

CONTRACT REVIEW

INNOVATION AND RESPONSIVENESS WILL BE THE HALLMARKS OF THE TROPICAL BEEF INDUSTRY

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INTRODUCTION

In the mid-1990s the tropical beef industry is characterised by the following conditions:

- generally low soil fertility
- extremely variable rainfall
- unpredictable prices and being a price “taker” not a price “setter”
- owned and managed by an aging and discouraged (after 5 years of drought) group of people
- low return on invested capital
- declining standards of living
- run-down infrastructure (fences, yards, houses, transport)
- reluctant to adopt new technologies because of lack of money, poor education and risk management skills, too many natural risks
- widespread land degradation with insufficient cash and resources to reverse the trend
- lack of cooperation between industry sectors especially processors and producers
- confusing signals from government policies and actions.

In the next decade or so the tropical beef industry will address these issues and, in so doing, it will become considerably more innovative and responsive than it is today. The purpose of this paper is to indicate why and how the tropical beef industry will exhibit a new responsiveness to the challenges of the 21st century. In this context innovation is the ability to be the first to develop and implement a new practice and responsiveness is the speed with which a positive reaction occurs to a stimulus. The paper is provocative rather than analytical and describes scenarios which, in most cases, are based on present trends.

In the 21st century the northern beef industry will be able to meet a greater range of markets for meat and live cattle because of improvements in genotype, the control of parasites in ways acceptable to the environment and consumer, better feeding technologies, and improved management and financial planning. Markets in Asia will be growing for a range of meat products. These will include markets for ground lean beef including hamburgers, pressed meat products and western-style meat cuts, eg steaks and roasts. While some products will be chilled or frozen to meet their markets, others will be dried and capable of being reconstituted for soups and other Asian-style dishes. The advent of these market opportunities, and our access to them, will demand an innovative outlook and the ability to respond positively to competition. Other countries will compete for a share of the market for specific products, and interest groups within Australia will compete for the use of the land resource for enterprises other than beef production.

The greatest threat to the industry will be the failure to adopt sustainable management practices which may occur because of a lack of understanding of the principles involved or for a variety of other reasons. If sustainable practices are not implemented, the trend towards various states of degradation now evident in our rangelands, with increases in undesirable pasture species, soil erosion and in native and exotic woody “weeds”, will continue.

In the past, technology has been the traditional way to enhance the competitive edge, but this alone does not necessarily lead to innovation. Innovation means more than the application of new technology; it includes new ways of doing business at a variety of levels, such as the negotiation of contracts, and marketing and finance methods. Success also depends on enlightened and innovative approaches by

government to send correct signals to, and elicit proper responses from, those involved. Thus government attitudes and policies to tax, pricing structures, industrial relations and other social issues such as remote educational and health systems are of central importance.

INDUSTRY STRUCTURES AND INTEGRATION

An innovative and responsive beef industry will require that all sectors of the industry - cattle producers, meat processors, traders and marketers, and providers of research, development, extension, education and training (RDEET) - work in a greatly enhanced, cooperative environment. The current North Australian Beef Research Council (NABRC) is the forerunner for this and in the future it should expand its structure and mandate to provide a series of interest group forums to cater for the needs of Asian customers for meat and livestock and the Australian producers who supply them. It will have a significant brokerage role, bringing the appropriate parties together to match product with market, and it will acquire the necessary skills to enable it to perform such tasks. It will be fully-funded, and actively supported by government and industry because of its success as a forum and facilitator of mutually beneficial alliances.

Large corporate beef producers are likely to increase in size and possibly number, and the small, individual/family producers, many of whom are presently unviable will leave the industry, or will form cooperative groups and joint ventures to compete with corporate producers for market volume and consistency of product.

Innovative stock and station agents and rural consultants have the opportunity to take over a significant number of the activities now associated with the government extension services. They will be increasingly active in identifying and supplying the needs for RDEET. They will initiate and participate in joint ventures between the smaller producers and will provide some of the linkages and communication networks across the various industry sectors as the product moves from paddock to plate. These new classes of employees of the stock and station companies will hold appropriate tertiary qualifications in technical and managerial areas. They will attend regular refresher courses and will provide advice, assistance and some training in those areas in which their clients are not performing to the optimum level. They, together with private rural consultants, will be major clients for information and training from the RDEET providers. Unless agents are able to respond to the increasingly specialised needs of their clients, they will be supplanted by consultants and innovative cooperative producer groups.

