NEW WAYS TO MAXIMISE RETURNS FROM QUEENSLAND BEEF

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Queensland produced 542 753 tonnes of beef (42% of Australia's production) in the 1983/84 financial year of which 69% was exported - mainly to the USA and Japan. The remainder went to various domestic markets, most of which require a quality product. Prices are largely determined by the demands of the main importing countries. North Queensland almost exclusively supplies export markets while central and southern Queensland supply both export and local markets. Feedlot beef for the local market comes mainly from the south-east.

The reduced dependence from the USA manufacturing beef markets to other overseas markets and domestic markets represents a change in production from manufacturing to younger high quality beef. Now, much of production, and payment to producers, is defined objectively 'in terms of carcass weight, fat thickness, sex and age rather than in subjective quality grades. The two premium Japanese markets are for carcasses of more than 275 kg and 320 kg, with fat specifications for cuts of 8 to 12 mm. The premium USA market requires the same weight but not the same fat specifications as Japan. Preferred domestic carcasses weigh 160 to 210 kg with less than IO mm of (rump) fat, from animals with fewer than 4 teeth. Surplus beef cuts from export carcasses are directed to the domestic market.

These and other recent market changes have provided the impetus for producers to sell younger cattle and for industry to implement better marketing strategies. Therefore, it is timely to draw together some of the most recent advances in tropical pasture and animal science, marketing options and road transportation, as well as to highlight likely future improvements because only an intergrated approach will maximize returns from Queensland beef.

BETTER MANAGEMENT OF QUEENSLAND NATIVE PASTURES

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Native pasture lands (151 m ha) support industries which contribute around $1000 million annually to the Queensland economy (Lloyd and Burrows in press). Approximately 97% of the State's grazing land consists of unimproved native pastures, which account for c. 75% of the annual beef production.

Native pasture productivity The mean liveweight production per annum from native pastures is about 100 kg/head, although the range is very large in keeping with fluctuating seasonal conditions. There is a paucity of reliable information on the fertility of cattle, although in a large survey by the Bureau of Agricultural Economics (1974), calving rates ranged from 67% in the south-east to 40% in the Cape York Peninsula-Carpentaria Gulf regions for 1968-69 to 1970-71. Native pasture productivity can be improved by timber clearing, fertilizer, stocking rate, burning and supplements.

Timber clearing Queensland studies show a negative curvilinear relationship between pasture yield and some measure of tree biomass (Walker et al. 1972; Scanlan 1984). In subtropical areas clearing of trees can double both animal carrying capacity and per hectare production, and improve cattle growth rates by 24% (Tothill 1982). However the response has not been consistent. In the

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tropics, Gillard (1979) found in below average years that tree killing significantly increased both pasture and animal production, whereas in wet years herbage production increased without improving animal production.

While the main effect of tree clearing is increased carrying capacity, there are potential hazards such as vegetation instability (e.g. woody regrowth) and soil erosion. Burrows et al. (in press) have provided some management principles for developing eucalypt communities. Tree thinning is not recommended north of about 20oS latitude since productivity is less affected by trees and ecosystems are more fragile.

Fertilizer application The few studies carried out on fertilizer applications to native pastures (Norman 1966) indicate that although increases in yield may result, the low inherent productivity of native species makes them an inefficient medium for improving the nutrition of the grazing animal (Winks 1984). However, Shaw and 't Mannetje (1970) reported a 20% increase in liveweight gain by steers when spear grass in central Queensland was fertilized heavily with superphosphate and stocked at a higher stocking rate than the control. The reason for this improvement is not clear. A more economical approach would seem to be either to supply the nutrients direct as supplements or to apply the fertilizer in the presence of an introduced legume which will improve both the N status and digestibility of the diet.

Stocking rate Few long term stocking rate studies have been done on Queensland native pastures. Shaw and 't Mannetje (1970) found after seven years that mean annual liveweight gains were 43% less (47 vs 83 kg/head) at their high stocking rate compared to the light stocking rate (equivalent to the district average). The depression in performance was greatest in drought years. There was a concurrent deleterious change in botanical composition and a severe decrease in vegetation cover. However, in a long-term grazing study at "Swan's Lagoon", north Queensland, liveweight changes were similar for paddocks grazed at 0.25 and 0.42 beasts/ha (L. Winks, S. McLennan unpub. data).

