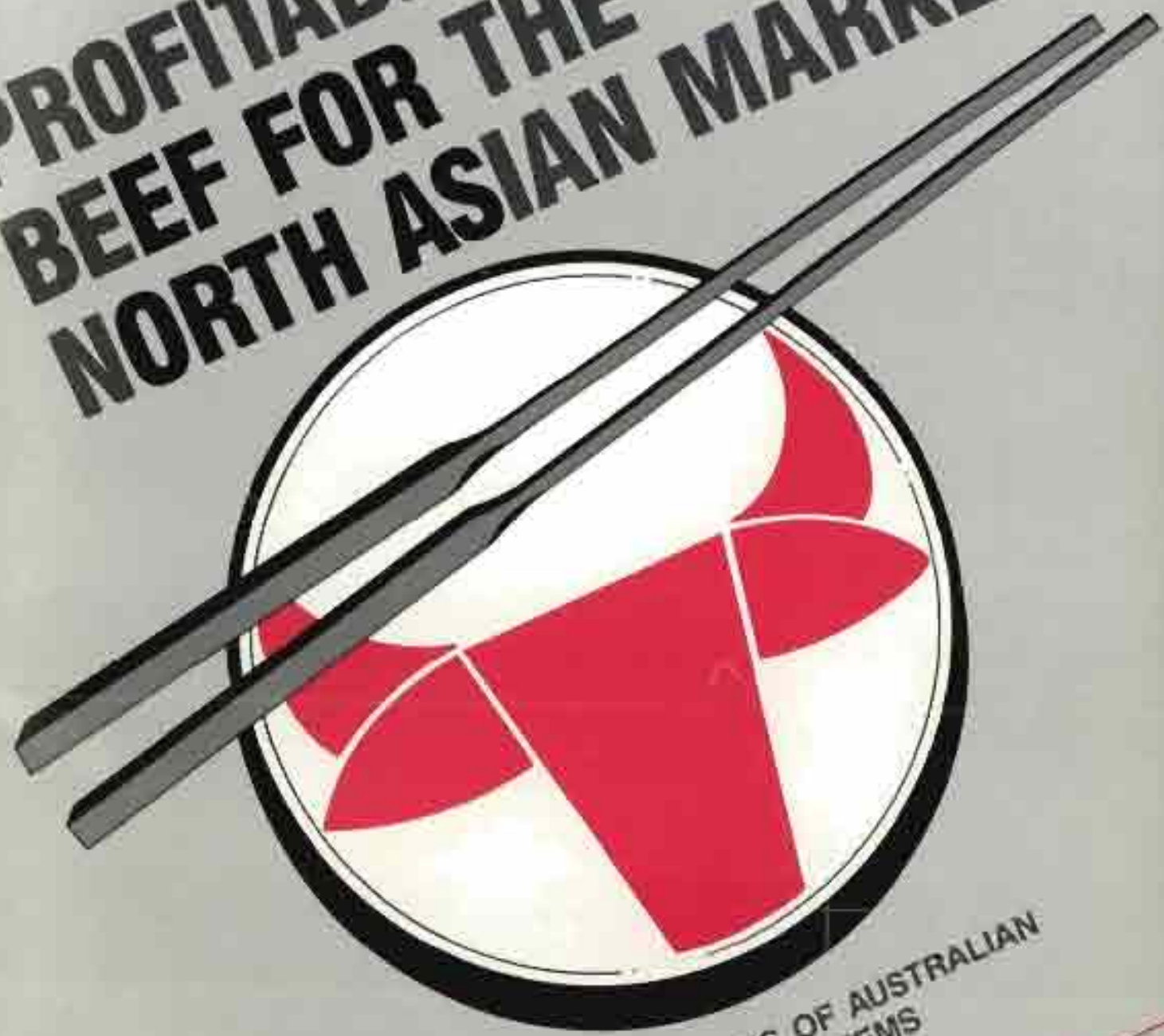


**DAN-061**  
**PROFITABLE  
BEEF FOR THE  
NORTH ASIAN MARKET**



**A FINANCIAL ANALYSIS OF AUSTRALIAN  
CATTLE PRODUCTION SYSTEMS  
TARGETTING JAPANESE AND  
KOREAN BEEF MARKETS**

COMMISSIONED BY THE MEAT RESEARCH CORPORATION  
CONDUCTED JOINTLY BY THE STATE DEPARTMENTS  
OF AGRICULTURE



# **PROFITABLE BEEF FOR THE NORTH ASIAN MARKET**

*A financial analysis of Australian cattle production  
systems targetting Japanese and Korean beef markets*

*MRC Project No. DAN.061*

*A study commissioned by the Meat Research Corporation  
conducted jointly by the State Departments of Agriculture*

*June 1992*

*The views expressed in this report are those of the Consultants and are not  
necessarily supported by the MRC.*

## TABLE OF CONTENTS

<b>List of Tables</b>	(iii)
<b>List of Figures</b>	(iv)
<b>Preface</b>	(v)
<b>1. Overview</b>	<b>1</b>
<b>2. Introduction</b>	<b>8</b>
2.1 Background	8
2.2 Terms of Reference	8
<b>3. Methodology</b>	<b>10</b>
3.1 General approach	10
3.2 Budgeting methods	10
3.3 Measures of financial performance	13
3.4 Sources of information	13
3.5 New market specifications	13
<b>4. Beef production systems and financial budgets</b>	<b>14</b>
4.1 Activity flow chart	14
4.2 Queensland	15
4.2.1 Beef regions	
4.2.2 Existing beef production system	16
4.2.3 Production parameters and technical feasibility of producing for new market specifications	16
4.2.4 Beef budgets for Queensland	17
4.3 New South Wales	22
4.3.1 Beef regions	22
4.3.2 Existing beef production system	22
4.3.3 Production parameters and technical feasibility of producing for new market specifications	23
4.3.4 Beef budgets for New South Wales	23

4.4	Victoria	28
4.4.1	Beef regions	28
4.4.2	Existing beef production system	28
4.4.3	Production parameters and technical feasibility of producing for new market specifications	29
4.4.4	Beef budgets for Victoria	29
4.5	Tasmania	31
4.5.1	Beef regions	31
4.5.2	Existing beef production system	31
4.5.3	Production parameters and technical feasibility of producing for new market specifications	31
4.6	Western Australia	35
4.6.1	Beef regions	35
4.6.2	Existing beef production system	35
4.6.3	Production parameters and technical feasibility of producing for new market specifications	35
4.6.4	Beef budgets for Western Australia	36
4.7	South Australia	41
4.7.1	Beef regions	41
4.7.2	Existing beef production system	42
4.7.3	Production parameters and technical feasibility of producing for new market specifications	42
4.7.4	Beef budgets for South Australia	42
4.8	Northern Territory	44
4.8.1	Beef regions	44
4.8.2	Existing beef production system	45
4.8.3	Production parameters and technical feasibility of producing for new market specifications	45
4.8.4	Beef budgets for Northern Territory	45
5.	<b>Information programs</b>	47
6.	<b>Commercialisation of Software</b>	48
7.	<b>References</b>	52

## LIST OF TABLES

1	A Gross Margin Budget	11
2	A Partial Budget	12
3	Major Beef enterprises in Queensland south of the tropics	16
4	Technical Feasibility of new market specifications in Queensland	16
5	Beef Gross Margin Budgets for Darling Downs and Western Queensland Regions	17
6	Regions of Queensland	18
7	Partial Budget for changing from Breeding and Selling Stores to APGF90 in Darling Downs	19
8	Partial Budget for changing from Breeding and Selling Stores to APY in Darling Downs	19
9	Partial Budget for changing from Breeding and Selling Stores to Korean Grassfed 1B in Western Queensland	20
10	Partial Budget for changing from Breeding and Selling Jap Ox to AP1 in Central Queensland	20
11	Partial Budget for changing from Breeding and Selling Jap Ox to APGF50 in Central Queensland	21
12	Partial Budget for changing from Breeding and Selling Export Bullocks to AP2 in Central and Southern Queensland	21
13	Major beef enterprises in New South Wales	23
14	Technical feasibility of new market specifications in New South Wales	23
15	Beef gross margin budgets for Southern New South Wales	24
16	Beef gross margin budgets for Coastal & Northern New South Wales	25
17	Beef Partial Budgets for Southern New South Wales	26
18	Beef Partial Budgets for Coastal & Northern New South Wales	27
19	Major beef enterprises in Victoria	28
20	Technical feasibility of new market specifications in Victoria	29
21	Beef Gross Margins for Victorian Breeding Enterprises	29
22	Beef Gross Margins for Victorian Growing Enterprises	30
23	Partial Budget for changing from breeding and growing out weaners to APGF90 in Victoria	30
24	Partial Budget for changing from growing out AP1 to AGF200 in Victoria	30
25	Partial Budget for changing from growing out AP1 to AGF90 in Victoria	31
26	Technically feasible new market specifications in Tasmania	32
27	Beef Gross Margin Budgets for Tasmania	33
28	Partial Budget for changing from trading Korean Grassfed Type 1B Steers to APY for Korea	33
29	Partial Budget for changing from trading Korean Grassfed Type 1B Steers to AGF200 in Tasmania	34
30	Partial Budget for changing from trading Korean Grassfed Type 1B Steers to AP1 for Japan in Tasmania	34
31	Partial Budget for changing from trading Korean Grassfed Type 1B Steers to Korean Grassfed AUS-MEAT P1 in Tasmania	34
32	Partial Budget for changing from trading Korean Grassfed Type 1B Steers to APY for Japan in Tasmania	35
33	Technical and Economic Feasibility of Beef Systems in Western Australian Agricultural Region	37
34	Technical and Economic Feasibility of Beef Systems in Western Australian Pastoral Region	38
35	Beef Gross Margins for Western Australian Agricultural Region	38
36	Beef Gross Margins for Western Australian Pastoral Region	40
37	Beef Production Systems According to Regions in South Australia	43
38	Beef Gross Margin Budgets for South Australia	43
39	Beef Gross Margin Budgets for Northern Territory	45

## LIST OF FIGURES

1	Japan/Korea Markets R&D Program	9
2	Activity Flow Chart	14
3	Queensland Beef Regions	15
4	New South Wales Beef Regions	22
5	Victorian Beef Regions	28
6	Tasmanian Beef Regions	32
7	Western Australian Beef Regions	36
8	South Australian Beef Regions	41
9	Northern Territory Beef Region	44

## **PREFACE**

### **Objective**

The aim of this study was to conduct a financial budgeting exercise for comparison of beef production systems throughout Australia south of the Tropic of Capricorn.

Based on a set of hypothetical market specifications, comparisons were made of the financial returns from existing beef production systems and new markets as specified.

