

The Expanding Live Cattle Trade in Northern Australian

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ABSTRACT: The north Australian beef industry is complex and dynamic. It is strategically positioned to access new and existing export markets. To prosper in a global economy, it will require strong processing and live cattle sectors, continued rationalisation of infrastructure, uptake of appropriate technology, and the synergy obtained when industry sectors unite and cooperate to maintain market advantage.

Strategies to address food safety, animal welfare, the environment and other consumer concerns must be delivered. Strategic alliances with quality assurance systems will develop. These alliances will be based on economies of scale and on vertical cooperation, rather than vertical integration.

Industry sectors will need to increase their contribution to Research, Development and Extension. These contributions need to be global in outlook. Industry sectors should also be aware that change (positive or negative) in one sector will impact on other sectors. Feedback along the food chain is essential to maximise productivity and market share.

Key Words: Beef Cattle, Markets, Global, Rationalisation, Food Safety, Animal Welfare, Vertical Integration

INTRODUCTION

The export of live cattle from Australia is increasing. In 1997, it was widely predicted that by the end of year 2000, Australia would be exporting over 1 million live cattle. The Asian economic crisis put an end to this prediction. In 1997, Australia exported 945,663 cattle to all destinations.

In 1999, exports totalled 845,766, a 36 percent increase on 1998 when numbers dropped to 621,121.

Current Australian Bureau of Agriculture and Resource Economics (ABARE) predictions are that exports will be 944,000 head in 2000, increasing to 1.07 million head by 2005.

The changes in live cattle export numbers and value since 1992 are shown in Table 1. The growth in the Middle East market was opportune in that it off set the downturn in south east Asian markets resulting from the economic crisis which commenced in 1997.

Geographically, Australia is well placed to supply the markets of South East Asia and the emerging Asian markets of Vietnam, China and Korea. The potential to further develop the Middle Eastern market is significant, even when additional transport costs are considered.

Queensland has over 40 percent of the national cattle herd, of which more than 80 percent are Brahman infused. These animals are well adapted to tropical environments, are less affected by the stresses of shipping and have the genetic potential to perform well in overseas feedlots.

CONTRIBUTION OF THE LIVE CATTLE EXPORT TRADE TO THE NORTHERN BEEF INDUSTRY

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History

Although the rapid expansion of the live cattle trade during the past 12 years is responsible for significant change in the direction of the north Australian beef industry, it should be clearly understood that the trade in livestock from Australia is not new. Queensland state library photographic records (ref sighted 2000) show the loading of cattle from Pinkenbar wharf, Brisbane to China in 1905. It is highly likely that live cattle had been exported before this time.

Table 1. Changes in Australian live cattle export numbers and value by calendar year and destination. Source Australian Bureau of Statistics (2000).

	Brunei	Egypt	Indonesia	Japan	Libya	Malaysia	Philippines	Total
1992 Number	9172	0	24981	21696	0	23298	56604	148256
Value (\$A)	4755918	0	9664830	14889812	0	9208704	27096333	74272617
1995 Number	7641	0	226384	10050	1298	38891	209192	516972
Value (\$A)	4832179	0	140046787	6838119	1015036	21006221	99262071	291206059
1996 Number	5824	52210	388974	15481	10007	44484	206317	741098
Value (\$A)	3584680	27697867	212697390	10382532	4605706	21408989	96783427	391422821
1997 Number	6528	37539	425677	19857	105257	73752	259702	945663
Value (\$A)	4053606	19283017	211640058	15722299	57666790	32985855	120981921	473513438
1998 Number	7655	119579	41174	17148	120717	43587	215961	621121
Value (\$A)	4894792	61601641	17955370	11891191	64890075	16837281	87786632	293065993
1999 Number	17413	240954	159472	12362	23115	65178	269745	845766
Value (\$A)	10244594	130808008	68673508	7774590	13515956	29887734	128326769	417000444

This change will continue given the possibility of exporting cattle to new markets such as China, Vietnam and Korea, combining with the potential to expand existing markets into Indonesia, Philippines, northern Africa and the Middle East. The trade in genetic material using semen and embryos to South America, USA and other countries is also expanding rapidly.

Change will also be fuelled by increased competition for our traditional processed beef markets. Competition for these markets from major beef producing countries including Argentina, USA, Brazil and EU will force the northern industry to continue to pursue cost effective production systems to keep the industry competitive. Consumer expectation about community needs, food safety, workplace practices, animal welfare and environmental considerations are also expected to influence change within the industry.