The providers of RDEET will also be operating in a cooperative mode; institutions such as the Tropical Beef Centre and the Cooperative Research Centres (CRCs) or their successors will be the norm. These Centres will be highly dynamic and interactive with clients. They will be major suppliers of information in forms that a wide range of clients will be able to translate into beneficial actions.

This integrated approach by all sectors of the industry will enable it to educate the wider community about its product, the manner in which it is produced, and the environmental and other side-effects that may be detrimental to its success in the eyes of the consumer.

Market interest groups will become the power and lobbying bases for the industry, and will replace the present industry broad based lobby groups. These will probably be allied to other industry interest groups that will represent the collective interests of the beef industry. Specialised groups will require specialised servicing and these will be hired by the groups as consultants or, provided they can respond to the challenge, the agents.

MARKET AWARENESS

Individuals and groups of producers will be well informed about the size and types of market which are available to them at that time, and in the immediate to mid-term future. International agreements will be helping to reduce some of the uncertainties in global trading and economic and commodity models will become more useful in predicting market trends and shifts. Cattle producers, and the processors and marketers of their products, will have ready access to this information. Decision support packages which utilise this information will enable the various interest groups to jointly plan their operations around market predictions and, in some instances, forward contracts.

Value based marketing will be the norm and models will be of sufficient detail and accuracy to enable value-based marketing to be used in the planning process. Market intelligence and analysis, as well as decision support systems, will be available through electronic networks accessible on-farm or nearby.

Informed commentary and advice on the output of these systems will be readily accessible through consultants or agents.

Producers who are aware of the needs of the markets will seek out the necessary technology to enable them to supply the market of their choice with a correctly specified product. Producers who are unaware of the market place and whose product is incorrectly specified will have difficulty in surviving.

The nature of Asian cuisine and their dining habits indicates that there will be a large range of products from both meat and offal which can be marketed successfully, provided that suppliers are aware of the market signals. Some Australian suppliers will form joint ventures with Asian partners to better appreciate market signals.

NEW PRODUCTION TECHNOLOGIES

The beef industry will rely increasingly on innovation to survive. Successful innovation is more than merely scientific invention. It is also the application of a new technology, process or invention as part of an improved production system. All sectors of the industry, and cattle producers in particular, will become more innovative - seeking out, and in some case generating, appropriate pieces of technology and applying them to their own needs. In keeping with the cooperative nature of the industry and its cross linkages, identification of the need for new technology, its form and development, will be increasingly driven by industry. However, it will be done in consultation with the aggregated RDEET providers and in such a way that the processes of technology transfer will start with the identification of the need for a new technology, and definition of an acceptable form for it.

Some technologies will be simple and some more sophisticated. There is no doubt that biotechnology will play a role, but the extent of this will be more dependent on community attitudes and perceptions than on the technical difficulties in the biological manipulations. Some modifications of the processes of microbial digestion will be available to increase feed efficiency. Feed intake may also be enhanced by modification of satiety centres, or increasing the rate of passage of feed. Metabolic and physiological processes will be immunologically modified to enable body composition, meat quality and reproduction to be enhanced. Buyers of breeding stock will demand from their suppliers estimates of breeding value for a range of parameters, so that they can produce to a market specification. Pre- and particularly post-farm gate technologies will be important in the determination of product quality and safety, and it is likely that monitoring procedures will be intense and relatively cheap, as automated sampling and new analytical tools are developed.

The major constraint to high technology approaches will be consumer suspicions that these are in some way "unnatural" and that both the quality and safety of the product are in doubt. If such approaches are to be successful, then there is a major task to educate consumers about their nature, methods of use and the safety and quality of the products that result from their application. Unfortunately, there have been some episodes in allied areas, such as hormonal growth promotants (HGP), which will make the task of public education more difficult; firstly, the banning of HGPs by the European Community was essentially an attempt to reduce domestic over-production and provide a trade barrier and secondly, the economic pressure, or greed, drove some European farmers to use potent, but illegal and unsafe drug cocktails, especially those containing the long-acting drug clenbuterol. The residues of clenbuterol in animals over-dosed with the drug caused several widely-reported cases of toxicity. The result has been extremely damaging to public acceptance of this type of technology, and to "high" technology approaches to livestock production in general.