The results provide broad indications of likely profitable changes in beef enterprises in various states and regions. However, they were based on a set of price assumptions in early 1991. Individual managers need to undertake detailed budgeting for each farm in order to decide whether and how they might make any change in the future.

### **Australian beef production and markets**

Beef production in Australia has traditionally been predominantly pasture-based producing for both domestic and export markets. A broad guide used to be that half the beef produced was exported and half of that was to the US manufacturing meat market.

Beef production systems range from the more extensive in northern and inland areas (producing heavier animals for manufacturing and other purposes) to more intensive in the higher rainfall temperate areas (producing younger animals for the domestic butcher and supermarket trade and for exports to some markets).

There is also a substantial trade in store (non-fat) stock to growers and fatteners (both on-farm and feedlot).

### **Recent changes in beef markets**

In the last 3 years negotiations on access to the Japanese beef market have led to changes in Japanese beef import policies. These changes mean that an increased amount of beef can potentially be placed into that market.

The Korean market, which was closed to imports for a number of years, has reopened. There are also other markets in the Pacific Rim that have potential for growth.

Recently the proportion of beef and veal production that is exported has risen to over 60% although the proportion going to the US market has remained at about half.

### **New market opportunities**

The recent report ('Winning in the Japanese Beef Market') identified opportunities within the Japanese market in terms of type of outlet and emphasised the importance of quality and consistency of product. The Australian beef industry was seen to have a comparative advantage in producing grass-fed and grain-finished beef to meet the 'middle-quality' market.

The quality-conscious Japanese marketing system requires product to meet strict standards so that in the future, producing to market specifications is likely to be more important.

## Implications for beef producers

Indications are that there will be a wider range of product options for beef producers but these options will be more tightly specified. Examples of new market specifications are shown in Boxes A and B.

There are also likely to be price premiums and discounts to provide more incentive to meet the specifications. At present the premiums are not widely available. Beef producers will need incentives to change from existing production systems. But premiums may not be paid unless production is to specification and if this happens the market opportunities may diminish. This is an important issue for the beef industry.

The implications of this are that beef production for these markets may need to be more intensive but managed differently. Some important questions arise immediately.

If extra inputs are required will the resulting output cover the extra costs? What is the bottom line, and how do managers decide on whether to change beef enterprises?

## Regions analysed

The Terms of Reference for this study require analysis of beef production systems within regions south of the Tropic of Capricorn. Each State was divided into regions according to climatic, physical and beef production characteristics. The regions used are shown in Figure A. These regions are described in detail in section 4, but the region names according to the numbers in Figure A are given below.

<u>State</u>	<u>Number</u>	<u>Name</u>
Queensland	1.	Western Queensland
	2.	Central Queensland
	3.	Central and Southern Queensland
	4.	Darling Downs
New South Wales	5.	Coastal NSW
	6.	Northern Inland
	7.	South Inland and Far South Coast
Victoria	8.	North Central Victoria
	9.	South and North Eastern Victoria
Tasmania	10.	North West Coast
	11.	Midlands
South Australia	12.	South East
	13.	Adelaide Hills
	14.	Cereal Zone
	15.	Pastoral Area
Western Australia	16.	Agricultural
	17.	Pastoral
Northern Territory	18.	Alice Springs District



## Box A. JAPANESE MARKET SAMPLE SPECIFICATIONS

### PASTURE FED

	<u>APGF50</u> Pasture fed grain finished for 50 days	<u>AP1</u> Pasture fed 1st quality	<u>AP2</u> Pasture fed 2nd quality	<u>APY</u> Pasture fed Yearling	<u>JAPANESE FEEDER STEER</u> (Shipped to Japan for feedlotting)
CARCASE WEIGHT	300-360 kg	300-360 kg	300-360 kg	200-240 kg	LIVEWEIGHT 275-300 kg
P8 FAT	12-22 mm	12-22 mm	8-16 mm	6-12 mm	AGE OF MATURITY Mid to late
AGE	Max 4 teeth	4 teeth	Max 7 teeth	0 teeth	AUSMEAT FAT SCORE 1-2
SEX	Castrate male	Castrate male	Castrate male	Cast. males/heifers	AUSMEAT MUSCLE SHAPE B or C
MEAT COLOUR	1-5	1-5	1-7	1-3	AGE 9-12 months
FAT COLOUR	4-6	4-6	6-9	4-6	BREED Angus or Murray Grey
MARBLING	2	2			

### GRAINFED

Carcass specification after grain feeding	<u>APGF90</u> Pasture fed grain finished for 90 days	<u>AGF300</u> Grainfed 240 days on feed	<u>AGF200</u> Grainfed 180-220 days on feed	<u>AGF150</u> Grainfed 150 days on feed	<u>AGY</u> Grainfed yearling 90-120 days on feed
CARCASE WEIGHT	300-360 kg	360-420 kg	360-420 kg	320-400 kg	200-260 kg
P8 FAT	12-22 mm	22-32 mm	22-32 mm	16-27 mm	6-12 mm
AGE	Max 4 teeth	4 teeth	4 teeth	4 teeth	0 teeth
SEX	Castrate male	Steers	Steers	Steers	Steers/heifers
MEAT COLOUR	1-5	2-4	1-4	1-5	1-3
FAT COLOUR	2-4	1-3	1-4	1-5	2-3
MARBLING	2 & 3	5+	3-4	2	2
Liveweight specification at feedlot entry					
LIVEWEIGHT	440-500 kg	280-320 kg	360-440 kg	440-500 kg	260-300 kg
P8 FAT	6-10 mm	4-8 mm	4-10 mm	6-10 mm	4-8 mm
AGE	18-22 months	9-12 months	16-20 months	18-22 months	9-12 months
SEX	Steers	Weaned steers	Steers	Steers	Steers/heifers

## Box B. KOREAN MARKET SAMPLE SPECIFICATIONS

### PASTURE FED

	<u>APY</u> Pasture fed yearling	<u>Korean Grassfed Type 1B</u> High quality pasture fed	<u>Korean Grassfed</u> AUSMEAT P1
CARCASE WEIGHT	200-240 kg	225-340 kg	180-280 kg
P8 FAT	6-12 mm	8-12 mm	5-12 mm
AGE	0 teeth, <18 months	6 teeth max, <3 years	6 teeth max, <30 mths
SEX	Steers/heifers	Steers, bulls and heifers	Steers, heifers and young cows
MEAT COLOUR	1-3	2-4	Dark meat excluded
FAT COLOUR	4-6	≤7, fair distribution	Yellow fat excluded
EMA		Min. 58 sq. cm at 12th rib	
MUSCLING		C or better	

### GRAINFED

	<u>Boneless Type 1A</u> High quality grainfed, 150 days on feed (suggest European crosses)	<u>Frozen bone-in</u> AUSMEAT K1 100 days on feed	<u>AGY</u> Grainfed yearling 90 days on feed
CARCASE WEIGHT	225-340 kg 280-340 kg preferred	225-340 kg 240-280 kg preferred	200-260 kg
P8 FAT	10-22 mm	4-12 mm	6-12 mm
AGE	24 months (2 teeth)	6 teeth	0 teeth, <18 months
SEX	Steers/heifers	Steers/heifers	Steers/heifers
MEAT COLOUR	<3	1-5	1-3
FAT COLOUR	1-3	4-6	0-2
MARBLING	3	1 and 2	2
MUSCLING	C or better	C or better	C+
Liveweight specification at feedlot entry			
LIVEWEIGHT	320-360 kg	320-360 kg	260-300 kg
P8 FAT	2-6 mm	2-6 mm	4-8 mm
AGE	15-16 months	15-16 months	9-12 months
SEX	Steers/heifers	Steers/heifers	Steers/heifers

Figure A. Beef Regions



## I. OVERVIEW

### Main findings

The budgets presented in this report indicate that there are potentially-profitable beef enterprises arising from the new Japanese and Korean beef markets in some states and regions of Australia. Based on assumptions about required growth rates and beef prices, some beef enterprise alternatives look promising but others do not.

At present the main potential for these enterprises is in the eastern States. The areas of greatest potential to produce to these new markets are mainly in New South Wales. Other promising areas are in Queensland, Tasmania and Victoria. In Western Australia, South Australia and the Northern Territory there is not currently much incentive to change.

### Basis of study

These findings are drawn from research which:

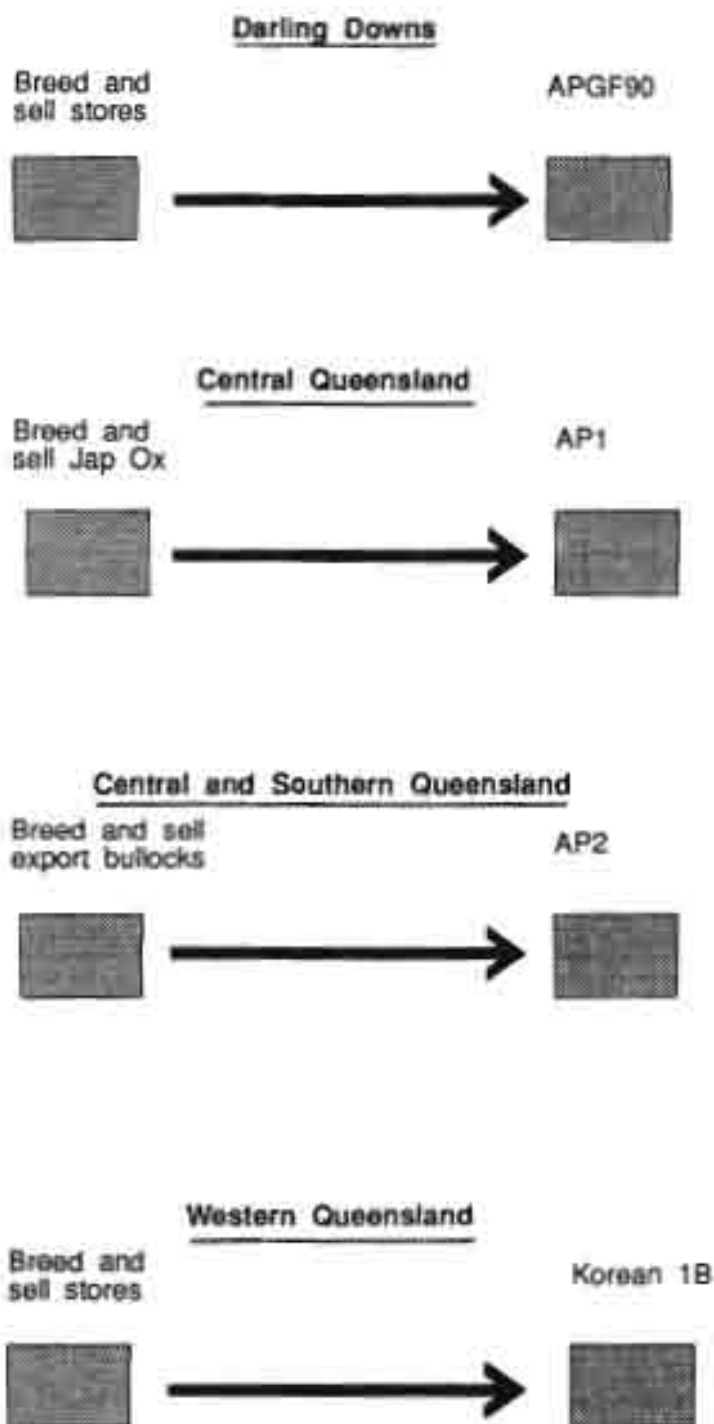
- specified regions within states according to climatic and physical characteristics and types of beef production systems;
- used livestock specifications considered necessary to produce meat products for alternative parts of the Japanese and Korean markets;
- described existing beef production systems and determined the necessary production parameters (eg growth rates) for alternative market specifications;
- by comparing the requirements necessary to meet new market specifications with the potential livestock growth rates in particular regions, determined whether producing to the new market specifications was technically feasible; and
- for those market specifications that were feasible, constructed financial budgets to determine the likely profitability and other implications of changing from existing to new market specifications.