Most damage to native pastures occurs through excessive grazing in the early wet season (Mott 1985; W. Scattini pers. comm.) when plants are rebuilding reserves and setting seed. Better adapted cattle, supplementation with urea/molasses and over-sowing with legumes increase grazing pressure and enhance drought survival for cattle. The increased grazing pressure in Queensland's native pastures could have a profound effect on pasture quality and land stability in the future. It is significant that native pastures become more sensitive to grazing from south'to north.

Fire A recent review (Anderson et al. in press) highlights the use of fire as a management tool for native pastures, by graziers to manipulate pasture quality. In a short-term experiment in south-east Queensland, Ash et al. (1982) recorded an 8 kg advantage to burning and Tothill (1983) measured a small variable annual liveweight response (mean 12%). In north Queensland, live weight did not increase when the pasture was burnt in either the early wet or late wet season (S. McLennan unpub. data). By contrast in dry years, feeding molasses/urea supplements on unburnt pasture during the dry season increased liveweight gains. It seems more appropriate to utilize the standing pasture in conjunction with supplements rather than increase the drought risk by burning.

Burning is a valuable aid in fire hazard reduction and may be beneficial in maintaining pasture composition, particularly in eucalypt communities receiving more than 650 mm annual rainfall, south of 20o latitude (Anderson et al. in press). In areas receiving less than 650 mm of rainfall, fire is

probably unnecessary except as an opportunistic tool to be used following episodic establishment of woody seedlings.

Supplements The capacity of dry season urea supplements to reduce liveweight losses and increase survival rates of cattle are well known (Winks 1984). These supplements increase digestible energy intake by stimulating intake of the old dry pasture. Considerably less research has been done on production feeding particularly on target groups of animals to achieve a particular goal - such as increased pregnancy rates or higher carcass weights at younger ages.

The combination of adapted cattle better able to survive the environmental extremes and supplements to overcome dietary deficiences of pastures, has increased stock numbers and grazing pressure on many north Queensland pastures over the past two decades to such an extent that degradation is occurring (A. Pressland pers. comm.). It is clear that property management needs to be responsive to the effects of new technologies if the benefits are to be reaped without degrading the native pasture.

Future developments It appears unlikely that substantial improvements in animal performance will result from the options discussed above. On the contrary, a serious decline in production could result in the long term if native pastures are allowed to deteriorate through mismanagement. Ecological management must partner economics and the natural resource must be maintained while optimizing animal production. Major improvement in animal production in the future lies in the development and employment of new supplementation strategies and the augmentation of native pastures with introduced legumes.

AUGMENTING NATIVE PASTURES WITH STYLOSANTHES

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Oversowing native pastures with stylo has great potential to improve beef cattle nutrition and increase stocking rates in sub-coastal Queensland. Better nutrition will lead to lower death rates, higher growth and reproductive rates and earlier turnoff. Concurrently, higher stocking rates will lead to better and easier management. Pressures on property owners towards pasture development include extension of cash cropping into better pasture lands, low availability and high cost of labour, market trends favouring younger, heavier cattle, and the need for better cattle control to facilitate proper husbandry and to meet the requirements of the disease eradication campaigns.

During the past ten years, several new pasture legumes from the genus Stylosanthes have become available. Because these new stylos are quite different in agronomic and managerial aspects from Townsville stylo, and because the latter is now unproductive or absent due to anthracnose disease, in much. of its former range, this paper concentrates on newer stylos, Stylosanthes quianensis (Graham and fine stem stylo), S. hamata (cv. Verano) and S. scabra (cw Seca and Fitzroy) in the sub-humid tropics and sub-tropics.

