

# live export

**LIVE.208**

## **The Best Practice Management of Pregnant Dairy Cattle on Long Haul Voyages**

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Final Report prepared for MLA and Livecorp

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# THE BEST PRACTICE MANAGEMENT OF PREGNANT DAIRY CATTLE ON LONG HAUL VOYAGES

## Executive Summary

There is currently no chapter in the LEAP Standards on the export of pregnant dairy cattle, and a chapter specifically devoted to Dairy Cattle will need to be built into the Standards.

Recommendations on the best practice management of pregnant dairy cattle are contained in boxes throughout this document. It should be noted also, that these recommendations are based on the consensus of the people interviewed. Concurrent literature and research has not been evaluated.

The recommendations of this report will be passed on to ALEC and Livecorp where the key issues can be debated further. They can then be passed onto AQIS, LASC and NACCAW for formal approval.

The management of pregnant dairy cattle takes on additional importance because the value of the animal is based on its eventual productive capacity rather than a residual slaughter value. Any factor such as mastitis or leg injury can have a big impact on its value on arrival.

In determining the recommendations it is recognized that there are great differences between voyages, the nature of the cargo and the vessels involved. A risk management approach is therefore promoted, however, the industry will need to define a set of minimum standards to address the management of this category of livestock.

The key recommendations stemming from this report are:

- A **reduction of stocking density** of between **15-20%** for the shipment of pregnant dairy heifers (and cows), over and above the existing LEAP requirements for cattle on long haul voyages.
- Final stocking density reduction to be determined by a **risk management approach** after full consideration of all factors relating to the voyage, the cargo and the vessel.
- Pregnant dairy cattle are **not to be shipped** to destinations in the Middle East during the Northern Summer period.
- That all cattle be **no more than 6 months pregnant** at the time of shipping, (date of departure).
- That only a **veterinarian with a proven track record** of accurate detection of the stage of pregnancy in dairy cattle be used to undertake the required pregnancy testing.
- That any voyage that is anticipated to **exceed a duration of 20 days** be accompanied by a **management plan** that clearly shows how the exporter intends to compensate for the additional risk imposed by the longer duration of the voyage.
- That the stockmen used to accompany pregnant dairy cattle have **significant experience in the management of pregnant dairy cattle** as well as **onboard experience**.
- That only cattle in **body condition 3 to 6** (inclusive) on the scale of 1-8 are selected for export.
- All cattle must be **individually identified** to assist in performance feedback.

Further recommendations are made throughout the document.

# **THE BEST PRACTICE MANAGEMENT OF PREGNANT DAIRY CATTLE ON LONG HAUL VOYAGES**

## **Background**

Changes to the disease status of many countries have resulted in a growing demand for Australian Dairy Livestock in Central America, the Middle East and Europe. This demand has led to an increased focus on the trade and the livestock export industry has asked that the shipment of pregnant dairy cattle be given special attention. Although the majority of voyages involving pregnant dairy cattle have been completed without incident, there have been a number of instances of unacceptably high mortality and poor performance. These instances have been a cause of concern for the industry.

This study undertakes to assess the current management practices associated with this category of livestock and determine those which have a bearing on performance.

The study was conducted by speaking to stockman and exporters that have had experience in the shipping of pregnant dairy cattle. The views of these people have been collected together and form the basis of this document. A draft document was presented at a workshop held in Adelaide 13<sup>th</sup> December 2000. The issues identified were discussed further with industry members at this workshop. The workshop was followed by a voyage whereby the practices described were evaluated. Reports by veterinarians accompanying pregnant dairy cattle on three other voyages were also used in determining the best practice recommendations.