Expansion of the northern cattle industry

The recent expansion of live cattle markets came at an opportune time for the northern beef cattle industry. In the early to mid 1990's, the demand for Australian boxed beef from its largest market, the USA, was severely curtailed by the effects of the cattle herd reduction in that country. Surplus USA processed beef found its way into traditional Australian markets such as Japan, Canada and Taiwan, placing downward pressure on price.

Coinciding with this was the El Nino phenomena responsible for a series of below average rainfall years, many of which resulted in severe pasture deficiency or drought. The management and development of north Australian properties would have been severely set back if the trade in live cattle had not emerged.

Perhaps an even bigger winner was the north Australian environment. The live export trade provided drought stricken properties with an opportunity to sell cattle, rather than retain them in an overstocked pasture situation. The contribution that heavy stocking can make to land degradation, especially during drought years, has been reported by Corte et al (1991), Tothill and Gillies (1992), and Landsberg, et al (1998).

In the longer term, environmental benefits continue to flow from this marketing option. Northern cattle properties are now better able to match the productive capacity of their soils to the growth potential of cattle.

Traditionally, the most favourably priced processing animal for the northern industry was the heavyweight bullock (560 - 600 kg liveweight) with a carcass weight of approximately 300kg, free of contamination. If the carcass had 12 -18 mm of rump fat, was less than 30 months of age (4 teeth) and graded Japanese Ox, there was an additional premium. Annual growth rates in excess of 180 kg per annum are required to achieve this premium.

Due to a combination of soil fertility and variable rainfall there is limited scope for the north Australian industry to consistently produce cattle suited for this Japanese market. Growth rates in northern Australia are typically in the range of 100 to 140 kg per annum (Dodt, 1998, pers com). Annual growth can vary 50 kg either side of this range, depending on seasonal conditions, or with preferential management of individual mobs. Heavy weight bullocks from the northern industry are typically turned off at 540 - 580 kg liveweight (280 - 300 kg carcass weight) at 42 - 54 months.

Growth rates of 140kg per annum suit the turn off of 300-400kg liveweight cattle at 18 to 30 months of age. While this product is well suited to the live cattle trade, it should be understood that the majority of these cattle are targeted to the processing sector. If these cattle are not sold directly to abattoirs, then they are sold indirectly through feedlots or grass fattening operations in other parts of Australia. The comparatively small percentage of cattle sourced by the live export trade provides sufficient competition in the market place for industry to consider the sale of younger animals.

The sale of younger animals has introduced challenges for the northern industry. Because of the lighter weight at sale, values per head are lower than when selling older animals. Also, when male progeny are sold at younger ages the breeder herd makes up a higher proportion of the total herd, if stocking rate is held constant.

Inefficiencies resulting from low reproductive performance and high death rates, have kept the breeder proportion of northern industry herds to a minimum. With an improved market for younger animals, the industry now has the cash flow to introduce technology and management practices which address these problems.

Weaning became an accepted practice during the Brucellosis and Tuberculosis Eradication program

which concluded in 1989. Although this program provided some financial support it was, in most instances, a regulatory requirement which provided the incentive for the development of property infrastructure including yards, fencing and water supply.

The commencement of the live cattle trade, through increased competition in the market place, provided the on property financial incentive to progress this development. From the early to mid 1990's, the industry had the cash flow to improve breeder efficiency through strategic supplementation programs, pregnancy testing, bull testing, and improved weaning practices. A number of properties have also introduced controlled mating programs.

This increased emphasis on property development and cattle management, especially with the breeder herd, has seen a major improvement in the female to male sale turn off ratio. Prior to these changes it was common for properties to practice a male only turn off policy. All weaner heifers were retained and no aged or cull females were sold. Although official figures are difficult to obtain, many properties can now demonstrate female to male sale ratios in the range of 30 to 40 percent. The majority of these females find their way into the processing sector.

The genetic improvement of the northern herd has also accelerated. The live cattle trade, especially to south east Asia, requires young animals which can deliver high growth rates from rations based on agricultural by product in a hot, humid climate. To this end, the grass fed *Bos indicus* cattle of northern Australia have been the right cattle at the right time.

These cattle are especially suited to the tropical environment, are tolerant of parasites, and have the added advantage of being better able to handle the rigours of transport and shipping than their *Bos taurus* counterparts.

The comparative ease with which *Bos indicus* can be mustered and handled in any weather is vital to the future of the trade. Specifications are expected to tighten, and delivery will have to be on a more regular basis. Their tolerance to parasites results in significantly reduced or nil dependence on chemicals. This has important ramifications in terms of food safety when breeders and other animals are sold into the processing sector.