Applicability Commercial experience will finally decide the environmental and managerial limits of pastures based on stylo. In the meantime, guidelines involving rainfall, temperature and soil texture have been suggested by Miller et al. (in press). The lower rainfall limit suggested is 600 mm average (corresponding to about 14 pasture growth weeks [McCown 1982]) although pastures are known to survive occasional years with much lower rainfall. Fine stem stylo is restricted to coarse-textured granitic soils. The other stylos

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persist and spread best on sandy-surfaced soils but have been successful on most soils except clays. The distribution of **Seca** and **Verano** is restricted by temperature, **Seca** being late flowering and therefore susceptible to frost before seeding, while **Verano** seed set is poor at altitudes above about 600 m, probably because of low night temperatures (Argel and **Humphreys** 1983).

Productivity There is no doubting the animal production potential of **Verano** or fine stem **stylo** pastures on soils of reasonable phosphorus status. Table 1 lists results from grazing experiments where native pasture productivity was measured or can be estimated. All **oversown** pastures listed were fertilized with superphosphate. Stocking rates on fertilized **stylo** pastures in these experiments were at least 10 times normal native pasture stocking rates in the northern cases and at least twice normal in the southern cases.

Apart from the Northern Territory work, these productivity measurements have been made on heavily fertilized soils. Unfertilized **stylo** pastures on soils of low phosphorus or sulphur status have generally supported higher stocking rates than adjacent native pasture but have not increased liveweight gains (Winks et **al.** 1974; Miller et al. 1982; **Gillard** and Winter 1984; Holmes and **McKeague,** unpub. data), The quantity of fertilizer applied to pasture has clear biological and economic significance and has possible implications in pasture development and management strategies. Accordingly, a good deal of current research is concentrated on the effects of low fertilizer rates (where the response is steepest) and on the possible substitution of direct mineral supplementation to cattle for fertilizer. Grazing experiments incorporating these factors are in progress at Katherine (CSIRO), Mareeba (QDPI), Townsville (CSIRO) and Ayr (QDPI). Results from each of these should appear soon.

Table 1 Productivity comparisons of native and **oversown** pasture

Site	Cultivar	Annual steer livewt gain (kg/head)		Reference
		Native	Oversown	
Katherine	Seca	40	94	Gillard and
Katherine	Verano	40	80	Winter 1984
Wrotham P.	Verano	80a	150	Gillard 1979
Kangaroo H.	Verano	60b	165	Gillard et al. 1980
Mareeba	Ver.+ Seca	20	128	Holmes (unpub. data)
Mareeba	Ver.+ Seca	17	86	Miller (unpub. data)
Gayndah	Fine stem	62	187	Bowen & Rickert 1979

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In the second year of a grazing experiment near Mareeba, in northern Queensland, we have recorded linear liveweight gain responses to fertilizer application between nil and 250 kg/ha. However, the amount of sty10 now present in these **oversown** native pastures is not a linear function of fertilizer application, suggesting that across fertilizer rates, the interaction of legume growth and grazing preference for legume may produce unexpected effects.

Management and economics Oversowing sty10 into native pasture usually involves no more preparation than burning standing grass at the end of the dry season and sowing immediately afterwards. Poor establishment has sometimes been reported on moderately fertile soils where native grass competition is vigorous. However, even where competition is not severe, perennial stylos,

particularly S. scabra, make poor growth in the first year. Some reported establishment failures have become good pastures with no further treatment.

Where more than one cultivar is likely to be adapted, it is now normal practice to sow mixtures to take advantage of different microhabitats, to reduce the risk of anthracnose and to allow more flexibility in management. Where soil available phosphorus is below 10 ppm, single superphosphate at 100 kg/ha is normally applied. Current research is directed towards refining rate and frequency of fertilizer for different soils and management situations.

Utilisation of small areas of sty10 pasture in conjunction with larger areas of native pasture, a necessity on extensive properties, has been achieved in practice by grazing sty10 pastures with selected stock classes. Commercially this has usually meant sale cattle, but weaners, maiden heifers and selected breeding stock have all been used.