## **Identification of Key Issues**

When interviewing people, there were several repeating issues that were considered most important. These issues were thought to be crucial to a successful outcome in their own right. Failure to give proper consideration to these issues was thought to greatly increase the risk of problems during the voyage. These were:

- Ensure accurate diagnosis of the stage of pregnancy. (*Not always achieved*).
- Provide gentle and careful handling, using stockman with significant onboard experience as well as experience in the management of dairy cattle. (*Generally practiced*).
- Provide a greater level of attention in the way of observation and individual supervision. (*Generally practiced*).
- Apply conservative stocking densities (additional space). (*Generally practiced*).
- Pay special attention to bedding management, particularly with regards to udder hygiene in lactating animals. (*Generally practiced*).
- Use non-steroidal anti-inflammatory agents, and ensure that corticosteroids are not administered to pregnant animals. (*Generally practiced*).
- Ensure that there are no pre-existing conditions (especially sub clinical mastitis) in cows selected for export. (*Generally practiced*).

### **Other Issues**

Survey participants also identified the following issues. These were considered to be important but unlikely to cause problems in they're own right, but were thought to act cumulatively to increase the risk of problems developing during the voyage. These were numerous and are listed below. There was a general consensus of opinion on all issues.

### **Best Practice Recommendations**

#### ***General***

The following general comments were expressed repeatedly by participants throughout the survey.

#### **Agility**

- Dairy cattle are seen to be physically less agile and not as robust as other cattle. A full abdomen, from both fodder and/or calf, contributes further to this lack of agility. Cows are less agile than heifers.

#### **Heat Tolerance**

- Dairy heifers are less heat tolerant than other bos taurus cattle. This would seem to be a breed effect. More work is required to determine the influence of acclimatization and/or pregnancy. Graph 2 illustrates the variation in heat tolerance of cattle on three different voyages.

#### ***Property of Origin***

The following headings were used to assess any factors (relating to the property of origin), that might affect the outcome of a voyage:

#### **Selection Criteria - Client Specifications**

- Selection criteria tend to be determined as a compromise between the wants of the importer and the availability of the livestock.
- It is important to understand the linkage between nutrition and performance and differentiate between the genetic potential to produce milk versus actual performance.
- Many benchmarks are based on the intensive feeding practiced in the Middle East and other parts of the world and do not relate to the grass feeding practices in Australia.
- It was reported that there can be an issue in determining and acquiring appropriate certification and details of pedigree when exporting stud animals.
- In general the selection criteria are commercial issues between the importer and the exporter. As such are outside the scope of this project but it is important to note that in many cases, the cattle being made available to exporters are surplus to requirements and will have been "culled" for some reason. This may affect subsequent performance.

## **Selection Criteria – Body Condition**

- A scale of 1-8 is used to assess body condition in the Dairy Cattle Industry.
- Over fat cattle will be higher risk and should be avoided. Any cattle in condition score greater than 6 should not be selected for export.
- Cows in light condition can also be a problem and only those with sufficient body condition should be selected. Any cattle in condition score of less than 3 should not be selected for export.

### ***Best Practice Management Recommendation***

The Dairy Cattle Industry uses a scale of 1-8 to assess the body condition of cattle.

It is recommended that pregnant dairy cattle selected for export have a body condition of between 3 and 6 (inclusive).

## **Selection Criteria – Body Weight**

- Heavy weight animals were described by some as a problem however, on further questioning this related more to fatness rather than body weight.
- Several exporters expressed the view that there should be no cut off limit in terms of weight, although further stocking density adjustments may be required for this category of livestock.
- Many heifers suitable for export, especially those due to calve at three years old, will exceed 550kg live weight.

### ***Best Practice Management Recommendation***

It is recommended that there should be no upper limit on the weight of this category of livestock, although cattle exceeding 550 kg should receive additional space. (See later under stocking densities).

## **General Husbandry and Day to Day Management**

- Inspect handling facilities on property of origin. Avoid facilities that risk injury, lameness or any other sort of trauma.
- Inspect lane ways and terrain etc. Ensure handling associated with protocols can be adequately performed.
- Better-managed herds tend to translate to less stress and better-prepared cargo.

## **Nutritional Management**

- A cow's body condition is not easily changed on pasture, and will be determined by the end of lactation. It is generally more efficient to increase a cow's body condition while it is in the dairy and this should be considered in the management of cows prior to selection.
- Heifers are generally in a more forward condition.