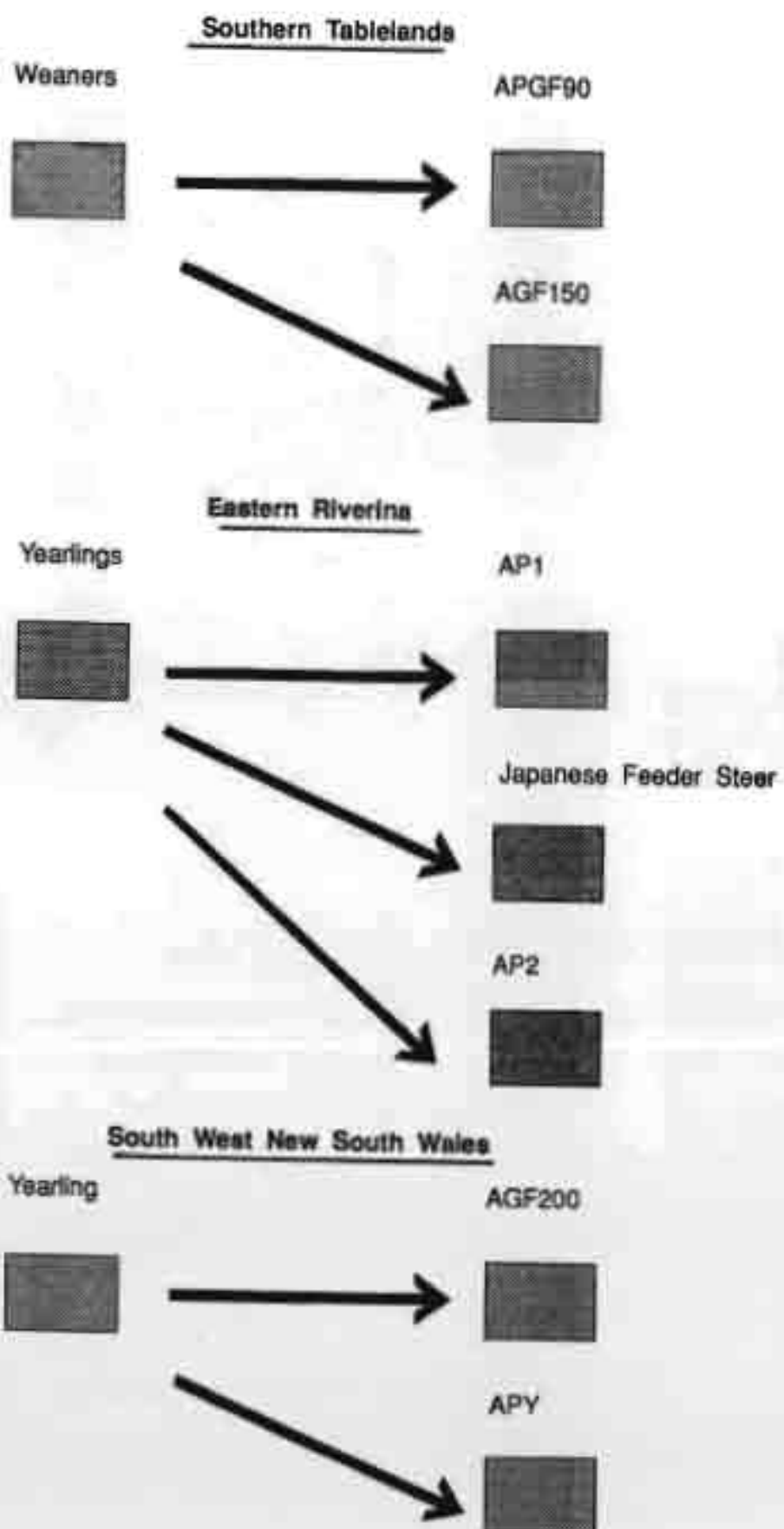
It must be emphasised that the budgets presented here are *indicative* of potentially profitable changes, but no warranty is implied in these results or this report. Individual beef producers still need to make their own decisions about potential changes on their properties. For instance beef prices have fallen since early 1991 when the budgets were constructed, so the results need to be considered in this light.

However, prices will always vary to some extent and there is a risk in changing beef enterprises. Some comments on risk are made later. As a further aid for beef producers in making management decisions, computer-based programs are available which can be used to look at the implications of changing assumptions (including price) in financial budgets.

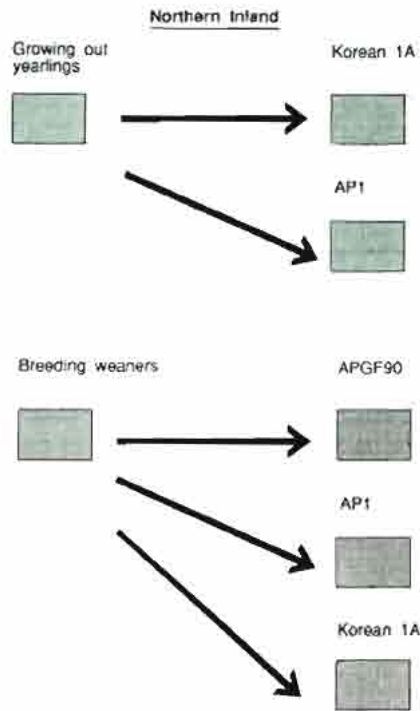
The potential benefits from changes are shown below.

## Queensland

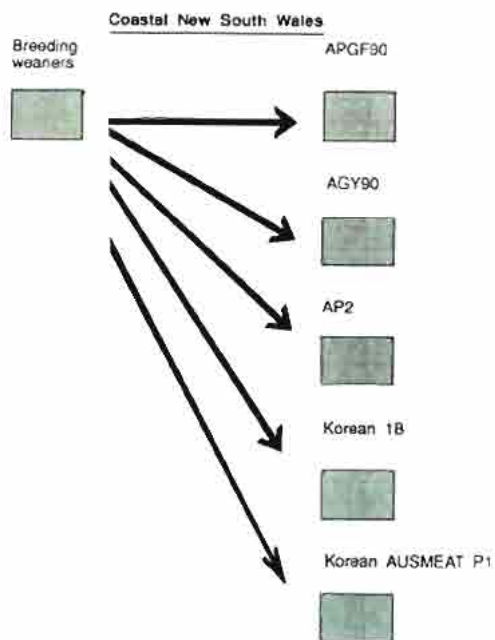


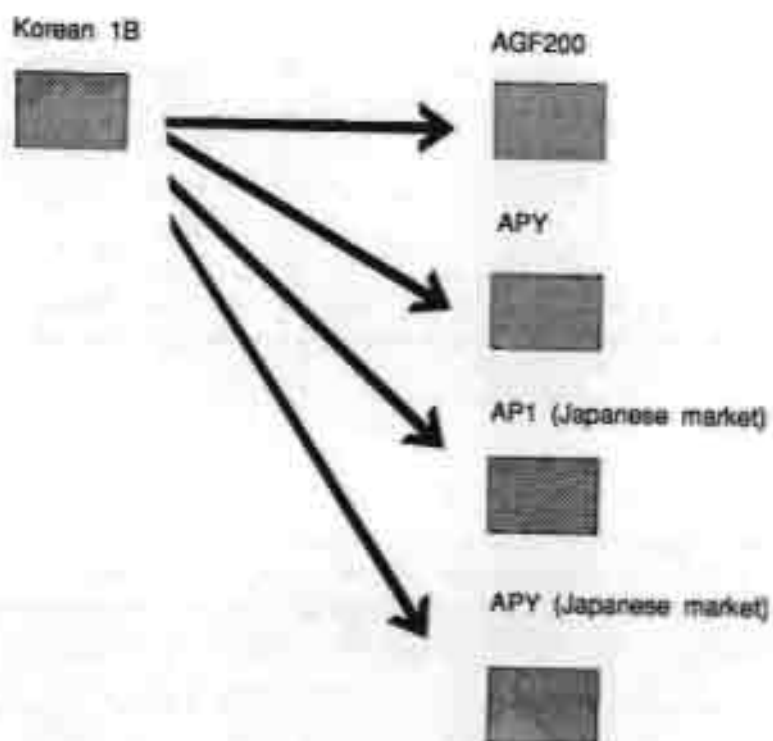
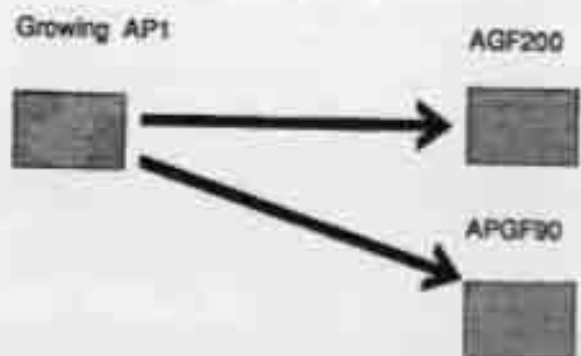
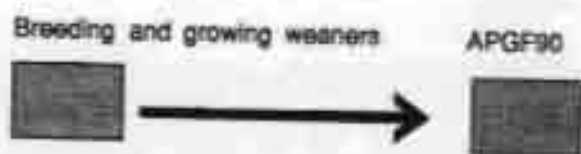
**New South Wales**

### New South Wales



### New South Wales



**Tasmania****Victoria**



## **Western Australia**

There is no current market for cattle suitable for the Japanese and Korean specifications, so the analysis focussed on the prices needed to attract production if these markets opened up in the future. Freight costs to export terminals are regarded as the most limiting economic factor.