Common grazing of small areas of stylo and large areas of native pasture is a concept with many variables but few practitioners. Our current recommendation of 0.5 ha of stylo per animal(together with 5 to 10 ha of native pasture) for such a system is based on the data of Winks (unpublished), Hunter et al. (1976), Gardener (1980) and Gillard et al. (1980) which imply an intake of sty10 limited by dry season moulding and deterioration to less than 1000 kg/head. However, we are accumulating evidence to suggest that in drier environments or when the pasture is dominated by the evergreen S. scrabra, stylo, intake is much higher during the dry season. Confirmation of this evidence would require an increase in the allowance of stylo per animal.

Where freight costs are not excessive, and with current beef prices, the animal production response necessary for economic returns to pasture development are not large, even ignoring the intangible benefits such as reduced mustering costs. However, perceived risks of pasture development on a scale sufficient to influence performance of large herds seems to steer many producers towards alternative forms of investment such as additional land, stock transport and the like.

Apart from the risk of insufficient productivity from pasture failure, a risk minimized in the economic sense by this type of low-input oversowing, two other risks have been faced by producers over the past ten years. Reduced beef prices can be and have been countered by withholding fertilizer for a number of years without prejudicing pasture survival (McKeague et al. in press) and with generally only small effects on productivity. The other main risk is degradation of native pasture and weed invasion, especially in the tropics. Moderate stocking rates, oversowing only part of an area, rotational fertilizer application and introduction of exotic, grazing-tolerant grasses are all being investigated as means of countering this risk (McKeague et al. in press).

Whatever the potential profitability and risks associated with such property development, the alternatives in the more extensive beef areas are even less attractive. Mustering costs rise exponentially with paddock size (T. McCosker, pers. comm.) and fencing and watering can cost up to $50/hd at stocking rates of 10 ha/hd, the latter adding some 12c/kg liveweight to the cost of sale cattle. Further, herd build-up following culling for disease eradication will be impossibly slow without improving in nutrition of the breeding herd (G. Hosegood, unpub. data). Indications of the increasing extent of producer adoption of stylo pastures are given by McKeague et al. (in press).

TECHNOLOGY AND MANAGEMENT PRACTICES TO MEET CHANGING MARKETS

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The challenge for the Queensland beef industry now and in the future is to adapt to changing market needs and cope with cost:price pressures. During the past 30 years research scientists, extension officers and innovative producers have developed many techniques to improve herd productivity and efficiency. However, adoption of new technology by industry has often been slow and sporadic. Additionally, the beef industry has been slow to realize that customers are entitled to, and will, demand the product of their choice. Improved technological and managerial practices have an important role in meeting the challenges for the future. It must be realised, however, a combined effort is needed by all sectors of the industry - producers, transporters, processors, research scientists and extension officers.

Nutrition Live weights of 520 to 600 kg and 300 to 400 kg are needed to produce carcasses that attract premium prices for the export and domestic markets, respectively. There are indications that future preferred ages at slaughter, and hence premium prices, for these markets may be less than 3.5 years and 18 months, respectively. Annual post weaning liveweight gains of 110 kg to 170 kg and 150 to 230 kg for the export and domestic markets, respectively, are required to achieve these goals.

Liveweight gains from native pastures vary from 30 to 140 kg annually, with the lowest and most variable gains in the harsher environments of western and northern Queensland. Pasture legumes have the potential to increase annual liveweight gains to c. 160 kg in large areas of the state (see Miller et al. in this contract), however in other areas and in years of below average rainfall use of supplements would be needed to achieve this level of liveweight gain.

Annual liveweight gains from improved pastures and more productive native pastures in southern and central Queensland range from 140 to 220 kg (Rudder and Seifert 1982). In these regions summer and winter grazing crops and grain can be used to compliment pasture production. Therefore, producers are in a better position to produce premium priced carcasses than their colleagues in the harsher western and northern regions. Although the possibility of technological developments to place northern producers in a similar position cannot be discarded, the economic and social consequences of further specialization into breeding or fattening regions should be explored.