### **Dry Cow Management**

- The main overseas demand is for pregnant dairy heifers however cows are also exported.
- Where cows are being selected, dry cow management is an important factor prior to selection.
- Dry cow management varies on each property.
- Cows will be dried off because: (1) they are due to calve, (2) they're milk production is falling off or they have failed to meet production standards (3) they have high cell counts in their milk (sub-clinical mastitis). (4) They have repeat cases of clinical mastitis (5) they demonstrate poor shed behavior (including slow milkers) or (6), they are cows that have failed to get back into calf within a reasonable time.
- Effectiveness of dry cow treatment is related to a number of different factors. Best practice revolves around limiting nutrition prior to drying off, then drying off suddenly. The successful use of dry cow mastitis treatments is dependent on the formation of keratin plug in the teat.
- Effective dry cow treatment is an important factor in avoiding sub-clinical mastitis in cows selected for export. Sub clinical mastitis can easily flare up when cattle are subjected to the stress of the livestock export process.

#### ***Best Practice Management Recommendation***

**It is recommended that exporters of cows are aware of the correct drying off procedure, and make every effort to avoid selecting cows that may have sub clinical mastitis.**

### **Seasonal Calving**

- Seasonal calving will affect the availability of heifers (or cows) at a required pregnancy status.
- Whereas seasonal calving patterns do exist, there is considerable regional variation within the States.
- It was reported that it is generally possible to source cattle at the required stage of pregnancy on a year round basis.
- Good paddock records will help to determine the stage of pregnancy within these herds.
- Victoria has a tendency toward spring calving.
- South Australia has a peak from autumn through to spring.
- NSW has the most even pattern with cows calving all year round.
- Tasmania has a spring calving management system.
- Queensland is fairly even with a tendency toward an autumn calving peak.
- Western Australia has a peak during autumn and a smaller peak during spring. There has been a tendency toward a more seasonal calving pattern since deregulation.
- If exporting is restricted to the Northern Winter period (Nov – March) and a pregnancy status of less than 6 mths is required, then herds calving in autumn would need to be targeted in very early summer. Spring calving herds would need to be targeted in very late summer or autumn.

### **Heifer Replacement Policies on the Dairy Farm – Selection Criteria**

- Most heifers are selected on type. This is subjective and based on “dairyness”.
- Obvious leg and feet problems will be culled.
- Some cattle will be culled on temperament.
- Performance and genetic bloodlines may also be considered.
- These factors will influence the cattle being made available for export.

- There has been a more recent trend for backgrounders to grow out dairy heifers and this has changed the traditional turnoff policy,.
- Traditionally, many farmers will join only a small percentage of their cows to dairy bulls, with the balance being joined to beef bulls. This has restricted the pool of heifers available to exporters. It is anticipated that many more cows will be joined to dairy bulls in response to the exporter demand for dairy heifers.

### **Other Animal Health Practices**

- Leptospirosis & Clostridium 5:1 vaccination is a common practice on farm. A booster prior to export would therefore provide effective protection against these diseases.

### **Sire and Breeding Policies**

- Can be based on performance at the expense of structural soundness.
- Australian heifers have good reputation in regard to structural soundness.
- There is a strong influence of American genetics throughout the Australian Dairy Herd
- Australian Dairy Cattle have performed well against cattle from other parts of the world, when compared under similar nutritional conditions.
- Herd performance data will be available on request from some vendors.

### ***Pre – Delivery***

#### **Protocol Considerations**

- The protocols for each of the major destinations (Mexico, Jordan, Kuwait, U.A.E., Indonesia and China) were scrutinized to see if there are any procedures that may possibly be affecting subsequent performance.
- Any procedures that were likely to produce a “febrile” (raised body temperature or fever) experience are of concern. A severe febrile experience is a known cause of abortion in pregnant cattle.
- Vaccinations for both BVD and IBR may produce mild febrile experiences.
- Protocols that require extensive testing and handling through yards were seen to add significantly to the stress of the export process.
- Do Not Use products that are contra-indicated in pregnant animals. (eg Some Flukicides)
- There are some protocols where treatments at the country of destination may affect subsequent animal performance (eg FMD). Exporters should be aware of these measures.