The live export markets also have a preference for low fat beef. The *Bos indicus* animal is well suited to supply this product without compromising eating quality. Another advantage is that low fat carcasses have higher meat yields than over-fat carcasses of the same weight, an added efficiency when transport costs are considered.

Infrastructure

Northern industry infrastructure has changed, and will continue to change. Major livestock depots and port facilities have been constructed to assemble cattle, to carry out appropriate pre-departure health protocols and to ensure efficient, careful loading of cattle onto ships. Road and rail facilities including loading yards have also been modified. These facilities have replaced many of the older, outdated structures and have

incorporated animal welfare and environmental requirements into their design.

The trade in live cattle has benefited the transport sector in that the traditional movement of Queensland cattle from north to south and west to east has changed. It is now possible to back load store cattle for the boat trade with slaughter cattle, something that was not possible previously. This increase in transport activity has forced many local government authorities to pay much needed attention to the road network, while the Queensland government has increased its investment in a modern and efficient rail system for cattle.

On the negative side, many northern processing plants have had to close. This restructure commenced prior to 1990 and is not solely due to the live export trade. Rather it is due to an excess of kill floor space at abattoirs and the need to replace ageing plants with larger, cost effective ones incorporating new technology and modern work place practices.

The rationalisation of the processing sector to the south has added further incentive for government to upgrade the road and railway networks. The ability to quickly and efficiently move livestock has resulted in a 37% increase in the numbers of cattle imported into Queensland for processing since 1991 (Sangster, 1999). In 1998/99 imports of cattle from the Northern Territory and New South Wales into Queensland totalled 789,000 while exports (including live export cattle) to these states totalled 395,582 cattle.

Producer Understanding of Markets

It is evident that North Australian producers have a superior understanding of the live cattle trade, compared to the processed beef trade. It has been an initiative of the Queensland Department of Primary Industries to encourage industry participants to travel to the market destinations of Queensland cattle. Producers, stock and station agents, merchandise, finance and government representatives returning from such visits were in a position to pass on necessary information to their colleagues through producer organisations and other networks.

The Department also published technical information such as the Stockman's Handbook and Marketing Cattle into South East Asia. These publications provided useful information to producers, overseas feedlotters, stock and station agents, exporters and transporters.

Future

As a result of the ongoing development of the trade, north Australian producers will continue to require relevant research and development programs to enhance their businesses.

Due to a range of economic pressures and consumer concerns, some importers are attempting to source lines of cattle direct from producers. In time, it is likely that more producer importer alliances will develop. These alliances will be based on the need for continuity of supply of a quality product that meets consumer expectation.

Community expectations about animal welfare, the environment, food safety and food quality will continue to present challenges for the northern industry.

A competitive, yet profitable industry will always overcome such challenges. Well bred, well handled livestock are always the producers' greatest asset.

Northern producers are optimistic about the future of live animal exports. They look forward to supplying expanded markets, particularly to the highly populated areas of South East Asia. Due to their geographic location, northern producers have a distinct freight advantage over their competitors.

In a market that is strongly price driven, the north Australian cattle industry is well placed to continue as a highly competitive force in the trade of both live animals and processed beef on the world market.

AUSTRALIAN LIVE CATTLE EXPORT TRADE

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The Australian live cattle export trade operated spasmodically throughout most of the twentieth century, but it was not until the early 1990's that demand from South East Asia saw the trade register significant increases in exports each year (Table 1). More recently the trade has expanded into northern Africa and the Middle East. Live cattle exports consist mainly of slaughter and feeder cattle. Only small numbers of breeding cattle are traded. From 1990 to 1995 exports went almost exclusively to Indonesia, Philippines, Malaysia and Brunei in South East Asia, and small numbers to Japan and North Asia.

Exports to the Middle East and North Africa began to develop in 1996/1997. Mexico also imported Australian feeder cattle in 1997/1998 and 1998/1999.

The trade suffered a severe set-back as a result of the Asian economic crisis in July 1997. Exports to South East Asia fell by two thirds; this was partially offset by increasing exports to the Middle East and North Africa. The outlook for 2000 is substantially better, with demand in Indonesia, Philippines and Malaysia registering significant increases, and North Africa and the Middle East maintaining their current steady demand.

Why the live cattle trade exists

It is often asked why does the trade exist when frozen beef (especially consignments subsidised by the EU) can be imported more cheaply? The main factors are based on custom, practicality, political and economic concerns and religious beliefs. Above all these reasons, the trade must be profitable.