It is widely recognised that reproductive rates of Queensland breeding herds are low (c. 60%). Nutrition is the major factor that determines survival and reproductive rates in most breeding herds. In central and southern Queensland, technology is available to maintain relatively high reproductive rates (Rudder and Seifert 1982). However, in the harsher environments of the State further research is needed to develop commercially viable technolgy to improve reproduction rates, expecially in the large and extensively managed herds. Molasses based supplements can be used to ensure high survival rates during drought (Wythes and Ernst 1984), however, implementation in extensive herds is a problem that needs attention. There is a need to assess the contributions of strategic weaning, joining period and supplementation to determine a suitable breeder management system for extensive and semi-extensively managed herds in the harsher environmental regions of the state. This technology will be vitally important if market pressures cause reduced age

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at slaughter and specialization. It could be expected that these herds would be required to supply young stores for growing and fattening regions and as breeders become a larger proportion of the herd, survival and reproductive rates have a greater influence on herd income.

Breeding Zebu crossbred cattle are more productive than British breeds in most of Queensland and now account for 65% of Queensland's herd (see Durand et al 1984). Taylor et al. (1980) showed that the increased productivity of Zebu crossbred herds was due to reduced age at sale, and increased growth and survival rates. Reasons for their superior performance include resistance to ecto and endo parasites, and tolerance to high ambient temperatures (Turner 1975). Current information indicates that 50% Bos inducus 50% Bos taurus is the "best bet" combination for most Queensland environments, however the role of high grade Bos indicus needs to be defined, especially in the wet tropics.

The common belief that Zebu crossbred cattle have more bruising and produce more dark cutting carcasses and tougher meat than British breeds is not substantiated (Tyler et al. 1982). While shear tests for meat tenderness usually favour British breed cattle, the differences are too small to be detected by consumer taste panels (R. Shorthose pers. comm.). There is a need, however, to assess the meat quality of straight Bos indicus cattle.

The role of large European breeds is not well understood. Preliminary information under benign environmental conditions indicates that growth rates will be superior to early maturing British breed and Zebu crossbreds, but carcass acceptability will be inferior due to a lack of fat cover, while a high incidence of dystocia is also a significant disadvantage (C. Esdale pers. comm.). Possibly their role is limited to infusion, of c.25% content, into existing early maturing British and Zebu crossbred herds.

Within breed selection programmes should concentrate on those traits that are economically important and moderately to highly heritable, e.g. live weight for age, ecto- and endo-parasite resistance. Industry can no longer support selection based on asthetic values (e.g. pedigree, colour and breed society standards of excellance) and only those bulls with a live weight for age ratio of > 100 should be used. Unfortunately buyers persist in paying high prices for bulls with ratios of less than 100 (P. Venamore unpub. data) therefore, there is a need to generate extension material and case studies to support a more rational approach to objective selection. However, the commercial importance of selection for adaptive traits should be investigated.

Management Labour is one of the largest costs on a beef property and can be reduced by strategically placed laneways for mustering, planned subdivision, and well designed and maintained yards. Dehorning of calves and sound education of all weaners reduces bruising and stress. Growth promotants usually increase liveweight gains by 10 to 20% during the last 100 to 200 days presale (Venamore et al. 1982; Hodge et al. 1983) and are cost effective.

Planning sales is probably the most important and often the most neglected aspect of herd profitability. Apart from marketing and transport aspects (see Round and Wilcock and Lapworth in this contract), more attention needs to be paid to how cattle are handled after they leave the farm. To maximize carcass weight, the time from mustering to slaughter should be as short as practical and cattle should have access to water at saleyards (wet curfews) and until slaughter at abattoirs (Wythes and Shorthose 1984). To maximize meat quality, cattle should have adequate rest at abattoirs and not be stressed prior to slaughter (Wythes and Shorthose 1984). Effective electrical stimulation of carcasses enhances meat tenderness, but will not reverse adverse effects.

Future developments Profitable beef production in the late 1980's and beyond will depend on combining all applicable technology. Producers should take a more active role to establish areas of weakness in their operation and determine appropriate steps to correct these weaknesses. Research must be directed towards potentially high commercial return areas. Research and extension officers should take an aggressive approach to ensure results of research are disseminated promptly.