Although at present the consumer's understanding of the nature and advantages of modern farming techniques is often rudimentary, over the next decade there will be increasing pressure and funds from the industry to undertake professionally organised community awareness programmes. Promotion and marketing of meat products will also be effective in highlighting not only the nutritional value of food but also the manner in which it is produced and the quality assurance measures that are in place to ensure the customer is buying a wholesome product that has been produced with little environmental impact and by humane methods. Various lobby groups have currently raised the awareness of the general public to negative environmental and social impacts associated with food, and particularly meat production, without emphasising or explaining the very positive benefits of present production systems relative to alternatives, and the need for current practices. Fortunately there are signs that technically qualified people are now taking up the challenge to debate the pros and cons of the different production systems and philosophies.

Although biotechnology and sophisticated computer based recording schemes will be increasingly evident, the need for traditional technology will not decrease. However, practices such as castration, dehorning and branding are likely to be supplanted by alternatives, not necessarily because the new will be more effective or cheaper than the old, but because of community pressures for more humane approaches such as immuno-castration, the use of genetically polled cattle, and lifetime electronic identification systems.

A potential future threat at least, and certainly a constraint to the development of new veterinary chemicals, will be the high costs of R&D, the very high costs of registration and marketing, and community pressures to drastically reduce the use of chemicals in food production generally. Intensive and semi-intensive production systems will require ways of reducing dependence on chemicals, and this will stimulate the development of immunological, biotechnological and genetic solutions.

The uptake of existing technologies will be more widespread, such as the plantings of leucaena and other tree-legumes and a greater use of adapted *Bos taurus* cattle in multi-breed synthetics and crosses. It has been estimated that around 1 million ha will be planted to leucaena in the Fitzroy Basin alone by the year 2020.

The fundamental question is not whether new technologies will be used in the future, but rather which technologies will be used. The consumer will be demanding meat of consistent quality at a reasonable price, but with the added requirement that this is produced in a system that is detrimental to neither the animal or the environment. Furthermore, the techniques by which a consistently tender and attractive product can be guaranteed to the consumer are likely to be available. Partnerships between inventors, innovative producers and consumers will help to ensure production systems that are not only profitable and sustainable, but also acceptable to the community at large.

RATIONAL RESOURCE USE

Competition for our northern beef producing areas from other industries and interest groups will be more intense. There will be some reconstruction of the industry with the possibility that marginal production areas will revert to other managed enterprises for alternative uses. Such uses will include occupation by traditional land-holders, managed environmental parks, eco-tourism, and possibly areas to produce native fauna and flora on a commercial scale. Before such a rationalisation of the total resource can occur there is a need for more scientific information about the sustainability of the alternatives and a commitment from the community of both funds and political will to gather the necessary information and to implement the required changes.

Resource use and its status will be scrutinised using a variety of new technologies such as satellite imagery and producers will be skilled in the interpretation of these images and correlated responses on the ground. The use of the resource will be self-regulated and under the management of groups such as Landcare and market interest groups. The tools available for a monitoring process - apart from satellite/GIS systems and more meaningful interpretation of their output - will include more sophisticated versions of on ground monitoring processes such as QDPI's QGRAZE and GRASSCHECK packages with the possibility of a video image analysis of rangeland and other vegetative features being used in the decision making processes.

Medium and long-term prediction of climate will be more accurate, although direct control of climatic variables is unlikely.

Greater awareness of the interaction between pastures and trees, patterns of land clearing, use of fodder trees and the management of complex ecosystems will be evident. It is likely that there will be incentives for beef producers to strive for an appropriate balance between grass and woodlands, possibly through the exercise of a "greenhouse" tax. Producers may reduce stocking rates in order to maintain grasslands, and leave some areas of overgrazed land to be colonised by woody plants in exchange for relief from any carbon tax.

The use of land will be more tightly regulated through community activities whether the land be leasehold or freehold. The understanding of the most appropriate use for particular areas, and their potential to support new activities, will be more complete than at present through a detailed knowledge of the ecology and climate of those areas. Achieving significant reductions in total grazing pressure and meaningful property reconstruction will be major goals for managers as the new century unfolds.

Some producers will opt to meet the challenge to their beef enterprises by diversifying their activities to incorporate such things as eco-tourism, farm holidays for city and overseas visitors, and a greater use

of native and introduced plant and animal resources in commercial operations. There will be community pressure for governments to provide financial incentives, to hasten diversification on land deemed no longer suitable for sustainable beef production.

EMPHASIS ON PRODUCT QUALITY

There will be a range of products of different qualities varying from meat suitable for manufacturing to that suitable for special dishes. Quality will be understood in terms of matching the product with particular market specifications, and it is likely that in any emerging Asian markets the volume trade will be in ground beef in one form or another, eg hamburger chains. This should not be confused with meat of inferior quality. It will be high quality in so far as it meets the specifications required. Co-products will also be in demand and prepared in such a way as to be suitable for the range of Asian food preparation methods. Feedback to producers will be largely through price differentials associated with failure to meet aspects of the specification, and market research will have an important role in determining how different cuts of meat and co-products need to be presented to specific markets to maximise the value-adding.

