropical dairy breeds such as Australian Friesian Sahiwal (AFS) and Australian Milking Zebus (AMZ) appear to be better suited to the humid tropics than the purebred Friesian. Jerseys are a more tropically adapted breed than Friesians, with their smaller body size, black skin, higher density of sweat glands and lower internal body heat production, because of their lower productivity. As well as their suitability, there is increasing interest in exporting countries, such as Australia, in using some of the production attributes of the crossbred Jersey × Friesian. In fact, these animals may have potential as export heifers, at least until more AFS become available for sale. Brown Swiss is another breed considered to have tropical adaptation features.

2.1.3 What the customer gets

There is increasing concern in many developed temperate dairy industries that current levels of heifer attrition, through export sales, is eroding the genetic quality of their dairy stock. Replacement heifers are required firstly, to expand these local industries and secondly, to allow adequate culling of inferior stock. Such concerns increase sale prices for export heifers, impacting on supplies of suitable stock to meet export demands.

Unlike in other countries, many Australian dairy farmers do not use Friesian bulls or semen over their replacement heifers, often preferring Jerseys or Angus because of small Friesian heifer size at mating. Furthermore, such crossbred progeny have high sale value as week-old calves. The use of Jersey sires is likely to be greater, with current interests in crossbred milking cows, thus reducing the availability of purebred Friesians, the genotype of choice for export.

In recent years, sourcing stock for export has been made easier as farmers offload their excess replacements during drought years or when leaving the industry. However, such supplies are abnormal compared with more normal years, when farmers require 25–30% of their heifers as herd replacements. How long the current rate of

supply of dairy heifers will be available to meet the increasing demands for export must also be addressed.

2.2 Australia's livestock export chain

To minimise the chances of adverse animal health and welfare during the live export process, the correct approach to stock management should be based on the whole of chain risk (DAFF 2006). This is important to ensure that all critical risks are identified, their potential impacts analysed and the most appropriate management procedures developed. This live export chain can be broken down to the following eight steps:

1. **Planning the consignment.** This covers the entire process, from preparation and sourcing the stock until they have been unloaded in the importing country. It also includes contingency plans in case of unexpected threats to animal health and welfare.
2. **Sourcing and on-farm preparation.** All stock must meet Australian and the importing country's health, welfare and commercial requirements and this may or may not require specific on-farm preparation.
3. **Land transport.** This involves moving all the stock from their property of origin to the pre-shipping location.
4. **Pre-embarkation assembly.** This takes into account the moving of stock from the pre-shipping location to the actual vessel for export.
5. **Vessel preparation and loading.** This includes the selection and preparation of a suitable vessel to transport stock overseas. Loading includes an inspection of the stock for health and fitness to travel at the port, before they are loaded onto the vessel.
6. **Sea/air voyage.** This covers on-board management during the voyage.
7. **Disembarkation.** Following arrival at the destination and acceptance of the stock for unloading, they are unloaded, after which the Australian Government's jurisdiction over the consignment is complete.
8. **Post-disembarkation.** The health and welfare now become the responsibility of the importer, under the authority of the importing country.

The exporter's responsibility covers the sourcing, land transportation, treatment and inspection before export, and specific plans to manage stock health and welfare during the journey, whether by sea or air.

All livestock for export must meet the Australian animal health and welfare standards, which are consistent with good animal husbandry practices. The importing country determines animal health and other requirements for imported stock, which it must advise the Australian Government from time to time. The exporter is responsible to the Australian Government for compliance with these requirements. AQIS (Australian Quarantine and Inspection Service) provides a health certificate and an export permit when it is satisfied that all stock for export meet the requirements of the importing country. The guiding principle is that livestock export consignments from Australia meet the requirements of the national animal health and welfare system and importing country requirements.

The exporter must source suitable stock that meet consignment specifications, such as the number of stock, their species, class, condition, and animal health and welfare status. The exporter must also ensure that sufficient livestock services are maintained throughout the voyage and management is adequate to maintain animal health and welfare, engaging accredited stock people and, when required, accredited veterinarians. The exporter is responsible for loading the vessel in a manner that prevents injury and minimises stress, that stocking densities are acceptable and there are adequate provisions of feed, water and veterinary supplies on the vessel. The Master of the vessel assumes overall responsibility for the management and care of the stock during transport on the vessel.