MODERN MARKETING OF SLAUGHTER CATTLE

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Radically new systems of marketing cattle are currently under trial throughout Australia. This interest has arisen because the present systems were inadequate in one or more important aspects. These include maximizing competition, providing sufficient product description for the supply of cattle suited to particular markets and providing incentive to minimize carcass quality and quantity losses.

The most common method of selling cattle involves offering cattle to the highest bidder - usually at a saleyard. Rivalry between saleyards has resulted in an abundance of promotional hyperbole from agents and saleyard operators, but little information on market requirements. The independent Livestock Market Reporting Service (LMRS) provides a comprehensive coverage of market activity, but this is sometimes difficult to interpret. Factors such as dressing percentage (Hall 1982; Wythes and Shorthose 1984), mixed ages and mixed fat scores in the same sale pen and a descriptive language which may not always be consistent with local jargon, all cloud the essential market signals.

Trying to get meaningful comment from meat processors is equally difficult. Processors are reluctant to specify clearly their requirements and continue, as best they can, to match the available cattle to market outlets. Telling a producer that his cattle are something less than ideal is seen as commercial suicide.

Many producers find "marketing" a difficult exercise and opt for saleyard selling, thus the majority of slaughter cattle in the State are sold through saleyards. The percentage for the southern half of the State is very high, but the reverse is the case in the north where 75 to 80% of cattle are sold direct to meatworks on carcass weight. Of these vendors, 65% obtain nil or only one price quote for the transaction (R.Beasley pers.comm).

Direct v Indirect selling The main advantage in selling directly to a processor is that cattle handling and the time interval from mustering to slaughter are minimized. On the other hand there is little competition (only one third of vendors obtain two or more price quotes). For direct selling, a thorough understanding of dressing procedures at each meatworks is needed for valid price comparisons. Payment is on hot carcass weight and in some instances modified by a subjective grade. Traditionally, price quotes cover a wide range of carcass weights and fatnesses.

Saleyard selling allows widespread competition, however prices for lots are averaged without regard to the yield of saleable meat of individual animals. Since payment is on liveweight, buyers estimate dressing percentage

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to obtain carcass value. However, there is a strong tendency for cattle with low dressing percentages to be overestimated and vice versa (Hall 1982), causing pricing inefficiency. The fatter cattle continue to bring the most money, yet they rarely yield the most saleable beef. Strongest price competition is at centres with frequent large yardings. The system is labour intensive and involves extensive handling of cattle. This increases the risks of bruising and tough meat, as well as extending the time from mustering to slaughter thereby lowering carcass weight (Wythes and Shorthose 1984). However, saleyards do cater for small and/or mixed lines of cattle.

New methods of direct selling The new marketing systems for slaughter cattle are sale by classification and sale by description.

(i) Classification Classification trading means that prices are determined on grid patterns of carcass weight by fat thickness for particular sex and age (dentition) categories. All parameters are measured objectively. The value of each carcass is determined individually and in relation to the expected yield of saleable meat.

Classification price schedules allow processors to specify their preferences clearly in money terms. The premium prices for various combinations of carcass attributes depend on the markets currently being supplied and will change from time to time.

In the short term, producers may improve their returns by supplying as many cattle as possible that attract premium prices. In the longer term, they may be able to alter management practices to produce a higher proportion of their turnoff to meet these criteria.

Classification trading encompasses the main advantages of direct selling in terms of cattle handling and time from mustering to slaughter. However price competition is still restricted unless sellers actively make a number of valid price quotes.

(ii) Sale by description This concept substitutes a description of the offering for the physical presence of the cattle. This description may be supplied by the producer personally or through the services of a professional assessor. Buyer attendance can also be eliminated through the use of an electronic communication network. Cattle remain on the property while bidding and negotiations take place and then travel directly to the abattoir.