Cattle herds in major South East Asian countries have been seriously depleted in recent years. On a per capita basis they are probably at the lowest level ever recorded. Leaders in these countries have the objective of rebuilding and stabilising national herd numbers.

The importation of feeder cattle is seen as a mechanism to take pressure off the processing of the national herd. Imports of breeding cattle increase the national herd while at the same time improving its

genetic potential. However, the funding requirements differ – breeding cattle imports require long term loans usually supplied through international sources.

A common factor with most South East Asian countries is that they have large quantities of cheap crop by-products that are ideal for cattle rations. This, in addition to low labour costs, makes cattle fattening a highly profitable exercise. The ability of the feeder trade to value-add and to create jobs is regarded politically as highly desirable by importing countries.

Custom and practicality also play a substantial role in the region where the majority of meat sales are conducted through the wet market. In these non-refrigerated markets thawed, frozen beef does not have the same keeping qualities as meat from cattle slaughtered on the day of sale. Custom dictates that any meat identified as "not fresh" be rejected or, at best, be sold at a reduced price.

Religious customs also play a significant role. In Muslim countries all meat must be Halal slaughtered under the supervision of a religious official. Although some abattoirs in non-Muslim countries have the approval to conduct Halal slaughter, there is an underlying preference for meat derived from animals slaughtered locally.

Tariffs also play an important role where meat imports to many countries are taxed at a significantly higher rate than live cattle imports.

The export trade in live cattle provides significant economic benefits to Australia. In the 1999 calendar year, this was estimated to be in excess of \$400 million dollars. It provides a valuable additional market for Australian cattle, at prices often above other cattle markets. The trade has a well documented, value-adding potential and is a significant employer both directly and indirectly, particularly in northern Australia. The live cattle market is regarded as a significant contributor to the sustainability and prosperity of northern cattle producers.

It has often been argued that if live cattle exports to South East Asia were to cease the meat deficit could be replaced by imports of Australian boxed beef. This reasoning is far from the truth. While live cattle exports enjoy a situation of little or no competition Australian beef competes with beef from many countries, and often the production of that beef is highly subsidised.

Industry sectors involved in the live cattle trade

The Australian cattle producer is undoubtedly the most important contributor to the live cattle export trade. This group has by far the largest capital outlay. Other contributors can be loosely defined as - licensed livestock exporters, industry organisations, government participants, selling agents, support service providers, ship owners, and importers.

The role of the cattle producer in live exports has changed significantly over the last ten years. Producers are now well in touch with export market specifications and continue to adjust their property turn-off to suit overseas market requirements.

There are some 120 livestock exporters licensed by the Australian Quarantine Inspection Service (AQIS)

of which around 30 are active. Potential exporters must demonstrate that they are of good repute, are financially able to conduct an export business, and have been accredited under the Livestock Export Accreditation Program (LEAP) before they are issued with an export licence.

LEAP is a quality assurance scheme established under Livecorp, the representational and systems delivery organisation owned by livestock exporters. It includes animal welfare oriented codes of practice for the operation of the trade, with each exporter independently audited to ensure compliance.

Other industry bodies also have a strong influence. The Australian Livestock Exporters Council (ALEC) is a council of peers responsible for the formulation of policy that is passed onto LIVECORP to enact. LIVECORP is funded by voluntary industry levies on exports.

Running in parallel with LIVECORP is Meat and Livestock Australia (MLA). MLA represents the producer interests. Most major initiatives of research and promotion in the livestock export trade are conducted by a strong partnership between Livecorp and MLA.

There is both Federal and State legislation to carefully control the export trade. Initially the trade is the responsibility of the Department of Agriculture, Forestry and Fisheries Australia (AFFA). The main responsibility of AFFA is to resolve policy issues. The Australian Quarantine & Inspection Service (AQIS) is responsible for the inspection and certification of all stock leaving Australia as well as the negotiation of import and health protocols.

Sea-going safety and shipping standards are the responsibility of Australian Maritime Safety Authority (AMSA). They ensure all livestock carriers and their cargoes comply with Marine Orders, Part 43, which covers the carriage of all livestock.

Departments of Agriculture and Primary Industries in each State also play a valuable role. They are mainly involved in ensuring the health status of animals to be exported but also carry out much of the relevant research and development. Some states are also involved in market development that provides valuable links to all sectors of the live export trade. These Government to Government relationships are an important factor in expanding export markets and creating strong trading relationships

Other major 'on shore' providers of support services to the trade are numerous. They include export depot operators, road and rail transporters, feed manufacturers, veterinarians, banks, insurance companies and general industry suppliers of goods and services.