2.3 Rejection of dairy stock for live export

Stock selected for export must be fit to travel. They must meet relevant state animal health and welfare standards and national codes of practice, as well as importing country requirements. They must be identified to their property of origin, be accompanied by correctly completed and signed declarations and be individually identified where testing is required during preparation.

Bos taurus cattle (which include Friesians and Jerseys) bred in an area of Australia south of latitude 26 degrees can not be sourced for export to the Middle East between May and October each year unless an agreed heat-stress risk assessment has been completed, predicting less than a 2% risk of 5% mortality. Lactating animals with young at foot can be transported only by air.

There are various standards (DAFF 2006) for rejection of cattle and those relevant to dairy stock are as follows:

- lactating animals
- if pregnancy status is not confirmed as appropriate for the journey, or they are more than 190 days pregnant at the scheduled date of departure. For air transport, breeding stock can be up to 250 days pregnant
- emaciated or overfat stock (with a score of less than 2, or 3 for pregnant stock, and more than 6) on a scale of 1 to 7 for body condition points score
- animal with anorexia or inappetence
- uncoordinated, collapsed, weak, unwell, lethargic or dehydrated stock or those suffering ill-thrift
- stock suffering from lameness, abnormal gait, abnormal soft tissue or bony swellings
- stock with dysentery or profuse diarrhoea, or bloat
- stock showing nervous symptoms, or abnormal or aggressive behaviour
- stock with generalised skin diseases
- stock showing visible external parasites or significant lacerations
- stock with discharging wounds or abscesses or blood/discharge from the vulva
- stock blindness in one or both eyes, or with excessive salivation, nasal discharge or coughing
- stock with untipped sharp horns or horns longer than 12 cm
- herds with a large disparity in size or age (these must be redrafted)
- herds with unusual mortalities during pre-export isolation

- calves weaned less than 14 days before being sourced for export
- stock weighing less than 200 kg or more than 650 kg
- stock that have become sick or injured during on-farm preparation
- pregnant stock cannot be treated with a prostaglandin drug within 14 days of export, and not during 60 days before export unless identified as being non-pregnant or less than 90 days pregnant.

2.4 Minimising the stress of transportation

Exportation of cattle involves lengthy periods of transportation. This can be by land, sea and/or air. Cattle are often required to be transported by land over relatively long distances, both within Australia, from their property of origin to reach ports prior to shipping, and on arrival at their country of destination, to travel to their new home farm. Sea transport can involve many days or even several weeks. Air transport may be relatively short, but the associated land transport to and from the airport can be lengthy.

There is increasing recognition of the need to minimise stress in livestock, both as a result of public concern for their welfare, and any adverse effect on their subsequent performance.

Animals being transported are subject to a number of stress factors throughout the journey, including handling, loading, transporting, mixing of unfamiliar animals, unloading and total time without water or food. These risk factors can be cumulative and apply across all phases of transport, from assembly and handling before the journey, to unloading at the destination.

Stress occurs when stock are exposed to changes in their normal environment. The effects of stressors are cumulative when they operate in combination. An animal already burdened with one stressor is less able to adapt to another. Therefore every effort should be made to minimise the degree of each stress so they can cope with additional ones. Table 2.1 indicates some of the main stressors likely to arise during the export process and their effects.

Animals show behavioural changes when adapting to changes in their environment. Measures of animal behaviour will provide the best overall measure of animal discomfort.

2.4.1 Clinical indicators of transport stress

Transport-related stress can be measured by the occurrence of a range of clinical syndromes. These include:

- loss of live weight
- dehydration
- decreased feed intake
- traumatic lesion such as bruising
- decreased disease resistance.