The main sale by description systems operating in Queensland are QUEST (Queensland Electronic Stock Trading) and NELCM (New England Livestock Computer Marketing). Both are still in a developmental state and adoption is slow. NELCM operates in southern Queensland, although now expanding into central Queensland. QUEST operated mainly in central and northern Queensland. For QUEST, final pricing is based on actual carcass attributes - hot carcass weight, rump fat depth, dentition and bruising. The specific bruising provision enables buyers to disregard the average losses they would normally consider in calculating their price limits. This allows buyers to pay a premium for non-bruised cattle. For NELCM, pricing is based on a live animal assessment, so the vendor knows the final sale price before trucking his cattle.

With QUEST, producers have found that processors are prepared to pay maximum prices for the carcass attributes that are most suited to their operation. The price schedule gives the producer the opportunity to ensure that at delivery, he sends only the cattle which the processor prefers. With

NELCM, buyers have found the professional assessment approach allows them to plan slaughter schedules with confidence. For wholesalers using a number of different service abattoirs, the system provides good flexibility and very low buying costs. Producers have discovered that both systems are better alternatives to the traditional selling methods.

Industry demand for innovative changes in selling methods has resulted in a considerable amount of industry money being spent to establish a national electronic marketing network. Through the Australian Meat and Livestock Corporation (AMLC), NELCM, QUEST and other associated developments are being drawn together as a single national system under the acronym CALM (Computer Aided Livestock Marketing).

The AMLC is hopeful that this initiative will lead to a major change in selling practices. However, acceptance and adoption of new systems is not necessarily guaranteed. Processors have demonstrated their willingness to adopt new buying methods, such as QUEST and NELCM, but producers have shown a reluctance to change. Even though the traditional methods have serious deficiencies, they still represent a wide range of easy options.

It must be demonstrated to producers, that the new selling systems offer greater benefits than the traditional methods. To help producers identify the benefits, there must firstly be standardisation of the market trading and reporting language, and then a promotion and extension campaign on a continuing basis. Through these efforts, it is to be hoped that the benefits of classification and sale by description will accrue to an increasing number of people, and the industry in general.

ADVANCES IN ROAD TRANSPORTATION

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In Queensland, most cattle travel solely by road from farm to the saleyard or abattoir. They are generally carried by livestock transport specialists using multi-double-deck (DD) stockcrates. Single deck stock crates on semi-trailers and body trucks are mostly restricted to short haul areas of south eastern Queensland. Transport by the owners of stock is common only in intensive areas. Road journeys can be longer than 1200 km from western Queensland. There is a definite seasonal movement of cattle in western and northern areas, beginning about March and ceasing by October, because it is too hot to muster and handle cattle during summer months. Despite higher freight costs, many producers choose road transport instead of rail. This method is quicker and more convenient, trucks are easily ordered or cancelled, stock are handled less and arrive in better condition. Any cattle unable to travel are left on the property rather than at the railhead.

Stockcrates Livestock transporters are now demanding stockcrates that will minimise bruising and other stresses experienced by cattle during transport. In November 1983 the Livestock Transporters Association of Queensland (LTAQ) adopted a set of minimum design standards for stockcrates. As far as is known, this is the first time in the world that such a step has been taken by a livestock industry group. These advances follow a greater recognition of the importance of improving the welfare of cattle while in their care.

Minimum design standards should result in better transport conditions for cattle by reducing bruising and stress. They should also reduce maintenance

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costs for stockcrates and lower freight rates. The standards concentrate on door widths (minimum 900 mm), low profile trailer floor height (standard 1170 mm), recessing of gate catches, sheeting sides and removing any other obstacles which may damage animals in transit. Sheeting helps to prevent animals becoming stressed by influences outside the vehicle and wind chill.

In the past, stockcrates were manufactured with little regard to anti-bruising features, for example bows were on the inside of the crate giving a smooth exterior surface rather than the reverse to give smooth interior surface. Preferred stockcrates incorporating anti-bruising features can be sheeted or slatted. The sheeted steel crate is the most popular because it is lighter, quicker and easier to build, requires less maintenance and will withstand rollovers better. Research is continuing to develop stockcrates which will improve the travelling environment for cattle.

Stockcrates on trucks used by property owners and some of the smaller contractors are mostly unsatisfactory. Improvements will take a long time because extension methods are unlikely to generate 'quick responses.