#### **Feeding Strategies in Assembly Areas prior to Shipping**

- No special practices were described. Cattle that are assembled for export will be pre fed and will have become accustomed to eating pellets.
- Fodder consumption in the first 6-7 days of the voyage will be higher in cattle that have been pre-fed. This may necessitate a revision of the feed budget.

## Preventative Vaccines and/or Preventative Treatments

- Blackleg (or 5 in 1) vaccination was considered.
- One voyage, characterized by a large percentage of leg abrasions, reported an unusual number of “black leg” type cellulitis and septicaemia. Whilst this may not necessarily have been caused by the black leg bacteria (*Clostridium chavoei*) it is likely that anaerobic bacteria from the bedding have entered an abrasion and produced an infection of a “gangrenous nature”.
- Although it may be better practice to prevent the abrasions in the first place, a “booster” 5:1 vaccination is considered to be a sensible precaution.
- No other preventative measures were identified.

## Pregnancy Diagnosis

- Accurate diagnosis of the stage of pregnancy is essential.
- Early pregnancy diagnosis is relatively straightforward. Accuracy between 4 and 6 mths is far more difficult, and has a much greater risk error.
- Inaccurate pregnancy diagnosis and/or failure to reject late pregnant animals has been a repeating cause of problems onboard.
- Where possible pregnancy diagnosis should be undertaken well before the date of shipment to minimize the risk of late pregnant cows being included in the consignment.
- Exporters should use veterinarians that have a proven track record in the pregnancy testing of dairy cattle.
- The use of veterinarians accredited under the AACV scheme, (Australian Association of Cattle Veterinarians) is not seen as a guarantee of expertise since many veterinarians accredited under the scheme would not be required to assess the stage of pregnancy on a regular basis.
- Where possible, the veterinarians involved should have knowledge of the management program of the cattle on the property of origin, particularly the joining history.

### ***Best Practice Management Recommendation***

**It is recommended that exporters use only a veterinarian with a proven track record in determining the stage of pregnancy in pregnant dairy cattle.**

**Cattle are to be no more than 6 months pregnant at the time of shipping.**

## Other Management Considerations

- Stockmen report that, although the occasional premature calf is observed, most of the calves born onboard appear to be full term. This is not substantiated by any body weights or other measures, however, it would indicate that there has been a problem in the accurate diagnosis of the stage of pregnancy.
- Stress will readily induce calving in heifers (or cows) that are more than 6 mths pregnant.
- Although there will be some exceptions, stress (or cortisol production) does not readily cause abortion in heifers (or cows) that are less than 6 mths pregnant.
- Accurate diagnosis of the stage of pregnancy is therefore of paramount importance.
- The use of ultrasound technology is not considered to have any application.
- Individual identification, (foolproof) should be encouraged to allow trace-back and feedback on subsequent performance.

### ***Best Practice Management Recommendation***

It is recommended that all animals be individually identified, to allow performance feedback and a record of treatment.

## ***Delivery***

### **Special Trucking Arrangements**

- 12 hr feed curfews are recommended.
- Ensure crates have sufficient height if carting mature cows.
- Avoid rubs or lacerations that may later become sites infection to develop.
- Transport should meet the conditions of the Model Code of Practice for the Land Transport of Cattle.

### **Special Loading Arrangements**

- Allow cattle to move at their own speed.
- Allow longer for the loading of these cattle, they may move slowly when loading and unloading.
- Make a point prior loading to inform all stockmen, wharfies and crew about how you wish these cattle to be handled.
- Do not use electric prodders.

### ***Best Practice Management Recommendation***

Pregnant dairy cattle should be handled with special care and attention. Gentle handling is essential at all times.

## **Trucking Distances**

- Excessive distances are not generally incurred at loading.