The extent to which these occur depends on a number of other interrelated factors, including the environment, transport conditions and animal factors such as nutritional

Table 2.1. Stressors in livestock transport

Stress	Stressor	Effect
Behavioural	Novelty, restraint, noise	Fear
	Mixing, overcrowding	Aggressive interaction
Nutritional	Fasting	Dehydration and hunger
Physical	Mixing, overcrowding, road conditions	Bruising and injury
	Weather extremes	Heat stress, cold stress
	Dust	Respiratory disease
Infectious	Exposure	Respiratory disease

status and the presence of infectious diseases. Road transport conditions include total transit time, overcrowding, driving care and road conditions. Sea transport is probably the most stressful because of its duration and dependence of adequate feeding management, good stock handling and exposure to disease agents while on board. Air transport also has its specific stressors, such as lack of space in crates and the requirements for adequate ventilation for many hours.

Loss of body weight is commonly found in all transported cattle. Most of this loss occurs in the first few days of transport due to periods of food and water deprivation. The combination of food and water deprivation with road and sea transport compounds the weight loss, which is due mostly to loss of body fluids and gut contents rather than body tissue.

Dehydration is the principal nutritional stress encountered and the main cause of live weight loss during transport. Water accounts for most of the weight loss and the longer the travel time, the more weight loss occurs.

Stress suppresses the immune system and therefore increases the likelihood of disease. Diseases that can be triggered by transport and environmental changes from extensive to intensive husbandry conditions include bovine respiratory disease, which is the most common disease in cattle upon introduction to feedlots such as during export transport, in quarantine yards either prior to shipping or on arrival at the new home port.

2.4.2 Management of transport stress

Management strategies for dealing with transport stress include pre-conditioning, rest periods during and after transport and the use of electrolyte solutions.

Electrolyte solutions have been used to maintain the acid–base balance of stock. However, recent research with Zebu steers subjected to land transport for 48 hr found that these animals were able to maintain their acid–base balance within normal values without the use of electrolyte solutions. Consequently, the researchers concluded that offering electrolyte solutions to dehydrated, transported, nutrient-deprived and stressed Zebu cattle was unlikely to resolve the physiological stressors any more efficiently than water alone.

Until now, hydration strategies involved with transportation have relied on the replacement of lost body water and electrolytes following the journey, or after their

welfare has been compromised. Boosting body water prior to transport is only temporary because the kidney rapidly excretes any excess fluid. Electrolyte solutions fed post-transportation provide little benefit in correcting the acid–base balance, compared with water alone.

However, there are novel non-electrolyte supplements available that, when provided prior to transport, are effective in improving energy balance and minimising spare muscle protein degradation through its effect on electrolytes, glucose and the acid–base balance. Therefore treatment with these supplements achieves the desired hyper-hydration, to decrease the energy deficit and confers a positive effect on the animal's immune system. Further research is under way to better understand the effects of these supplements.

Heat stress during transport (such as on ships) can be alleviated by wetting stock, provided there is sufficient air movement around the stock. Water should be applied to the head and back of cattle, and enough water needs to be applied so that it starts to run off their backs and down their sides. Do not apply cold water (less than 25°C) to the head of cattle with severe heat stress because the cold shock may kill them. Under moderate heat stress, short duration wettings of less than 1 min per six head of cattle can be effective for up to 24 hr.

2.5 Post-arrival management

Following the journey from their country of origin, all stock need time and a suitable location to recover. During this time, they may be subjected to further veterinary attention to comply with the requirements of the importing country. The period of quarantine and the range of health checks and vaccinations will differ, depending on the veterinary regulations of each purchasing country.