The live cattle trade will be increasingly demanding of accurate specification of the product in relation to genotype, age, reproductive status, disease status, potential finishing ability and feed efficiency in Asian feedlots.

Regardless of the specifications requested, quality assurance will be an important aspect of the total food chain to ensure a "clean, green, edible and appetising" product. All sectors of the chain will contribute to the ability of a product to meet its specified market and this will be facilitated by the mutual benefits that accrue from cooperation in joint ventures.

INDUSTRY FLEXIBILITY

Because of its integrated nature and the forums that will exist to exchange ideas, coupled with the availability of instant information on a range of market, community, environmental and consumer issues, the industry as a whole, and beef producers in particular, will be better informed and better equipped to respond appropriately to any threats, and to strengthen any weaknesses. For example, criticisms from consumers about the eating qualities of the product, or aspects of its safety, will be readily answered because of objective measures of tenderness and other qualities that will be able to be made on the various products. Environmental criticism and any allegations of over-grazing or land degradation will have to be addressed with comprehensive records (including things like Cattle Care) kept as part of the normal operation of property planning and management. There will be no shortage of targeted industry training courses and information.

The emphasis of some government agencies which exist for the benefit of the beef industry will change, as government involvement in meat marketing is replaced by commercial involvement. The functions of government agencies will change therefore. The Meat Industry Council, or its successor, will be alert to these changes and will move quickly to seek governmental support and assistance to those areas of greatest need.

In many areas the industry can be only as responsive as the regulations allow it to be. Response times will be lengthened and perhaps great opportunities lost, unless the government can facilitate a rapid response time in the industry. Because of their capacity to slow response times, consultative processes must occur prior to an event and not as a consequence of it. Policies for a range of scenarios need to be agreed prior to those scenarios arriving so that the industry can respond quickly and effectively. Policies for opportunistic, beneficial scenarios need to be in place as well as for those that represent threats and crises.

INFORMATION ACCESS AND MANAGEMENT

The computer, when connected into a network, will provide cattle and beef producers unparalleled access to global information on a wide range of relevant topics. While not all information important to efficient beef production will be electronic, global electronic networks will play a major role in innovation and responsiveness. Because of its isolation, geographic spread and diversity of production systems, the northern beef industry has more to gain from networking and on-line information than many other agriculturally based enterprises. Market intelligence about beef and interacting commodities, weather forecasts and finance, accessed electronically and used in property planning and decision support systems, will be important to national and international competitiveness.

As information sources multiply and content becomes more complex, one of the major challenges will be to avoid information overload. Cattle and beef producers will need to have greater control over the information aimed at them, and be able to sort it and resynthesise it into formats and systems they can apply quickly and profitably. There is likely to be a series of “secondary processors”, or filterers of information. Consultants or perhaps stock and station agents will provide this service to their clients and aggregations of small producers with similar interests. The large corporate producers are likely to employ their own specialist staff. Regardless of whether producers wish to access these primary or secondary sources of information, there will be an increasing demand for producers to become more computer literate than they are at present.

Electronic information systems (through connection to the Internet) will provide producers with the opportunity to actively participate in the delivery and receipt of production-oriented knowledge systems and to communicate readily with one another and with their banks and agents. However, the complexity of beef production systems in the future will require changes in knowledge, attitudes and behaviours in those that manage them. Learning is the most appropriate and important process by which these changes can occur, and computer based learning systems will be an essential tool of the innovative and responsive industry. Learning to solve complex problems is more than being able to access information and being aware of what a computer can do: it requires decisions and actions as a result of the gathering, collating and analysing the information. Learning also requires motivation and motivating influences. These will be the need to make the right management decisions for breeding, feeding, marketing and financing to be competitive and profitable within the prevailing social, economic and environmental attitudes of the wider community.

The genetic evaluation of cattle, accomplished through the processing of pedigree information and performance records, will encompass all desired traits, expressed in dollar terms, from data collected throughout the life of the animal and the processing of its carcass to individual cuts. The seedstock producer will be motivated to collect and provide more information if clear signals are received from the market that buyers are prepared to pay a premium for the additional genetic information provided. The additional costs of providing breeding value data for a wide range of traits of economic importance will be recouped from the buyers who are striving for the genetic optimum in their herds. Lifetime electronic ID will facilitate this. The use of artificial breeding to maximise the use of genetically superior animals and increase the rate of genetic gain will overhaul natural mating systems.