Volume loading Livestock transporters were forced to introduce multi-deck stockcrates to be more cost efficient. However, many cattle double deck transport units then exceeded the legal gross weight and were heavily fined. Industry faced even higher freight rates or a return to single deck transport. Instead the LTAQ, producer and processor organisations and the Main Roads Department agreed to the introduction of volume loading, i.e. loading to the capacity of a stockcrate of specified dimensions.

Volume loading is a new world concept and has been operating in Queensland for nearly three years. To qualify, a Queensland livestock vehicles must conform to Main Roads Department specifications for gross vehicle mass, stockcrate dimensions, brakes, tyres, suspension and trailer stability before being issued with a weighing exemption certificate. Volume loading has eliminated overweight fines, contained transport costs and reversed a trend back towards single deck transport.

Double deck loading ramps (DDLR) The widespread adoption of DD transport in Australia has necessitated the building of DDLR's. However it is only in Queensland that saleyard operators and meat processors have made a concerted effort to do so, with more than 25 DDLR's now at major saleyards and meatworks as well as on several larger northern properties. They greatly reduce the time, effort and handling needed to load and unload DD transports, and the risk of bruising. The DDLR is designed to fit low profile trailers. DDLR's need to be constructed at all major saleyards, railheads and meatworks, as well as on properties transporting more than 2000 head each year. It is imperative that industry draft minimum design standards for DDLR's.

Livestock Transporters Association The LTAQ is a very active organisation and members control over 80% of road transport deck space in Queensland. They have lobbied successfully for the introduction of volume loading and rescinding exclusive rail contracts with meatworks. The LTAQ is keenly aware of animal welfare issues and has actively co-operated in research to reduce bruising and stress.

The LTAQ and cattlemen are striving to start a training scheme for livestock drivers to improve the welfare of livestock during transport. The curriculum should cover driving and mechanical skills, livestock handling and welfare, first aid and a sound knowledge of relevant regulations.

CONCLUSIONS

J.R. WYTHES and T.H. RUDDER

The greatest challenges confronting the Queensland beef industry are to meet customers' preferences for beef, cope with the continuing cost:price squeeze and effectively use and maintain the State's natural resources under often very unreliable price and rainfall regimes. To meet these challenges succesfully, industry must objectively evaluate advances in science and technology, adopting those innovations that are appropriate to their enterprise. Researchers and extension advisers can assist by ensuring that their work is relevent to commercial needs and that research results are promptly made available to the industry.

Improvements to nutritional levels can be effected through judicious timber treatment, burning, improved grazing management, introduction of improved legumes and grasses, plus protein and mineral supplementation of cattle. Maintenance of pasture productivity is an important aspect that is often neglected by producers and extension advisers. Increased returns from beef can be achieved by the use of environmentally adapted cattle. However, the full benefits will only accrue by objectively selecting superior breeding stock to increase meat production. Adoption of new technology should enable producers to improve reproductive performance, reduce mortalities and increase growth rates so that more cattle qualify for the higher priced markets.

Drought is a major problem, but drought policies have often concentrated on herd survival rather than on mitigating long term environmental effects. The land degradation that results from drought or general land mismanagement can seriously reduce future herd production. A broader approach to both issues needs to be explored.

The importance of devoting greater attention to the transport of cattle from property to abattoir cannot be stressed too strongly. Losses in carcass weight, bruising and meat quality must be minimised. Recent advances include the introduction of volume loading of cattle, adoption of minimum design standards for stockcrates and building of double decker loading ramps.

Producer and processor demands for innovative changes to current marketing systems follow dissatisfaction with present levels of competition, product description and market reporting. There is also a lack of price incentive to maximise meat quality. Radical new systems of carcass classification and sale by description are currently being tested. Benefits can accrue to all sectors of industry from their adoption and further development.

Industry can no longer afford to be fragmented if it is to prosper during the 1980's and beyond. All sectors - production, transport, processing, research and extension - must collectively tackle current problems to improve productivity and ensure the demands of beef consumers are met. It is to be hoped that all concerned have the courage and conviction to implement the changes necessary to maximise returns from beef in the future.

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