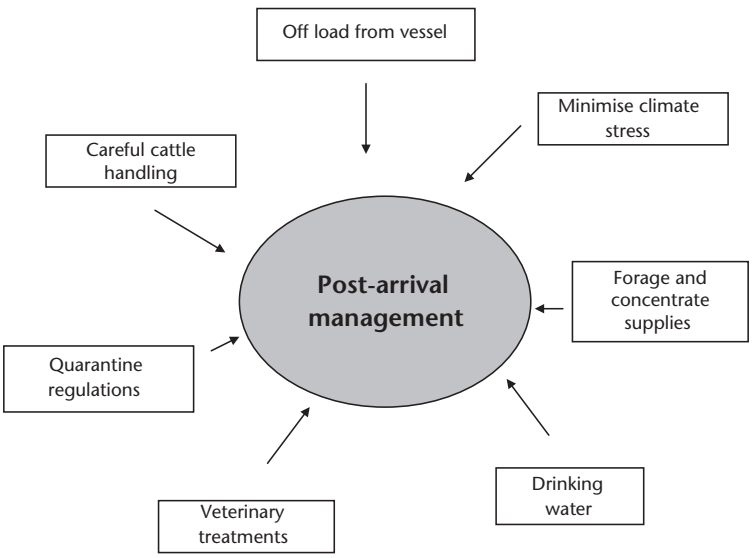
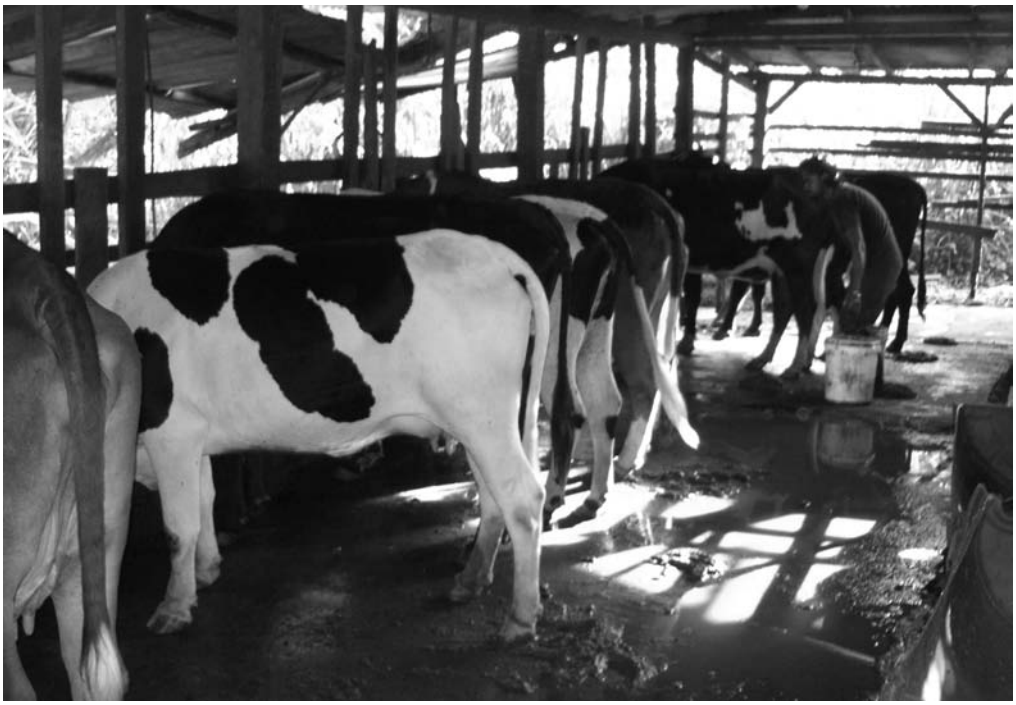


Figure 2.2. The key factors to consider when preparing for immediate post-arrival management of export dairy stock



Imported dairy heifers would not perform well on this small holder farm (Indonesia).

This small holder farmer would be unlikely to manage imported dairy heifers to their potential (Sri Lanka).

The quality of the immediate post-arrival management can have a dramatic effect on the subsequent survival, health and performance of the imported stock once they reach their new home farms. The emphasis of all such management should be on minimising the adverse effects of the accumulated old stressors and the impact of any new ones on their wellbeing. A well constructed set of cattle yards, race and crush will facilitate veterinary inspections. Reducing the adverse effects of climate stress will require shade and adequate resting space. Sufficient clean drinking water and quality feed will allow the stock to recuperate from the completed leg of their journey. Competent stock people are essential because it is likely the imported stock will not have had the exposure to close human contact as other stock on their new home farm and, in addition, their temperament is likely to still be upset from the trauma of their journey. The quarantine location is likely to be very different from the stock's normal environment, so recuperation could be quite slow.

Following their quarantine period on arrival, further road transport is likely for them to reach their new home farm. The conditions of transportation could add an additional stress to their metabolism, so it is important that they be handled quietly and be allowed to rest comfortably during early post-arrival, prior to this final journey.