A most important aspect of the information systems of the future will be the ability to build up large data bases which can be integrated over the whole of the production chain. Thus, pedigree, birth date and weight, together with other weights and measures made on live animals will be able to be merged with data sets from feedlots, performance during the shipping process, and carcass and meat quality measures. Decision making will revolve around integrated management packages, that will include decision support modules. The elements for the packages are the interactive data sets collected over the life of the animal, and easily manipulated data bases.

There will be a continuing need for training in the use and development of appropriate rural information networks. Prior to all individuals having direct access to information networks there will be a need for information services (government and private), universities, local learning groups, agricultural colleges, municipal libraries and the like to offer this service. Groups of producers with common goals may band together to source information and share costs; breed societies are also likely to expand their current role and provide a broader based service to their members.

The innovative and responsive northern beef industry will be highly dependent on being able to integrate information from a large number of sources and translate it into profitable action so that it impacts positively on management and production. This task will be easier for the large, well resourced, corporate producers but poses a significant problem for the small producer who alone may not be financially able to access such services or who is either not prepared or is unable to participate in access via a cooperative group.

FARM AND BUSINESS RECORDS

The ability to keep and analyse detailed records of the performance of all aspects of the business of beef production, including cattle performance, marketing, financial transactions and management activities, will play a major role in innovation and responsiveness and hence long-term viability.

Appropriate record keeping will be applicable to all areas of the business including:

- breeding (including pedigrees and performance) and feeding regimes
- purchasing of stock and other supplies
- costs of labour and other services
- financial and property planning
- sourcing new markets
- entering joint ventures and identifying alternative investments
- fulfilling government statistical requirements
- QA, land care and best practice protocols
- banking and other sources of finance.

The home or group-based computer will be able to access information globally and, using this information in primary or in processed forms, cattle and beef producers will be able to plan more effectively, and maximise present and future possibilities to make profits in socially acceptable ways.

PROSPERITY THROUGH INNOVATION AND RESPONSIVENESS

Despite the current problems that confront tropical beef producers outlined at the start of this paper, they are strategically placed to remain a significant part of the global food industry in the next century. However if industry is to capitalise on its favoured geographical location and its ability to produce low cost meat, it will need to be both innovative in the way that it does things and responsive to the needs of its major clients. Some restructuring will be necessary for those producers who are currently only profitable with a run of good seasons and are in marginal beef producing areas. Unfortunately this will involve some pain and suffering but this may be alleviated with enlightened community attitudes towards the need to occupy the land and actively manage the natural resource whether it is used for beef production, tourism, traditional aboriginal uses or national park/wilderness areas. The majority of beef producers who remain in the industry over the next decade will, by virtue of their continued existence in the tropical beef industry, have demonstrated the necessary degree of innovation and responsiveness to carry the industry forward.

The indicators as to how well the northern beef industry responds to future opportunities will be measured by its profitability and sustainability which will be influenced by how well it:

- can access relevant information (technological, market, financial)
- can analyse that information and turn it into profitable decisions
- communicates and cooperates within and between its sectors (eg producers, processors, RDEET providers, marketers and the community)
- is able to assess the strengths and weaknesses of its competitors and make appropriate responses
- can identify possible threats to its operation and respond positively before the threat becomes reality (eg environmental, animal welfare and food safety issues)
- can identify leaders and the best professionals to run its infrastructure
- is able to form strategic alliances and joint ventures into Asia.

Never before have individual producers been able to directly access information on which they can develop innovative approaches to supplying products, and never before will there have been an opportunity to supply such a large range of products.

The industry will have many tools to assist it to be innovative and responsive that it has developed within its ranks and in conjunction with government agencies and private enterprise. Increasingly, it will be the responsibility of industry, through its common interest and lobby groups, to identify what additional tools it requires and to set in motion the processes by which those tools can be provided. Cross-sectoral groups such as NABRC, which has primarily a regional electorate and focus, will possibly have an expanded role to influence the supply of tools which are presently considered to be on the margins of an RDEET mandate. Further advances in electronic communication and conferencing will make discussion and decision making easier and quicker, and that component of innovation resulting from sharing ideas as well as the response time for the implementation of a new idea will be enhanced. Innovation and responsiveness will indeed be the hallmarks of the tropical beef industry of the future.

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