## **Load Plan Considerations**

- Where possible, place pregnant dairy cattle on open deck or near top of ramp to reduce the climb required at discharge.
- Provide additional space for sick pen. (Can be part of overall stocking density reduction ..see later).
- Place high-risk cattle in well-ventilated areas.
- Draft and pen cattle in lines according to weight, but maintain lot integrity where possible.

### ***Best Practice Management Recommendation***

Draft and pen pregnant dairy cattle into lines according to weight, but maintain lot integrity where possible.

### **Flooring and Ramp Considerations**

- Non slip floors and hazard free ramps are required.
- Use purpose design and/or suitable ramps.
- Avoid loading injuries at all costs

### ***Onboard***

#### **Stockman**

- Provide careful handling, preferably by dairyman/person or stockman with significant experience in the management of pregnant dairy cattle as well as onboard experience.
- Use stockmen that are familiar with the ship.
- Provide a greater level of attention in the way of observation and individual supervision.
- The exact ratio of stockmen to cattle should be evaluated on an individual shipment (and ship) basis.
- Ensure that stockmen are provided with an appropriate veterinary kit suitable to address the types of conditions that occur.
- Provide stockmen with additional training and/or briefing in the treatment of the common ailments associated with dairy cattle.
- Th existing stockman's manual needs to be expanded to include a chapter on pregnant Dairy Cattle.

#### ***Best Practice Management Recommendation***

**Where possible use stockmen that have both onboard experience and experience in the management of pregnant dairy cattle.**

### **Bedding Management**

- Dairy cattle would seem to drink more during periods of heat stress, which results in excessive urination. This leads to rapid deterioration of state of the bedding
- Additional sawdust should be provided for pregnant dairy cattle.
- Desirably there should be enough sawdust for every wash during the voyage, however, if washing frequency is increased this may become impractical.
- Good quality (pine) sawdust should be used, with low moisture content.
- The higher feed intake may lead to greater manure production and this may dictate more frequent washing. Washing every 2-3 days (or even every day) may be required due to the rapid deterioration of the bedding.
- If sufficient sawdust for every wash is unavailable (or becomes unpractical), sawdust should be conserved for sick pens, hot spots and more susceptible groups and/or areas on the vessel.
- Save some sawdust for unloading to ensure alleyways and/or discharge ramps are not slippery.
- Be careful when washing to avoid distress among the cattle, especially on the first one or two washes.
- Avoid the direct jetting of water onto cattle and where possible, avoid manure splashing onto the udder of lactating cows.

### ***Best Practice Management Recommendation***

**Carry additional sawdust where possible and be prepared to wash on a more frequent basis.**

### **Flooring Considerations**

- Slippery floors are a big hazard to this class of cattle due to their instability. Abrasive surfaces are also a hazard. Leg injuries in the form of grazes or abrasions are common and need to be treated promptly.
- The use of portable rubber mats to assist in raising downer cows was reported to be a useful aid.
- Areas that become slippery should receive additional sawdust.

### **Length of Voyage**

- It is generally agreed that cows tended to tire as the voyage proceeds.
- Long voyages, (in excess of 20 days) were thought to impose more time for injury, illness, stress and misadventure to impact on the cargo.
- This was considered particularly important for voyages that spend much of their time in the equatorial zone.
- Voyages to Mexico that cross the dateline and duration should be calculated on days rather than dates.
- Voyages (involving smaller numbers of pregnant dairy heifers) of up to thirty days have been completed with minimal mortalities although effects on subsequent productivity have not been evaluated.

### ***Best Practice Management Recommendation***

**It is recommended that exporters take advantage of efficiencies and use fast ships to export pregnant dairy cattle.**

**Any voyages of 20 days or longer should require an AQIS management plan. This plan should demonstrate the measures being used to address the additional risk due to the length of voyage.**

### **Stocking Densities**

- It was universally agreed that stocking density reductions are required.
- Voluntary reduction has been practiced.
- Lowered stocking density can:
  - Reduce the amount of heat generated from the pen and therefore affect deck temperature (in relation to ambient temperature).
  - Allow better movement of air around animals and through pens.
  - Allow cattle better access to feed and water troughs.
  - Reduce stress through competition and bullying, and reduce the number of shy feeders.
  - Allow all cattle to lie down, (if they wish).