Ship owners are also an important segment of the industry, as most cattle are exported by sea. Only limited numbers are exported by air. The number of ships servicing the cattle export trade fluctuates. At present there are about 40 ships registered by AMSA to carry Australian cattle. Carrying capacity of ships ranges from 800 head to 15,000 head although most fall in the range of between 1,200 head to 2,400 head. There are no Australian owned ships or flagged cattle carriers and

the complex job of ensuring uniform high standards are undertaken by AMSA. In 1998 standards were tightened considerably. Ships now have to demonstrate compliance to all AMSA rules including compliance with a new quality assurance system.

The last vital link in this export food chain is the importer. It is the responsibility of the importer to ensure that the cattle meet the expectations of the overseas customer. Normally, importers will send representatives to select the cattle and will only pay for the cattle on liveweight at the port of discharge. It is therefore essential that liveweight be maintained or increased during the transport phase and that mortalities are minimised. It is normal for cattle to gain some liveweight during the shipping voyage. Mortality rates of about 0.05 percent and sometimes less are common.

AFTER SALES SERVICE

The majority of live cattle exports are for feeder and slaughter cattle. There is wide variation in the standard of construction and management of overseas feedlots. All feedlots must operate profitably or go out of business. It is therefore imperative that the Australian live cattle export industry gives technical support to its overseas clients.

As with cattle fattening worldwide, there are many variables that can add or detract from profitability. Factors such as cattle genotype, nutrition, health, management and handling methods, cattle transport and feedlot construction all have a significant impact on the sustainability of each feedlot enterprise.

It is in the interest of Australian exporters to carefully monitor the performance of cattle in client feedlots. If a problem is found, it can be addressed as quickly as possible through the multi-tiered system of technical and diagnostic services available to the industry.

Technical advice and help may be provided in the first instance by the exporter's own staff or consultants employed by the exporter. Specialist assistance is also provided through Livecorp/MLA on a case by case basis. In addition to this, Livecorp/MLA execute a carefully planned research program that is revised each year. State Government instrumentalities such as Queensland Department of Primary Industries, Northern Territory Department of Primary Industries and Fisheries and the Western Australian Department of Agriculture have involvement in overseas research and export development.

Animal welfare

Since the Senate Select Committee into animal welfare chaired by Senator George Georges in the early 1980's, the live export trade and the general public have become increasingly aware of animal welfare issues.

State and Federal welfare codes for the handling of livestock have been in existence since 1983. However, agencies concerned with animal welfare, such as the Royal Society for the Prevention of Cruelty to Animals (RSPCA) and the National Consultative Committee on Animal Welfare (NCCAW), were not convinced that these codes were followed or that they were appropriate to the live cattle export trade.

The majority of livestock exporters are fully aware that the incorporation of animal welfare safeguards into their operations is essential to the overall success of their operations.

The animal welfare lobby, argues that there is insufficient safeguard in the system to guarantee animal welfare compliance. To address this situation, LIVECORP established LEAP which is an all encompassing set of live export standards strongly based on all relevant Australian animal welfare Codes of Practice. All exporters must be accredited under LEAP and must undergo independent audits conducted by Aus-Meat. Serious breach of LEAP standards can lead to the suspension of the exporter's licence.

Cattle mortalities

Cattle mortalities on short haul voyages to South East Asia have not generally been a problem. The industry average is less than one mortality for every 1000 cattle exported. Most of these mortalities are the result of injuries, eg a broken leg, which requires the humane destruction of the animal.

From time to time, the unforeseen does occur. Cyclones at sea can sink a ship or injure a proportion of the cattle on board. Fortunately this is a rare occurrence as modern navigation and communication systems can be relied upon to provide timely advice of these risks.

Mechanical failure, especially of the ships ventilation systems, has occurred with disastrous results in two cases in the past two years. These disasters were thoroughly investigated by AMSA, who continually update the standards of ships used in the trade. Such incidents will be significantly reduced in the future.

Cattle mortalities on the long haul voyages (17-25 days) to North Africa and the Middle East were of concern, particularly when heavy Bos taurus cattle were being exported from a southern Australian winter to the raging heat of a Middle Eastern or North African summer. This practice has now been stopped under a separate set of guidelines insisted on by ALEC/LIVECORP.

It is impossible to prevent all mortalities. They are an everyday occurrence in the cattle industry, whether it is on-farm, during transport from farm to abattoir or wharf, or on ship. What can be stopped are mortalities caused by bad handling procedures, badly designed facilities, the export of unsuitable stock and the non-compliance to AMSA shipping standards.