## **South Australia**

There is also only a limited market for these types of cattle. Given the beef production and farming systems, there would need to be secure contracts before beef producers might consider changing production systems. Freight costs to export terminals are again regarded as the most limiting factor.

## **Northern Territory**

There is little incentive to change from the existing steer turnoff enterprises to the Korean grassfed AUSMEAT P1. In practice the production environment with seasonal uncertainties and poor control over steer age groups reduces the chance of presenting consistent quality product to meet market specifications.

## **Risk considerations**

Risk needs to be considered in changing to new farm enterprises. For the changes considered here, risk comes in three main forms. The first is in the specification tolerances. Producers must assess what proportion of their production will actually meet specification. An alternative market must be found for those carcasses which do not make the grade. Some of the newer export-based enterprises have tighter specifications than the existing markets. Risk is greater the higher the price discount for rejected carcasses.

The second type of risk is market unreliability. Newer markets are less likely to be as stable as long-established markets. If producers decide to produce for a new market they need to consider alternative marketing strategies in the event of failure. The higher the discount for supplying alternative markets, the higher the risk. Forward contracts could help reduce the risks involved.

The third type of risk involves enterprises that require higher input costs. Some of the growth rates required can only be achieved with pasture improvement. Added costs can be regarded as extra risk exposure.

## **Computer Programs**

The construction of the budgets presented in this report was undertaken with two computer programs. In Northern Australia (Queensland and Northern Territory) the program used was BREEDCOW, produced by the Queensland Department of Primary Industries. For all other States a program called CATTLE CASH (produced by NSW Agriculture) was used. These programs were developed specifically for financial budgeting in the northern and southern beef production environments.

Both these programs are based on commercial spreadsheet packages. The programs are available for sale to beef producers who wish to develop their own budgets for use in farm decision-making.

## **Information programs**

The information in this report provides a basis for further awareness and dissemination programs. Those programs could contain technical and marketing information, as well as the type of financial comparisons shown in this report.

A problem with budget-type information is that, as prices and other financial variables change over time, the figures can become dated. However, it is easy to recalculate budgets and the capacity to undertake sensitivity analysis is a strong point of computer-based spreadsheet models.

The important consideration is that the budgets presented in this study can be updated and used for advisory or extension programs within states and regions.

It is recommended that since the information was generated mainly from the State Agriculture Department networks of economic and beef advisory officers, a major focus of the information dissemination programs should be the extension and advisory personnel and services of those organisations. This process has already begun as these personnel were widely consulted in drawing up the budgets. It will be a natural step to utilise this information in specific regionally-based programs.

However, to gain the full benefit from the investment in this project a more specific high-profile campaign of advertising and a series of workshops could be organised to increase the awareness within the beef industry of the information generated by the project. The advertising campaign would notify the availability of hard copy booklets, computer software programs and seminars or workshops. The latter might involve a series of speakers on producing for the new market specifications and farm management planning, as well as interactive computer workshops where the computer models are described and used for beef enterprise planning.

## Contact Persons

The project contact persons for the various states are listed below:

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-----------------------------------------------------------------------------------------------------	----------------------------------------------

## 2. Introduction

### 2.1 Background

The Australian beef industry is currently experiencing changes to a number of important export markets. In particular the liberalisation of the Japanese market through changing policies and regulations (ABARE 1988) and the reopening of the Korean market to beef imports since 1988 have provided new opportunities. The beef industry has researched the best method of accessing the Japanese market under these new arrangements (MRC and AMLC 1990), and similar work is being undertaken for the Korean market.

One of the strategies proposed in that research report was to 'decouple' Australian prime grass fed from Australian standard grass fed in the Japanese market. The prime grass fed involves short term grain feeding and more tightly specified production in terms of age, fat and meat colour, marbling and weight. In conjunction with potential changes in consumer tastes and demand for more consistent quality, these changes have implications for beef production, processing and grading systems in Australia. At the farm level these changes imply a change to producing beef for different, and more tightly specified, markets or products.

One area of concern in the future is whether changing to new market specifications is likely to be profitable at the farm level, in comparison with existing beef production systems. The question of relative profitability is very important for beef producers. This question also has implications for beef feedlots and meat processors in terms of what prices might be required to attract beef producers to change systems. While these matters would normally be left to the market place to determine, this issue has been subjected to more detailed research because time is of the essence in the business of accessing the new markets before Australia's international competitors.

The MRC has a major program under way looking at different aspects of how the beef industry can adapt to the new Japanese and Korean markets. A schematic representation of that program is shown in Figure 1.

One project within the Japan/Korea Market Key Program is specifically aimed at comparing the economic returns from existing and new market specifications of beef enterprises at the farm level throughout Australia. This document reports the results of the economic study.

### 2.2 Terms of Reference

The Terms of Reference for this study were written to address the main objective of the Consultancy, which is:

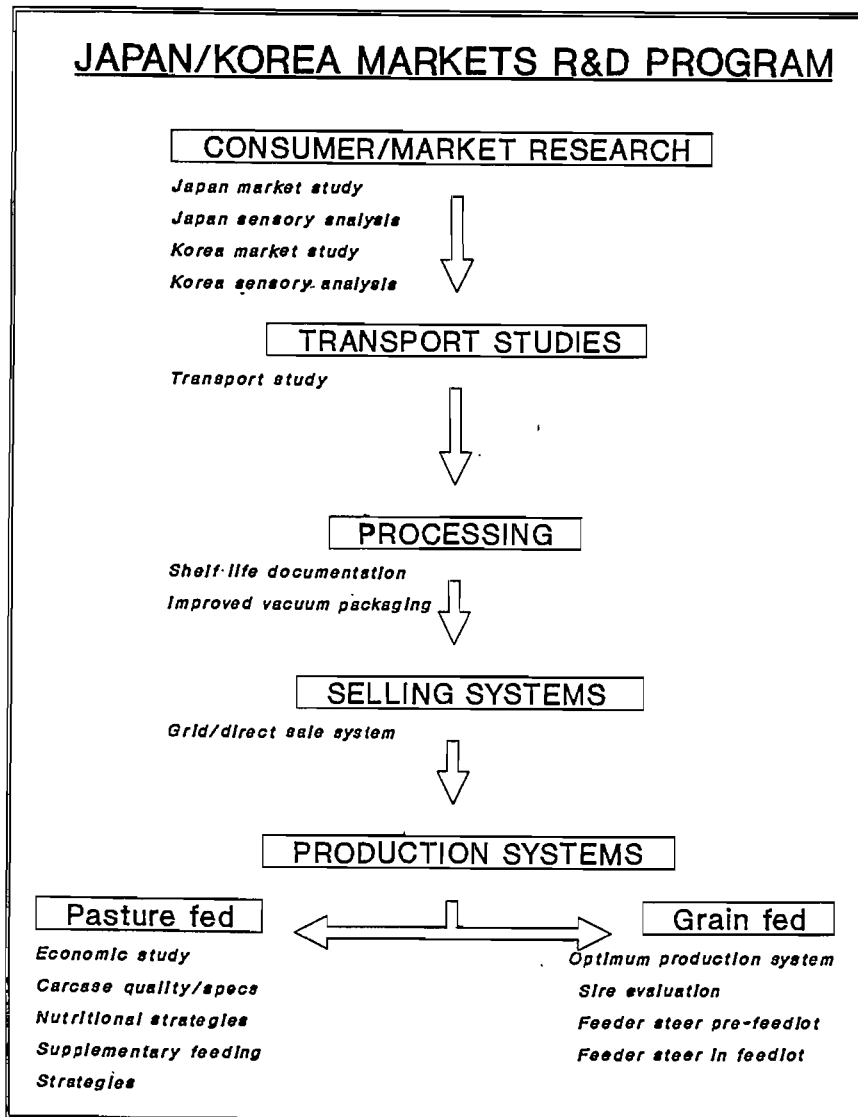
'...to provide Australian beef producers with better economic information to help them make production and marketing decisions based on the relative returns from targeting alternative beef markets.'

The activities undertaken within the project were:

- (i) Describe the existing beef production systems in each region (including constraints imposed by the climatic and physical environment) and any additional resources (capital, feed, labour) required to produce cattle for alternative markets. Comment on the impact of alternative enterprises (wheat, sheep, etc);
- (ii) Develop financial budgets of current and potential beef production systems on a regional basis throughout Australia particularly for beef grades earlier specified in Boxes A and B under Preface. These budgets will consist of:

- gross margin budgets of the most important current beef production systems in broadly defined regions,
  - gross margin budgets of alternative market specification beef production systems, and
  - partial budgets of the changes in revenue and costs involved in moving from current production systems to producing for alternative markets;
- (iii) Recommend methods by which financial budgets developed can be distributed to beef producers as a guide for their thinking and as a format they can use for their own property budgets; and
- (iv) Make beef producers aware of computer software packages that are commercially available so they can undertake farm planning in more detail. Commercialise computer programs used to calculate the gross margins.

Figure 1.



### 3. Methodology

#### 3.1 General approach

The ultimate aim of this project is to provide Australian beef producers with better marketing and economic information about new beef markets so that they are more informed about options for their own properties. The approach taken in the project was to define broad geographic regions within each state and to calculate financial budgets for existing and alternative (new) beef enterprises as an indication of potential improvements in farm-level profitability from changing beef enterprises. The processes of describing the requirements necessary to meet the new market specifications and constructing the beef budgets are the main methods of developing better information systems for Australian beef producers about marketing and economic issues.

The budgets developed in this project are typical of normal beef production systems within regions. They are broadly representative of 'average' farms, and so have not been developed for any particular farm. Since production systems, resources and management levels differ from farm to farm, these budgets can only be presented as indicative of potential gains within regions and beef systems. Individual beef producers should do their own sums in considering changing any farm enterprise. Hence the indicative budgets are, in part, providing a format which beef producers could follow for their own circumstances.

Computer models were used in the project to develop the budgets on a consistent basis throughout the states. These models are now available for beef producers to use in their own farm planning.

#### 3.2 Budgeting methods

The primary aim of the analysis was to budget potential changes at the beef enterprise level rather than undertaking a whole-farm analysis - this was confirmed with the MRC project supervisors at the outset. The project terms of reference indicated that gross margin and partial budgets were to be undertaken. The initial meeting of the consultants discussed the issue of the best budgeting approach and agreed that, to look at the relative profitability of different markets for an existing beef producer, development of gross margins and partial budgets was appropriate. Ideally a whole-farm analysis would be preferred for an individual property assessment, but in the context of developing a broad message for groups of farmers, enterprise budgets were considered more practical.