- Reduce the amount of urine and faeces being added to the bedding and therefore affect bedding management.
- There is a point beyond which additional space adds very little to the factors outlined above.
- There is a strong correlation between stocking density and performance (as measured by mortality).
- A risk management approach should be undertaken when determining stocking density reductions.
- This should include the consideration of factors relating to the voyage, the cargo and the vessel.
- Voyage factors would consider the time of year, the anticipated temperature and humidity, length of voyage, conditions at destination and post discharge trucking and handling requirements.
- Cargo factors would consider breed, pregnancy status, weight and body condition, acclimatization and possibly cows vs heifers.
- Vessel factors would consider ventilation rates, the provision (or otherwise) of direct jetting into pens, possible contamination of intakes, level of onboard management, stockman experience, flooring and washing capabilities.
- A final stocking density should be determined after full consideration of all of the above factors.

### ***Best Practice Management Recommendation***

**A risk management approach should be undertaken to determine stocking density reductions. It is recommended that a stocking density reduction of between 15-20% (as applied to the default Table 1. In the LEAP Standards) be applied to the shipment of all pregnant dairy cattle (both heifers and cows) after full consideration of the factors outlined above.**

### **Feeding Strategies**

- It has been stated that dairy cattle eat and drink more than beef cattle. It is thought that they have a larger stomach in proportion to their body weight as an adaptation to the nutritional requirements.
- A daily fodder requirement of over 3% may be required to cater for the fodder requirements of dairy cattle.
- Pre-feeding will reduce the period of lower feed intake at the very beginning of the voyage and will increase the overall consumption per head. This also needs to be taken into consideration.
- The provision of both chaff and hay was thought of benefit.
- Restricted feeding can lead to significant shy feeder problems.

### **Fodder Management**

- There have been a few voyages reported where the length of voyage has been extended for unforeseen circumstances (and /or cattle have eaten greater quantities). Fodder restrictions towards the end of voyage have been necessary. It may be that a higher %age body weight calculation, or a 5 day contingency for fodder requirements is required. Where the voyage length is anticipated to be greater than 20 days, additional contingency fodder should be considered. This should be considered in the management plan.
- Contingency fodder should be linked to voyage length

## **Water and Electrolytes**

- The use of electrolytes is under review.
- Pregnant dairy heifers and cows drink more, especially when heat stressed.
- This will often incur excessive urination, which in turn affects the bedding.
- Dairy cattle may require a special formulation of electrolyte.

## **Sick Pen Management**

- The lowered stocking density should provide additional sick pens in strategic positions.

## **The Incidence and Treatment of Heat Stress**

- Pregnant dairy cattle are less heat tolerant than other bos taurus cattle. (See Graph 2).
- A reduction in stocking density is one way of managing this lower tolerance.
- Voyage timing, (see below), is considered another way of dealing with the lower tolerance.
- Best practice should encourage exporters to engage vessels known to have “good” ventilation (high pen air turnover and direct jetting of air into every pen) or at the very least, stow these cattle in the better-ventilated areas of a vessel.

## **Time of Shipping Effects (Time of Year)**

- Due to the risk of encountering extreme conditions of heat and humidity in the Persian Gulf and Red Sea during the period from 1<sup>st</sup> May to 31<sup>st</sup> October it is recommended that pregnant dairy cattle are not exported to these destinations during this period. (See Graph 1).
- Although voyages to other destination may not incur such extreme conditions, temperatures (and humidity) at the destinations may be high and further stress may be incurred if further transport is required. This should be considered and shipping during this time of year should be avoided where possible.