All the above factors are the subject of independent audit or inspection. Both industry and government now have the confidence that mortalities due to preventable factors will be minimized or entirely eliminated.

RESEARCH DEVELOPMENT AND EXTENSION ACTIVITIES FOR THE LIVE CATTLE EXPORT TRADE

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The live export trade is no different than other sectors of the northern cattle industry. At the agri

political level it can display solidarity, but at the grass roots level it is diverse, competitive, factional and without unity.

Any contribution of Research, Development, and Extension (RD&E) to the live cattle export sector will also benefit the processing sector. In countries where live cattle have been imported, an increased demand for processed beef has followed. For example, Australian processed beef imported into the Philippines, a dominant live cattle market, has increased fourfold since 1997 (Sangster, 1999). Similar trends have been witnessed in other importing countries.

For this reason the following discussion applies as much to the total beef industry as it does to the live cattle export sector.

The challenge for the RD&E sector is to be a recognised and essential component of the trade. While there have been some creditable achievements the challenge has not yet been accomplished. Public perception of science and scientists is not high, (Martin and Beder, 1993, Spencer, 1999). This perception should be a concern for those with a vision of assisting in the development of a long term commercially successful beef cattle industry. Such a vision will more likely be achieved if trade practices are based on fact, rather than perception and myth. There are also concerns if RD&E agencies expect the public to fund their activities.

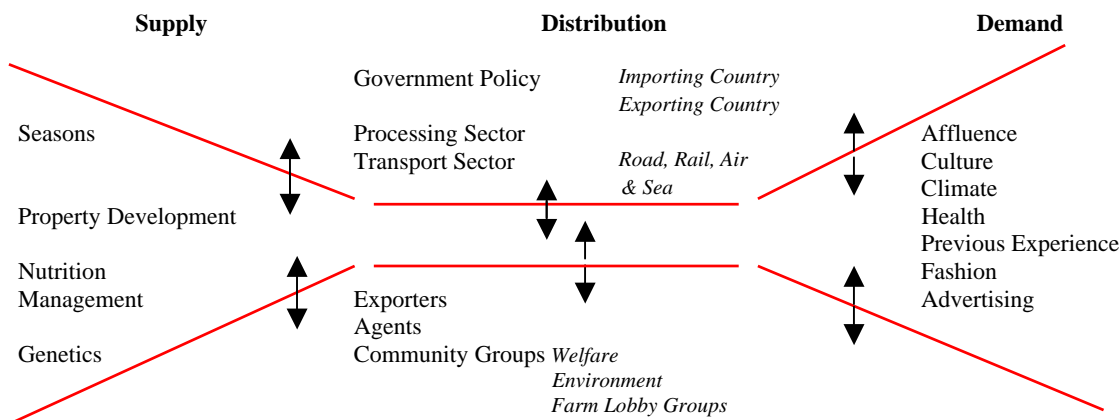
The RD&E sector should not accept all of the blame for this situation. Public perception is fuelled by a media, which at times is biased and sensational in its reporting. Recent 'triggers' to negative consumer perceptions about the beef industry include bovine spongiform encephalopathy, the cloning of farm animals, contaminants in beef exports and the recent foot and mouth disease scare in Japan.

Added to this are media reports that focus on politicians struggling to balance the interests of animal welfare, environmental and farm lobby groups with political and economic reality. As Spencer (1999) suggests, RD&E could probably better protect its own interests, and in this case that of the live cattle export industry, if it changed from its current narrow science based focus to view the industry in its entirety.

Wide picture view of the Beef/Live Cattle Export Industry

It is suggested that the live cattle export trade can be considered as three broad interlocking areas of supply, distribution and demand (Figure 1).

Figure 1. Diagrammatic representation of Live Export Trade



The supply demand equation is easy to understand. When supply exceeds demand, prices are low; when demand exceeds supply, prices are high. If supply always equalled demand, trade would be predictable and mostly without risk. For an industry at the mercy of continually changing consumer demands, combined with the vagaries of the elements, this is an unrealistic expectation.

The equation is also influenced by 'bottlenecks' in the distribution network. The policies of Australian Federal, State and Local governments, as well as those of importing countries, are significantly influential and rarely synergistic. The corporate influence of the processing sector, as well as lobby groups, all impinge on government policy. The reliability and capacity of road, rail and shipping networks and other infrastructure also effects the balance of the supply demand equation.