A gross margin budget for a farm enterprise is calculated as gross income minus variable costs. Gross income is the total value of production from the enterprise during the production period. Variable or direct costs are costs that vary with the size, type and intensity of the activity. By definition gross margins do not include fixed (overhead) costs or capital costs. A gross margin can be used to choose between beef enterprises. An example of a gross margin budget is shown in Table 1.

For an existing farmer considering changing beef enterprises a partial budget can also provide useful information. A partial budget shows the extra returns and costs as well as revenue foregone and costs saved from the proposed change. It shows whether the proposal is more or less profitable than the present enterprise. An example of a partial budget is shown in Table 2. A more detailed discussion of the issues in selecting a beef cattle enterprise is contained in Farquharson and Davies (1991).

**Table 1. A Gross Margin Budget**

Beef Cattle Budgets – Income and Variable Costs

Enterprise Name: Growing out Steers Region: Victoria  
 Carcase Type: APGF 90 Date: 28-Jun-91  
 Enterprise Units: 100 head

		Our Budget	Your Budget
A. Income:			
80 steers @	\$598 /head	\$47,840.00	
20 steers @	\$550 /head	\$11,000.00	
A. Total Income		\$58,840.00	

B. Annual Operation Expenses:

a: Replacement stock:			
100 steers @	\$330.00	\$33,000.00	

b: Husbandry operations:

Operation	Number	Number of doses	Cost per head		
1. Vaccination;	100	1	\$0.20	\$20.00	
2. Drenching;	100	1	\$1.50	\$150.00	
3. Lice Control	100	0	\$0.00	\$0.00	

c. Other Costs:	eartags @	\$0.00 /steer	\$0.00	
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d. Transport Costs*:				
	Purchased cattle	100 steers @ \$6.00	\$600.00	
	Sale Cattle	100 steers @ \$8.00	\$800.00	

e. Rural Lands Protection Board Rates (fixed cost, levied on DSE carrying capacity):				
723 DSE units @	\$0.00 /DSE	\$0.00	\$0.00	

f. Veterinary costs:			\$0.00	
	@	\$0 total herd costs	\$0.00	

g. Sale costs:	5.50% charged on sale cattle	\$3,236.20	
100 sale cattle @	\$0.00 /head saleyard charge	\$0.00	

B. Total Operation Expenses: (Excluding feed)	\$37,806.20	
-----------------------------------------------	-------------	--

C. Margin (before feed costs)	\$21,033.80	
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h. Feed costs (herd):	hay \$1,400	grain \$0	
	supplements \$0	irrigation \$0	
	pasture \$1,400	D. Total Feed Costs	\$2,800.00

	Gross Margin (C-D)	\$18,233.80	
	Gross Margin/steer	\$182.34	
Herd DSE's	723	Gross Margin/DSE	\$25.22
Capital invested	\$33,000	Percentage capital return p.a.	80.86%

Note: DSE stands for dry sheep equivalent. One DSE = 3012 Megajoules of metabolisable energy which is sufficient energy to maintain the weight of a 50kg wether for one year.

**Table 2. A Partial Budget**

## 1. Calculate change in capital involved

Purchases	___ breeding cows @ \$___ = \$___	A
Sales	___ breeding cows @ \$___ = \$___	B
Capital structures		C
Total capital	A - B + C =	TC

## 2. Calculate change in income

Total GM from new system	___ @ \$___ = \$___	D
Total GM of income foregone	___ @ \$___ = \$___	E
Change in GM income	= D - E	F
Less depreciation of new structures		G
Less repairs & maintenance of new structures		H
Net result	F - G - H =	I

## 3. Calculate Return on Capital = (I/TC) x (100/1)

In discussing the budget tools to be used it was considered highly desirable to have consistent financial measures used for all states and regions. It was also considered necessary to account for differing feed and capital requirements of alternative beef systems and to have computerised models to undertake these tasks.

Two computer models were used to develop the gross margin budgets. The models were the BREEDCOW/DYNAMA beef herd model (developed by Bill Holmes of Queensland DPI), which was used for the cattle industry in Queensland and the Northern Territory, and the CATTLE CASH model (developed by Ben Bootle of NSW Agriculture), which was used for all other states. Both models incorporate calculation of feed requirements (on a monthly basis) for the whole herd and estimate measures of gross margin per feed unit and gross margin per \$100 of livestock capital. The models allow incorporation of various livestock herd parameters (eg calving and adult death percentages, weaning weight, etc), capital valuations and enterprise prices and costs. Two models were used because the BREEDCOW model was specifically developed for northern Australia (using the Adult Equivalent (AE) for feed requirements) and the CATTLE CASH model was developed for more temperate regions (using the Dry Sheep Equivalent (DSE) feed measure).

### 3.3 Measures of financial performance

A gross margin budget is particularly useful in comparing the profit attributed to different enterprises which compete for land, labour and feed on any farm. In using gross margins for comparative analysis of farm activities or enterprises, valid comparisons can only be made in terms of a production unit common to all enterprises being compared (Makeham and Malcolm 1988). The unit can be land area (profit per hectare (ha)), capital invested (profit per \$100 livestock capital), head of livestock (profit per cow) or labour unit (profit per person). There are drawbacks with some of these measures. For gross margin per cow, there are different sized cows which require different amounts of feed, so the cow is not necessarily a common unit. Also comparison of breeding enterprises of vealers, yearlings and older turnoff with growing or fattening enterprises (eg buying steers for fattening and selling) will be difficult on a per cow basis. For gross margin per ha there needs to be an assumption made about stocking rates which may not be explicit.

Because of this the computer models used in this analysis calculate gross margin per feed unit (DSE or AE). These models explicitly account for the feed requirements of the different beef enterprises on a whole herd basis over the full planning year. Hence the gross margin per feed unit measure is a more realistic measure of financial return to one of the most limiting resources (feed) without specifying any stocking rate.

The models also calculate gross margin per \$100 livestock capital invested and it is also used in the report. This is equivalent to a percentage return to livestock capital invested.

In considering the range of percentage return to capital figures it must be remembered that this is a return only to livestock capital (and management) invested in the beef enterprise. The capital stock does not include land or fixed improvements, so returns of 30% to 50% are not extraordinary in this context.

In this report the beef enterprises are reported in terms of livestock capital investment required, feed DSEs or AEs required, total enterprise gross margin, gross margin per DSE or AE and percentage return to livestock capital. The last two measures are the most important for comparison purposes. Partial budgets were only calculated for enterprises where the gross margin per feed unit was increased substantially over the current beef enterprise. As a general rule, a 20% increase in gross margin per feed unit was required before a partial budget was calculated.

### 3.4 Sources of information

Because the budgets were developed on a regional basis information from economists and beef advisory officers within regions was used as a basis for the budgets. Stock prices were determined in addition through talking to feedlot operators and abattoirs. In this way regional differences in stock sale prices were incorporated.

With respect to quantities of beef required for an export order, the assumption was generally made that although an individual producer might not have enough stock to make up an export order there would be other cattle available to make up the order. However, in West and South Australia where meatworks were not killing for the export trade it was considered infeasible to produce at present for those markets. Instead the approach was to determine what price farmers would need to receive before such a market was profitable.

### 3.5 New market specifications

The market specifications for potential new markets were supplied to the consultants and these are attached in Appendix A. These specifications are for both Japan and Korea. They involve pasture-fed and pasture-fed/grain-finished animals. A number of the grain-finished specifications involve grain feeding for various periods of time. After discussions, it was decided that any grain finishing for 90 days or longer would be in a feedlot. The budgets developed for this project were at the farm level only. For grain feeding of 90 days or longer, alternative liveweight specifications for feedlot entry were developed. These specifications are what farmers should aim for in terms of feedlot entry and the budgets were developed for these liveweight (rather than the carcass) specifications.



## 4. Beef production systems and financial budgets

This Chapter contains the main analysis and results of the work program. In the next section the flow chart of activity is outlined. Following that, detailed results are presented for each State.

### 4.1 Activity flow chart

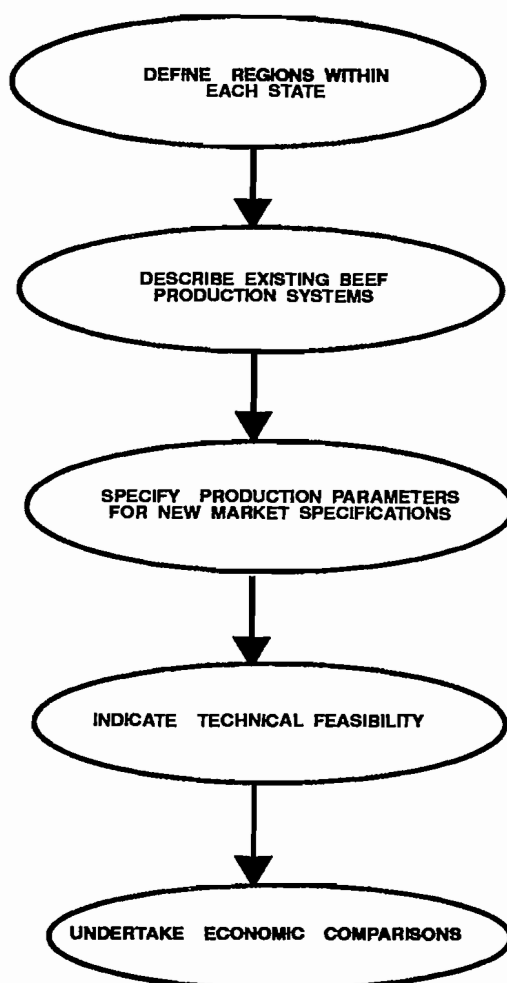
The analysis was undertaken according to the terms of reference specified in Chapter 2. The flow chart of activities for each State is shown in Figure 2.

Each State was divided into regions according to broad climatic and physical characteristics and types of beef production systems.

Within each region existing beef production systems were described and the necessary production parameters (e.g. growth rates) were determined. The comparisons of these requirements with potential feed available from pastures and fodder within each region indicated whether producing to the new market specifications were technically feasible.

For those market specifications that were feasible, financial budgets were drawn up for comparison with existing beef enterprises.

Figure 2. Activity Flow Chart .



## 4.2 Queensland

### 4.2.1 Beef regions

Within Queensland four regions were specified (as shown in Figure 3):

#### Western Queensland

West of longitude 148° and south of the Tropic of Capricorn.

#### Central and Southern Queensland - Spear Grass

Narrow coastal strip that stretches from Rockhampton to the NSW border.