### ***Possible Management Recommendation***

**It is recommended that pregnant dairy cattle are not shipped to destinations in the Middle East during the Northern Hemisphere Summer (1<sup>st</sup> May to 31<sup>st</sup> October).**

## **The Incidence and Management of Cows that Lactate without Calving**

- Many heifers and/or cows demonstrate udder development and lactation without calving.
- This represent a significant risk of mastitis developing due to stasis of milk, the removal of a protective keratin plug and the unavoidable (lack of) hygiene that exists in most pens.
- The cause of this is unknown although it is most likely to be caused by stress.
- The incidence would seem to vary with different voyages, and it would seem also to be related to the level of stress incurred. Sustained heat stress would seem to produce sufficient levels of cortisol to induce “bagging up” and lactation.

- Only a small percentage of those cattle that “bag up” will lactate and only a percentage of these will end up with mastitis.
- Treatment (intramuscular antibiotics) of those with inflamed udders at the time of a post-washing “walk thru” is considered good practice.
- The incidence can be too high for these animals to be removed and treated individually. A form of mass treatment via water medication may be a viable alternative.
- The capacity to identify and treat these animals at the point of destination is very important.

### **Treatments for Common Ailments**

- Painful injectables such as oxytetracycline should be avoided and alternatives such as long acting penicillin should be used where possible.
- Shy feeders can develop in some pens due to bullying by dominant animals. Additional observation is required to detect this behavior. Shy feeders (or bully) should be removed.
- Individual treatment should not be attempted at the expense of the cargo as a whole.
- Specific treatments for common ailments have not been included in this document since the emphasis is on prevention rather than cure. Useful notes however, have been determined and may be included in future versions of the stockman’s manual.

### ***Discharge***

#### **Ramp and Floor Considerations**

- The cattle sheds and discharge areas at some destinations are reported to have particularly slippery floors.
- Extra sawdust is recommended to treat all slippery areas on discharge, particularly since cattle tend to be weaker and more fatigued at the end of the journey.
- Take care to ensure that ramps, alleyways, trucks, truck drivers and labour practices do not sabotage the good work in getting them there.

#### **Post Discharge Considerations**

- Receivers should be encouraged to be capable of continuing the treatment any cattle that arrive with mastitis or other conditions.
- As discussed, unlike slaughter type cattle, the value of dairy heifers and cows is related to their productive capacity. Loss of their productive capacity incurs a serious loss of the heifer’s value that cannot be recouped by the slaughter value of the animal.
- Mastitis and leg injuries are the two most common causes of a loss of productive capacity.
- The export of pregnant dairy heifers (and cows) is therefore far more demanding than the export of slaughter type animals and greater care is required to ensure a satisfactory commercial outcome.