Quantity and quality of the beef industry product (beef, cattle, genetics, by products, technology) varies widely from year to year and within years. The major factor driving this variation is seasonal rainfall. This variation can be reduced by energy supplementation. Energy supplementation, such as in feedlots, is a high cost management option, which ignores the major advantage of the ruminant animal - its ability to convert human inedible plant material, of abundance in Australia, to high quality human food.

The demand for Australian beef product, live or processed is not fixed. It ranges from the highly marbled product sought by the Japanese consumer to the lean product required by the wet markets of South East Asia and the manufacturing requirement of many markets, especially USA

The volume required by each segment also varies. Whilst major determinants are affluence, culture, and health, short term changes in demand can be triggered by weather, festivals, advertising and fashion.

This variation in supply and demand is exacerbated by the inability of the distribution network to respond quickly. Infrastructure in processing plants, transport, shipping, and other facilities is capital intensive. There are also community, environmental and national considerations that impact on the willingness and ability of government/s to co-operate.

Changes in RD&E Focus

It is difficult to separate actual activity from industry perceptions of RD&E activity. Traditionally the focus has been on the grazing sector (supply). During the past 20 years, the processing sector (distribution) has attracted a significant proportion of RD&E funding while the consumer (demand) has received major attention during the past five years (Cattle Council of Australia, 1999).

The grazing industry is disenchanted with this shift in focus. During the first 17 months of operation of Meat and Livestock Australia, just 9300 of an estimated 30,000 dedicated Australian red meat producers made the effort to complete a (free) membership form (Mulders, 1999). To those outside the 'supply sector' it is easy to suggest apathy.

A more likely reason is the failure of MLA, through its RD&E agents, to convince the grazing industry that it understands the complexities of the beef industry. In a predominantly pasture based production system, relying on unpredictable rainfall and volatile export markets, the supply demand equation seldom favours the supply sector.

There is no doubt about the market being consumer driven or that effort into understanding how to best meet consumer requirements is necessary. The problem is that RD&E is all too often narrowly focused on one sector without considering the impact of change on other sectors.

On the other hand if all sectors are involved, there is often a fear by individual sectors of losing market advantage by the sharing or exposure of knowledge or market intelligence.

Examples of Queensland RD&E Activities contributing to the Live Export Trade

The Queensland Department of Primary Industries, through its Beef Industry Institute, has initiated several projects to address the above issues.

With support from the Beef Improvement Association, north west Queensland Branch and MLA, the Live Export Link project was commenced in 1997. One aim of the project is to identify the strengths and weaknesses of the live export chain by monitoring

liveweight change of cattle as they progress from property to overseas feedlot. Positive information is useful to promote the benefits of Queensland cattle, the practical skills of the Queensland industry and the technology that the RD&E sector has to offer. Weaknesses identify opportunities for further research and development.

The project also sends a message to the wider community that the live export industry is taking responsibility for issues such as animal welfare which could impact on its future growth and development.

In this project, cattle producers are invited to agist cattle (20-25 head each) on Toorak Research Station (21° 02' South, 141° 47' East). Located 50km south of Julia Creek, this research facility is 680km and 530km respectively from ports at Townsville and Karumba. To date, data from 990 cattle from 26 north

Queensland properties is contributing to the information pool.

Cattle enter the project at approximately 200kg live weight and are grown out to approximately 350 kg before being sold into an overseas feedlot. Supplementation strategies to counter seasonal conditions or to reduce the range in liveweight in any one mob, are investigated.

At the individual participant level, feedback increases knowledge of cattle performance and suitability to the trade. The problems of between property comparisons of cattle performance due to the implications of gut fill, property of origin, animal age and age at weaning have been highlighted.

Monitoring liveweight change during transport (Table 1) places weight change information into the public arena.

Table 1. Weight changes of cattle (Draft 1) Toorak Research Station to Mother Earth Feedlot, Philippines.

	Date	kg	Comment
Initial Weight	26/11/97	194 (fasted)	
Final Weight	17/09/98	349 (full) 335 (4% est. fast)	155kg (293 days) 0.48 kg per day
Wharf Weight Karumba	18/09/98	327	8.1% transport loss
Wharf Weight Philippines	30/09/98	332	5 kg gain 0.25% loss
Slaughter Liveweight	Various dates. Av 61 days in lot	390	58 kg (61 days) 0.95 kg per day
Carcase Weight		210	

This information is necessary to make valid marketing comparisons. It is also useful information to assist in the development of best practice transport and weighing procedures to improve animal welfare practices for the trade.