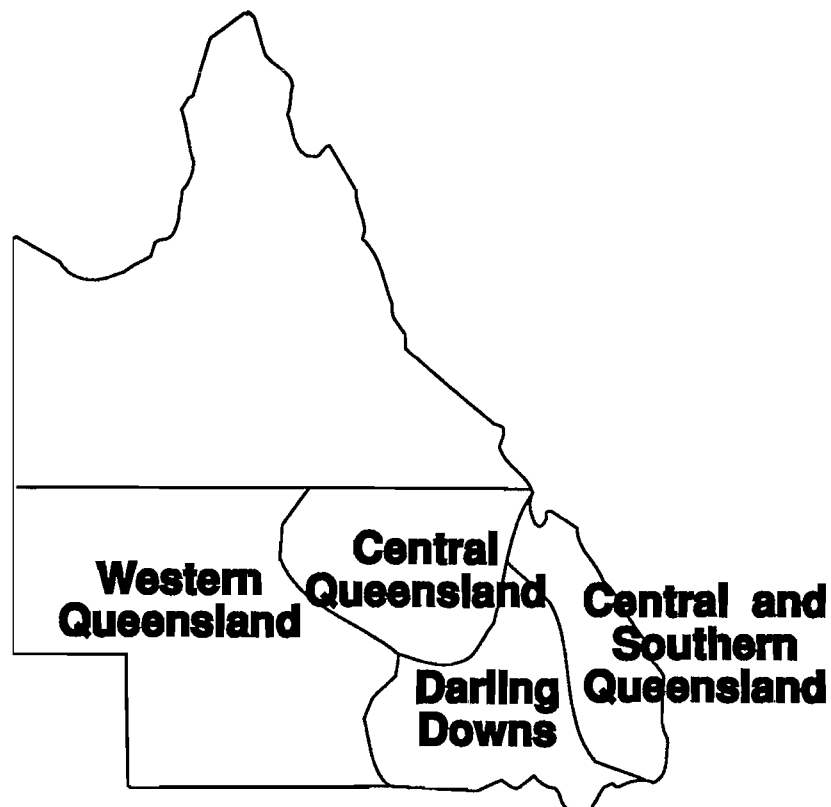
#### Central Queensland - Brigalow

The Brigalow lands of the Fitzroy basin in central Queensland. Between the Tropic of Capricorn and latitude 26° south and between the meridians of longitude 143° 40' east and 150° east.

#### Darling Downs

Between latitude 26° and 28° 20' south and between the meridians of longitude 148° and 152° east.

Figure 3. Queensland Beef Regions



The major existing beef enterprises within Queensland regions are shown in Table 3.

**4.2.2 Existing beef production systems**

**Table 3. Major Beef Enterprises in Queensland south of the Tropics**

<b>DARLING DOWNS</b>
Breeding and selling stores
Buying stores
Breeding vealers
Breeding yearlings
<b>WESTERN QUEENSLAND</b>
Breeding and selling stores
Breeding export bullocks
<b>CENTRAL QUEENSLAND - BRIGALOW</b>
Breeding and selling Jap Ox
Fattening purchased steers as Jap Ox
<b>CENTRAL AND SOUTHERN QUEENSLAND - SPEARGRASS</b>
Breeding store steers
Breeding and selling export Bullocks

**4.2.3 Production parameters and technical feasibility of producing for new market specifications.**

The technical feasibility of producing to the new market specifications was determined by whether the required growth rates could be achieved with the types of pasture and fodder available within each region. The technically feasible new market specifications are shown in Table 4.

**Table 4. Technical feasibility of new market specifications in Queensland**

	Darling Downs	Western Queensland	Central and Southern Queensland	Central Queensland
<b>JAPANESE MARKET</b>				
APGF50				*
AP1	*			*
AP2	*	*	*	
APY	*			
APGF90	*			*
AGF200	*			
AGY	*			
<b>KOREAN MARKET</b>				
Korean grassfed 1B	*	*	*	*
Korean grassfed (AUSMEAT P1)				
* Technically feasible.				

#### 4.2.4 Beef budgets for Queensland

The gross margin budget summaries for Queensland regions are shown in Tables 5 and 6. Figures are presented for both existing and new market specification beef enterprises. In comparison with the existing beef enterprises in each region, only a few of the new budgets showed an appreciable increase in profitability measured by gross margin per AE.

**Table 5. Beef Gross Margin Budgets for Darling Downs and Western Queensland Regions**

Enterprise (Existing or New)	Capital Stock	Total Adult Equivalent (AE)	Gross Margin (GM)	GM per AE	Percent Return on Capital
	\$	AE	\$	\$	\$
<b>Darling Downs</b>					
<u>E</u> Breeding & selling stores	80,788	189	14,621	77.43	18.10
<u>N</u> APGF90	91,950	231	25,999	112.53	28.28
APY	91,950	231	23,429	101.40	25.48
AGY90	79,500	189	16,714	88.51	21.02
<u>E</u> Buying stores	44,200	100	6,020	60.20	13.62
<u>N</u> AP1	70,000	100	4,176	41.76	6.96
AP2	70,000	100	4,701	47.01	6.72
Korean 1B	70,000	100	6,045	60.45	8.64
<u>E</u> Breeding Vealers	82,488	191	22,713	118.70	27.54
<u>N</u> AGY90	82,488	191	22,713	118.70	27.54
Korean Grainfed Feeder Steer	87,198	201	18,878	94.11	21.65
AGF200	87,198	201	19,083	95.13	21.89
<u>E</u> Breeding Yearlings	101,936	235	24,109	102.44	23.65
<u>N</u> AP2	119,184	238	23,025	96.70	19.32
APGF90	103,736	235	26,474	112.49	25.52
Korean 1B	111,278	238	24,859	104.41	22.34
<b>Western Queensland</b>					
<u>E</u> Breeding & selling stores	79,620	195	12,250	62.89	15.39
<u>N</u> Korean AUSMEAT P1	83,828	193	14,204	73.49	16.95
Korean 1B	83,828	193	15,210	78.69	18.15
<u>E</u> Breeding Export Ox	124,485	247	22,851	92.59	18.36
<u>N</u> AP2	124,485	247	23,856	96.66	19.16
Korean 1B	107,606	247	23,719	100.27	22.04

**Table 6. Beef Gross Margin Budgets for Central and Coastal SPEARGRASS Regions of Queensland**

Enterprise Existing or <u>New</u>	Capital Stock	Feed Adult Equivalent (AE)	Gross Margin (GM)	GM per AE	Percent Return on Capital
	\$	AE	\$	\$	\$
<u>Central Queensland</u>					
<u>E</u> Breeding and selling Jap Ox	140,800	240	39,907	166.42	28.34
<u>N</u> APGF50	140,450	240	40,271	167.80	28.67
AP1	140,450	240	42,231	175.96	30.07
Korean 1B	140,450	240	39,379	164.08	28.04
APGF90	140,450	240	40,155	167.31	28.59
<u>E</u> Fattening purchased steers as Jap Ox	140,800	240	39,907	166.42	28.34
<u>N</u> APGF50			12,544	156.80	
Korean 1B			8,898	111.23	
AP1			6,857	85.72	
<u>Central and Southern Queensland</u>					
<u>E</u> Store steers - Coastal SPEARGRASS					
	94,280	198	19,134	96.51	20.29
<u>N</u> Korean AUSMEAT P1	93,240	197	17,934	91.08	19.23
<u>N</u> Korean 1B	93,240	197	19,749	100.30	21.18
<u>E</u> Breeding/selling export bullocks					
	125,560	264	25,692	97.40	20.46
<u>N</u> Korean AUSMEAT P1	125,800	264	24,914	94.27	19.81
Korean 1b	125,800	264	26,417	99.95	21.00
AP2	125,800	264	28,813	109.02	22.90

For the potential beef enterprise changes that did appear to be profitable, partial budgets for these changes have been developed and are presented in Tables 7 to 12.

Partial budgets for the changes from breeding and selling stores in the Darling Downs to APGF90 and APY are shown in Tables 7 and 8. In Table 7, assuming 200 ha of forage sorghum, the change from breeding and selling stores to APGF90 requires extra livestock capital of \$11 162. Income increased by \$11 377 but there are extra costs of \$10 872. Overall the net profitability increase would return 5% on the extra capital investment needed.

In Table 8 a change from breeding and selling stores to APY in the Darling Downs would show a slight decrease in profit.

**Table 7. Partial Budget for Changing from Breeding and Selling Stores to APGF90 in Darling Downs**

<b>Enterprise name:</b>	Breeding & Selling Stores		
<b>New enterprise:</b>	APGF90		
<b>Region:</b>	Darling Downs (Assumes 200 ha of forage sorghum)		
<b>1. Change in capital</b>			
Herd capital:	new system	91,950.00	
	old system	80,788.00	
	Estimated increase in capital required		11,162.00
<b>2. Change in income</b>	GM for new system	25,999.28	
	GM of income foregone	14,621.77	
	Change in GM income		11,377.51
	Less contract fixed costs		
	plough	2,844.00	
	discs	2,519.00	
	cultivator	1,870.00	
	air seeder	3,639.00	10,872.00
	Estimated change in profit		505.51
<b>3. Return on capital</b>	= (505.51/11,162) x (100/1) = 5%		

**Table 8. Partial Budget for Changing from Breeding and Selling Stores to APY in Darling Downs**

<b>Enterprise name:</b>	Breeding & Selling Stores		
<b>New enterprise:</b>	APY		
<b>Region:</b>	Darling Downs (Assumes 200 ha of improved pasture)		
<b>1. Change in capital</b>			
Herd capital:	new system	91,950.00	
	old system	80,788.00	
	Estimated increase in capital required		11,162.00
<b>2. Change in income</b>	GM for new system	23,429.23	
	GM of income foregone	14,621.77	
	Change in GM income		8,807.46
	Less contract fixed costs		
	plough	2,844.00	
	discs	2,519.00	
	air seeder	3,639.00	9,002.00
	Estimated change in profit		-194.54

In Western Queensland the change from breeding and selling stores to Korean Grassfed Type 1B would show a 70% return on capital (Table 9).

**Table 9. Partial Budget for Changing from Breeding and Selling Stores to Korean Grassfed 1B in Western Queensland**

<b>Enterprise name:</b>	Breeding & Selling Stores		
<b>New enterprise:</b>	Korean Grassfed Type 1B		
<b>Region:</b>	Western Queensland		
1. Change in capital			
Herd capital:	new system	83,828.00	
	old system	79,620.00	
	Estimated increase in capital required		4,208.00
2. Change in income	GM for new system	15,210.93	
	GM of income foregone	12,250.66	
	Change in GM income		2,960.27
3. Return on capital	= (2960.27/4208) x (100/1) = 70.35%		

In Central Queensland the change from breeding and selling Jap Ox to PA would require extra capital but would increase profits by \$2 323 (Table 10). For the same region a change from breeding and selling Jap Ox to APGF50 would return 5.2% on extra capital required.