## **ANALYSIS OF PERFORMANCE AND PRACTICE**

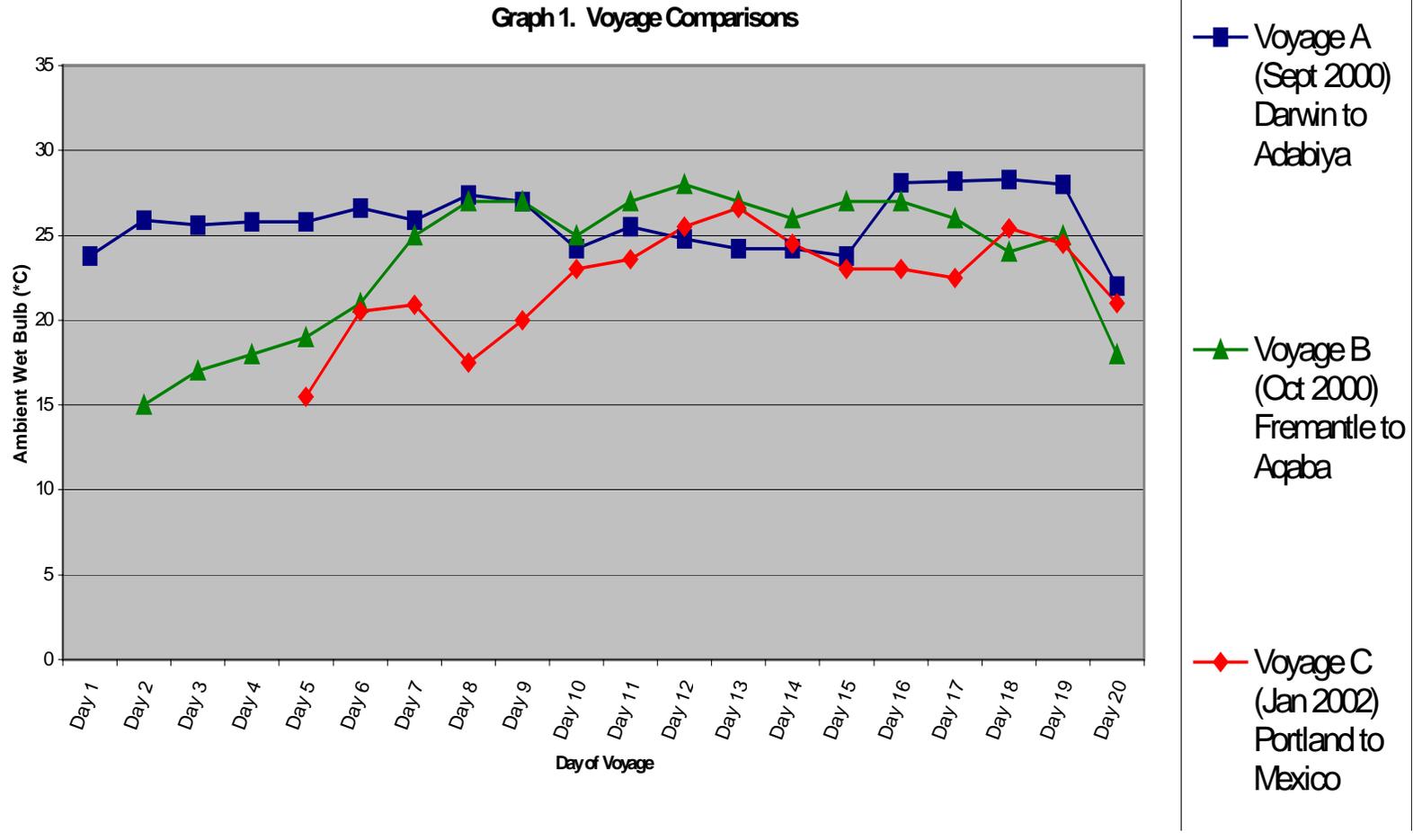
As with previous investigations, records are kept in a manner that makes serious statistical analysis of performance questionable. There were 14 voyages included in the survey in a period from May 1999 to August 2001. The smallest consignment was 271 and the largest was 3329. There were two voyages in which a mortality rate in excess of 5% was reported. The balance of the voyages reported mortality rates of 1% or less.

Linking performance to practice has proved difficult. There would appear to be no single factor involved. A breakdown of the accuracy of pregnancy diagnosis and a high incidence of leg injuries appear to have been predisposing factors on some voyages.

## **RECOMMENDATIONS FOR FUTURE RESEARCH AND/OR ACTION**

- Expand existing stockmans manual to include chapter on the management of pregnant dairy cattle.
- Undertake further investigation into the cause of lactation without calving.
- Undertake further investigation into the cause of excessive urination associated with heat stress, including the use of suitable electrolytes.
- Develop a system of feedback to determine the subsequent performance of Australian dairy cattle in dairies at the place of destination.
- There were several comments suggesting that visiting veterinarians (especially from Mexico (SAGAR)) be afforded a greater level of contact with our own authorities. Clear advice as to the time and nature of their arrival would be required for this to be facilitated. This was thought to be a way of improving the SAGAR authority's confidence in our export process.

# GRAPH 1 VOYAGE COMPARISONS



# GRAPH 2 HEAT TOLERANCE OF VOYAGE

Graph 2 Heat Tolerance by Voyage