Feedback from the Asian feedlot not only helps Queensland participants with on property production decisions but is also useful information for the overseas feedlot operator. Additionally, it identifies and presents an opportunity to market Queensland technology.

This project has developed stronger relationships between producers, cattle buyers, exporters and overseas feedlot operators. It has paved the way to undertake further collaborative research requiring cooperation between these sectors.

The focus of a second project, Global Beef Link, is to promote the Queensland Beef Industry to overseas customers. The aim is to encourage overseas importers, government representatives and RD&E agents to visit Queensland, and to experience its production, processing and marketing systems.

This project also facilitates marketplace missions to customer countries so that Queensland producers have the opportunity to advance their understanding of the marketplace, its requirements and the customs and culture of the importing country. Successful missions, involving representatives from the

producer, selling agents, transport, processing, financial and government sectors, have been completed to Philippines, Indonesia, Brunei, China, Argentina, Brazil, Malaysia, Vietnam and Egypt. Reciprocal tours have also been arranged so that overseas representatives have the opportunity to become familiar with the practicalities of the Queensland production, transport and processing systems.

These projects are not innovative research. They are examples of RD&E providing a forum to bring a disparate industry together. By incorporating experiential learning principals (Kolb, D.A. 1984), they encourage communication and participation between the supply, distribution and demand sectors. At the same time they identify strengths and weaknesses specific to the live cattle and processed beef trade.

CONCLUSIONS

Overseas consumers of live export cattle are just as demanding as Australian consumers. They expect to purchase animals that have been well cared for, both in Australia, and during the sea voyage. There is an expectation that these animals will grow quickly in feedlot situations, in tropical environments, using crop by products as the main nutritional source.

Existing and potential customers will demand quality assurance (QA) programs that guarantee the supply of healthy food, free of disease

and chemical residues. These QA programs will enhance economic trading relationships that are built on trust, reliability and product consistency.

The increasing globalisation of the cattle and beef product markets places Australia, and especially northern Australia, in a vulnerable position. To remain competitive and sustainable in a global economy all sectors of this food chain must have effective dialogue and increased cooperation.

There are many players in the export trade. The major ones are the cattle producer, the buyer/exporter, the importer and the researcher / development (extension) officer. There should be awareness that management and structural changes in one sector will impact on other sectors, and that rationalisation and change are necessary.

Strong linkages between the various sectors will maximise market share and contribute towards a fair sharing of industry profits. To maintain a preferred supplier status there will need to be increased effort into research and market development.

A shift in community support from a production focus to a consumer focus will force the formation of strategic alliances. Alliances may appear threatening as they reduce the power and control of the individual, but for those who recognise their advantages, and adapt to change, there will be significant long-term rewards.

There needs to be clarification about the types of alliances developed. While major benefits can be demonstrated by total integration through joint venture projects, there are often political, cultural, social and economic reasons for their failure or their comparatively short-term success to date. Vertical cooperation offers significant benefits to the northern industry without subjecting it to the economic and social risks of total integration.

Cooperation is not just supplying a specified product, on time, with adherence to transport and health protocols. It implies a deeper understanding of the market and of the product that the market requires. It implies assistance to develop the market through training programs, infrastructure development, and the formation of appropriate trading partnerships. It means a requirement to change the product to suit changing consumer demand. Pre-empting these changes will ensure long term sustainability of markets and market alliances.

Most importantly, it implies that attention to after sales service is vital. The northern industry must become aware of the strengths and weaknesses of the available markets and of the product that it can supply. Active promotion of product strengths is the means by which the northern industry will secure repeat sales and new markets, independent of whether these markets require live cattle, processed beef or by product.

Governments need to be aware of, and be supportive of, the impact of market globalisation. Globalisation is generating community concerns and changing community demands. It requires that governments review the capacity and efficiency of current infrastructure. Rural population decline,

changing employment opportunities and the demands of multinational companies are just a few of the factors that will influence government acceptance of its role in helping to resolve the many challenges that the northern beef industry has to face.

The northern beef industry has the ability to further improve its position in the international market.

The growing export trade in live cattle, which has bought much needed development and stability to the north Australian beef industry, should not be jeopardised by current infrastructure rationalisation of the Australian processing industry. A higher level of national economic benefit will accrue if the northern industry has access to both a strong processing sector and a strong live cattle export sector.

If the rationalisation of the infrastructure for both sectors was complete, the north Australian beef industry would be better placed to concentrate on the uptake of appropriate technologies and tapping into the synergy that can only be obtained when industry sectors unite.

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