**Table 10. Partial Budget for Changing from Breeding and Selling Jap Ox to AP1 in Central Queensland**

<b>Enterprise name:</b>	Breeding & Selling Stores		
<b>New enterprise:</b>	AP1		
<b>Region:</b>	Central Queensland - Dawson - Callide Valley		
1. Change in capital	Change in livestock capital		-350.00
	Capital structures:		
	10 used 200 litre drums @ \$7.00 each	70.00	
	Total change in capital		-280.00
2. Change in income	GM for new system	42,231.34	
	GM of income foregone	39,907.52	
	Change in GM income		2,323.82
3. Break even analysis	Live weight price of steers sold (\$/kg)		1.09
4. Comments	Looks favourable if the live weights and costs given are maintained and the average price of steers is above \$1.09 kg live weight.		

From Table 11 the break even live weight price of steers required is \$1.17, but this level of return is not particularly high. In Central and Southern Queensland the change from breeding and selling export bullocks to AP2 looks promising if the live weight steer price is at or above \$1/kg.

**Table 11. Partial Budget for Changing from Breeding and Selling Jap Ox to APGF50 in Central Queensland**

<b>Enterprise name:</b>	Breeding & Selling Jap Ox		
<b>New enterprise:</b>	APGF50		
<b>Region:</b>	Central Queensland - Dawson - Callide Valley		
1. Change in capital	Change in livestock capital	-350.00	
	Capital structures:		
	10 used 200 litre drums @ \$7.00 each	70.00	
	2 x 2.5 tonne self feeders at \$750 each	1,500.00	
	<b>Total change in capital</b>		<b>1,220.00</b>
2. Change in income	GM for new system	40,271.01	
	GM of income foregone	39,907.52	
	Change in GM income		363.49
	Less depreciation on new structures 20% on self feeders		300.00
	<b>Total change in income</b>		<b>63.49</b>
3. Return on capital			5.20%
4. Break even analysis	Live weight price of steers sold (\$/kg)		1.17
5. Comments	At the costs and live weight gains given, this enterprise is not very favourable considering that the opportunity cost is approximately 10.5%.		

From Table 12 the return on capital is 29%.

**Table 12. Partial Budget for Changing from Breeding and Selling Export Bullocks to AP2 in Central and Southern Queensland**

<b>Enterprise name:</b>	Breeding & Selling Export Bullocks		
<b>New enterprise:</b>	AP2		
<b>Region:</b>	Central & Southern Queensland - Coastal SPEARGRASS		
1. Change in capital	Change in livestock capital	240.00	
	Capital structures:		
	341 ha of seca stylo pasture @ an establishment cost of \$31/ ha	10,571.00	
	<b>Total change in capital</b>		<b>10,811.00</b>
2. Change in income	GM for new system	28,813.38	
	GM of income foregone	25,692.90	
	Change in GM income		3,120.48
3. Return on capital			28.86%
4. Break even analysis	Live weight price of steers sold (\$/kg)		1.00
5. Comments	At the costs and live weight gains given, this enterprise is not very favourable considering that the opportunity cost is approximately 10.5%.		



## 4.3 New South Wales

### 4.3.1 Beef regions

The regions specified in NSW were (as shown in Figure 4):

#### North Inland

Includes Northern Tablelands, North West slopes and plains, Upper Hunter and Central West slopes and plains north of Dubbo.

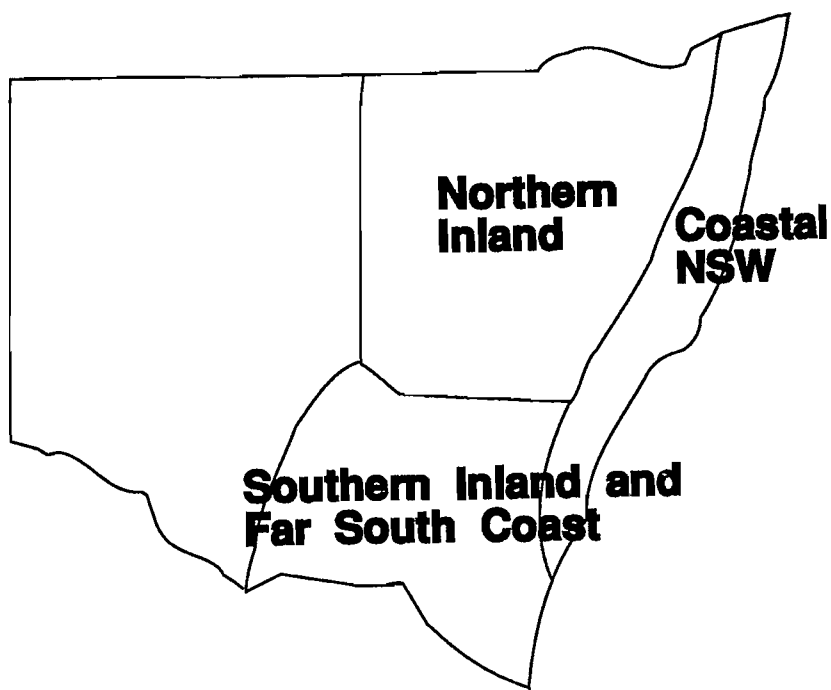
#### South Inland and Far South Coast

Includes Central West, the Murray, Murrumbidgee and South Eastern statistical divisions.

#### Coastal NSW

Includes Far North Coast, Mid North Coast, Lower Hunter, Sydney and Illawarra.

**Figure 4. New South Wales Beef Regions**



### 4.3.2 Existing beef production systems

The major existing beef enterprises within NSW regions are shown in Table 13. A wide range of beef enterprises are capable of production in NSW with different enterprises important in different regions of the state.

**Table 13. Major beef enterprises in New South Wales**

Existing beef enterprises
Store weaner, vealer and yearling production from straight bred and crossbred cows.
Producing for the butcher, supermarket and restaurant trade.
Growing out steers on pastures or crops.
30 month steer production.
Bullock production

**4.3.3 Production parameters and technical feasibility of producing for new market specifications**

The production parameters for new beef enterprises within each region were developed in conjunction with regional farm management economists and beef advisory officers. The technically feasible new market specifications are shown in Table 14.

**Table 14. Technical feasibility of new market specifications in New South Wales**

	Northern Inland	South Inland and Far South Coast	Coastal
<b>JAPANESE MARKET</b>			
APGF50	*		
AP1	*	*	*
AP2	*	*	*
APY	*		
APGF90	*	*	*
Japanese Feeder Steer	*	*	
AGF300	*	*	
AGF200	*	*	*
AGF150	*	*	*
AGY90	*		*
<b>KOREAN MARKET</b>			
APY		*	
Korean Grassfed 1B	*	*	*
Korean Grassfed (AUSMEAT P1)	*	*	*
Boneless Type 1A	*	*	*
Frozen Bone-in (AUSMEAT K1)	*		
* Technically feasible.			

**4.3.4 Beef budgets for New South Wales**

In NSW, prices used were primarily based on valuations made by advisory officers for their districts. They have been influenced by prices quoted by lot feeders and by abattoirs that purchase direct.

The main problem with attaching prices to various carcass types is that most of these markets are still in their infancy and definite price premiums are yet to be demonstrated on a consistent basis. Advisory officers still look to what a similar carcass will fetch in domestic saleyards. Therefore there has been little price premium attached to some of the specifications.

In addition, buyers seeking carcasses to fill a particular specification order are only going to pay the minimum necessary to attract supplies. Until a longer term contracting arrangement is developed between producers and the marketers, the price signals will continue to be unclear.

In situations where fast growth rates are required, additional costs have been identified in the form of extra supplementary feeding costs or extra pasture costs. Some of the specifications listed could only be achieved on good soil types. In general the price premiums necessary to justify the additional costs are less than 10 cents/kg live weight because much of the increased costs are recouped by turning off more meat per hectare each year.

The base budget that alternative enterprises are compared to is an enterprise based on improved pastures because the majority of the alternative enterprises also require improved pastures. Partial budgets are very sensitive to the choice of price parameters for the base budget.

The Korean specifications that also take the heifer carcasses are attractive from a management point of view.

Direct marketing to abattoir or to the feedlot results in considerable savings and an increase in the number of contracts for delivery at a future date is anticipated. A marketing agent may be required by the producer to identify the best market for the type of cattle produced (taking into account breed and production system).

The summary gross margin budgets for NSW regions are shown in Tables 15 and 16.

**Table 15. Beef Gross Margin Budgets for Southern New South Wales**

Enterprise	Capital Stock \$	Feed DSEs DSE	Gross Margin \$	GM per DSE \$	Percent Return
<b>Southern Region</b>					
<b>Southern Tablelands</b>					
Weaners (domestic)	68,144	1,471	15,418	10.48	22.63
Korean 1B (also domestic)	80,693	1,891	24,642	13.03	30.54
APGF90 and AGF150	85,038	1,993	27,576	13.84	32.43
<b>Eastern Riverina</b>					
Yearlings (domestic)	77,322	1,741	24,129	13.86	31.21
Crossbred Yearlings (domestic)	81,918	1,750	25,581	14.62	31.23
<b>Pasture fattened steers</b>					
(domestic)	11,684	406	5,867	14.45	50.22
Supp. feed steers (domestic)	8,384	302	2,136	7.07	25.48
Korean Type 1B	89,191	2,080	28,632	13.76	32.10
Korean Type 1A	81,228	1,890	25,032	13.24	30.82
Japanese feeder steer	71,610	1,602	23,876	14.90	33.34
AGY90 (European Cross)	73,093	1,506	21,826	14.49	29.86
AGY90 (non European Cross)	72,641	1,497	20,903	13.96	28.78
AP2	99,413	2,240	33,735	14.61	32.93
AGF300	75,528	1,595	23,235	14.57	30.76
AP1	96,138	2,166	32,985	15.23	34.31
<b>South Western NSW</b>					
Domestic Yearling	83,946	1,903	27,616	14.51	32.89
Korean AUSMEAT P1	97,202	2,261	29,246	12.93	30.09
APGF90 and AGF150	89,435	2,004	29,710	14.83	33.22
AGF200	85,080	1,903	31,699	16.66	37.26
APY	92,605	2,118	32,426	15.31	35.02

In the northern inland region many enterprises can be undertaken both by breeding and growing and by buying and growing and the budgets for each can be seen in Table 16.

From Tables 15 and 16 the new enterprises may be more or less profitable than the existing domestic enterprises. To further investigate the profitability of changing enterprises, partial budgets for all changes were calculated.

**Table 16. Beef Gross Margin Budgets for Coastal & Northern New South Wales**

Enterprise	Capital Stock	Feed DSEs	Gross Margin	GM per DSE	Percent Return
	\$	DSE	\$	\$	%
<u>Coastal NSW</u>					
Weaner breeding (unimproved pastures)	61,245	1,127	10,485	9.30	17.12
Weaner breeding (improved pastures)	61,060	1,238	16,121	13.03	26.40
APGF50	101,867	2,294	25,100	10.94	24.64
APGF90	88,262	1,840	27,753	15.08	31.44
AP2	102,315	2,259	37,087	16.42	36.25
AGF200	84,418	1,718	23,184	13.49	27.46
AGY90 straight bred cows	65,849	1,243	17,496	14.07	26.55
AGY90 crossbred cows	69,128	1,218	19,962	16.38	28.88
Korean Grassfed 1B	114,761	2,432	34,060	14.01	29.68
Korean AUSMEAT P1	94,443	2,082	28,015	13.46	29.66
Korean AUSMEAT P1 (Crossbred cows)	105,746	2,172	30,780	14.21	29.11
<u>Northern Inland NSW</u>					
- Breeding enterprises					
Typical weaner	61,054	1,313	17,684	13.47	28.96
APY	87,835	2,021	25,682	12.71	29.24
APGF50	102,298	2,262	31,493	13.92	30.79
Japanese feeder steer	70,163	1,548	21,070	13.61	30.03
AGF200	78,228	1,750	21,421	12.24	27.38
Korean Type 1A	78,525	1,831	25,882	14.13	32.96
APGF90	84,895	1,916	28,738	15.00	33.85
AP2	118,644	2,899	29,674	10.24	25.01
AP1	102,298	2,270	33,372	14.70	32.62
AGY90	72,763	1,636	22,787	13.93	31.32
AGF300	70,163	1,548	21,070	13.61	30.03
- Growing out enterprises					
Growing out steers for APY (common domestic enterprise)	17,875	482	5,936	12.31	33.21
Growing out for AGF200	17,875	482	5,936	12.31	33.21
Growing out for Korean 1A	16,940	438	8,632	19.71	50.95
Growing out for APGF90	24,050	693	9,407	13.57	39.12
Growing out for AP2	84,175	2,093	17,003	8.12	20.20
Growing out for AP1	55,900	1,508	23,187	15.38	41.48

The main problem with comparing enterprises in Tables 15 and 16 is that some new enterprises required less capital than existing enterprises but are more profitable. In this case it is impossible to compare them on a return to capital basis. In NSW the approach taken to overcome this problem was to assume that there were no extra costs in changing enterprises (i.e. the feed requirements were the same for both enterprises in the comparison) and to compare enterprises on a constant feed requirement basis. The resulting partial budgets are shown in Tables 17 and 18.

**Table 17. Beef Partial Budgets for Southern New South Wales**

Enterprise	Equiv. Cow Nos. No.	Capital Incl. Calves \$	Change in Capital \$	New GM \$	Change in GM \$	Change 20% Interest \$
<u>Southern Region</u>						
Southern Tablelands						
Weaners (domestic)	100	68,144		15,418		
Korean 1B (also domestic)	78	62,941	-5,203	18,994	3,576	4,616
APGF90 and AGF150	74	62,926	-5,216	20,165	4,747	5,790
Eastern Riverina						
Yearlings (domestic)	100	77,322		24,129		
Crossbred Yearlings (domestic)						
	99	81,099	3,777	25,075	946	190
Korean Type 1B	84	74,920	-2,402	23,814	-315	165
Korean Type 1A	92	74,730	-2,592	22,802	-1,327	-808
Japanese feeder steer	109	78,055	733	25,767	1,638	1,491
AGY90 (European Cross)	116	84,788	7,466	25,069	940	553
AGY90 (non European Cross)	116	84,264	6,942	24,009	-120	-1,509
AP2	78	77,542	220	25,281	1,152	1,108
AGF300	109	82,326	5,004	25,077	948	-53
AP1	80	76,910	-412	26,128	1,999	2,081
South Western NSW						
Domestic Yearling	100	83,946		27,616		
	84	81,650	-2,296	24,325	-3,289	-2,830
Korean AUSMEAT P1	95	84,963	1,017	27,946	332	129
APGF90 and AGF150	100	85,080	1,134	31,386	3,772	3,545
AGF200	90	83,345	-602	28,895	1,281	1,402
APY						

In those tables the first step was to calculate (from DSE requirements) the numbers of breeders or steers (for growing out enterprises) that could be run on the same areas as the 100 original animals from the typical enterprise. This number is shown in the first column. Then the capital required in this enterprise (including progeny) is calculated by multiplying the original capital stock (from Tables 15 and 16) by column 1 expressed as a percentage. The adjusted capital values are in column 2. Next the difference in capital required from the previous enterprise is calculated and shown in column 3. A minus figure indicates a saving compared to the original enterprise on a constant feed unit basis.

The new gross margin was calculated by multiplying the gross margin per cow (not shown in Tables 15 and 16) by the numbers in column 1. The change in gross margin is the column 4 figure compared to the original gross margin for the domestic enterprise. Column 6 shows the change in gross margin adding 20% of capital savings and subtracting 20% if there is an additional capital requirement. This is really equivalent to the bottom line figure in most partial budget calculations. It allows for the opportunity cost of capital on a constant feed unit basis.

From the results in Tables 17 and 18 there are a number of enterprises that appear to pay on a return to marginal capital basis in NSW. These include changing from weaner production to APGF90 and AGF150 on the Southern Tablelands, changing from yearling production to AP1, Japanese feeder steer or AP2 in the Eastern Riverina and changing from yearling production to AGF200 and APY in South Western NSW.

**Table 18. Beef Partial Budgets for Coastal & Northern New South Wales**

Enterprise	Equiv. Cow Nos. No.	Capital Incl. Calves \$	Change in Capital \$	New GM \$	Change in GM \$	Change 20% Interest \$
<u>Coastal NSW</u>						
Weaner breeding (improved pastures)	100	61,060		16,121		
Weaner breeding (unimproved pastures)	110	67,370	6,310	11,429	-4,693	-5,955
APGF50	54	55,008	-6,052	13,455	-2,667	-1,456
APGF90	67	59,136	-1,924	18,459	2,337	2,722
AP2	55	56,273	-4,787	20,249	4,127	5,084
AGF200	72	60,781	-279	16,571	449	505
AGY90 Straight bred cows	100	65,849	4,789	17,369	1,247	289
AGY90 Crossbred cows	102	70,511	9,451	20,213	4,091	2,201
Korcan Grassfed 1B	51	58,528	-2,532	17,244	1,122	1,628
Korean AUSMEAT P1	59	55,721	-5,339	16,408	286	1,354
Korean AUSMEAT P1 (Crossbred cow)	57	60,275	-785	17,416	1,294	1,451
<u>Northern Inland NSW</u>						
- Breeding enterprises	100	61,054		17,684		
Typical weaner	65	57,093	-3,961	16,582	-1,103	-310
APY	58	59,333	-1,721	18,144	460	804
APGF50	85	59,639	-1,415	17,790	106	389
Japanese feeder steer	75	58,671	-2,383	15,958	-1,726	-1,250
AGF200	72	56,538	-4,516	18,510	826	1,730
Korean Type 1A	69	58,578	-2,476	19,696	2,012	2,507
APGF90	45	53,390	-7,664	13,242	-4,442	-2,909
AP2	58	59,333	-1,721	19,226	1,542	1,887
AP1	80	58,210	-2,844	18,108	424	993
AGY90	85	59,039	-1,415	17,790	106	389
AGF300						
- Growing out enterprises						
Growing steers for APY (common domestic enterprise)	100	17,875		5,936		
Growing out for AGF200	100	17,875	0	5,936	0	0
Growing out for Korean 1A	110	18,634	759	9,495	3,559	3,407
Growing out for APGF90	70	16,835	-1,040	6,585	649	857
Growing out for AP2	23	19,360	1,485	3,911	-2,025	-2,322
Growing out for AP1	32	17,888	13	7,420	1,484	1,481

In Coastal NSW potentially profitable changes are from breeding weaners on improved pastures to AP2, APGF90, AGY90 and Korean grassfed (Type 1B and AUSMEAT P1). In the Northern Inland region for breeding enterprises potentially profitable changes are from breeding weaners to APGF90, AP1 and Korean boneless Type 1A. In that region for growing out enterprises potentially profitable changes are from pasture fed yearling APY to Korean Type 1A and AP1.

## 4.4 Victoria

### 4.4.1 Beef regions

Two regions were originally specified for Victoria -

#### South and North Eastern Victoria

Area south of Great Dividing Range plus the north east of Victoria situated east of the Hume Highway.

#### North Central Victoria

Area north of the Great Dividing Range, east of the city of St. Arnaud and west of the Hume Highway.

These regions are shown in Figure 5. However, when constructing the beef budgets there was very little difference in gross margins between regions. Therefore only one set of budgets has been produced for Victoria.

**Figure 5. Victorian Beef Regions**



### 4.4.2 Existing beef production systems

The major existing beef enterprises within Victoria are shown in Table 19. The current breeding enterprises are supermarket, butcher, restaurant and AGF300. The latter is basically an enterprise for breeding and growing out weaners for feedlots or fatteners. The current growing enterprises are pasture-fed steers and yearlings.

**Table 19. Major beef enterprises in Victoria**

Existing beef enterprises
Store weaner, vealer and yearling production
Breeding and growing out weaners for feedlots or fatteners
Producing for the butcher, supermarket or restaurant trade
Growing out pasture fed yearlings, steers and bullocks

#### 4.4.3 Production parameters and technical feasibility of producing for new market specifications

The technically feasible new market specifications are shown in Table 20.

**Table 20. Technical feasibility of new market specifications in Victoria**

JAPANESE MARKET	KOREAN MARKET
APGF50	Korean Type 1A
APGF90	Korean Grassfed Type 1B
AP2	Korean Grassfed (AUSMEAT P1)
APY	
AGF300	
AGF200	
AGY90	

#### 4.4.4 Beef budgets for Victoria

Budgets have been prepared for breeding and growing enterprises. These are shown in Tables 21 and 22 respectively. In the Victorian breeding enterprises the largest increase in gross margin per DSE is the change from breeding and growing out weaners (AGF300) to APGF90, where the increase is about 18 per cent. The partial budget for that change is shown in Table 23 where the livestock numbers have been adjusted to a constant feed requirement basis. The increase in profitability is \$3 845 and \$6 750 less capital is required.

Partial budgets for growing enterprises were also estimated for the change from AP1 to AGF200 and APGF90. These changes provided a return on capital of 18% and 43% respectively, as shown in Tables 24 and 25.

**Table 21. Beef Gross Margins for Victorian Breeding Enterprises**

Enterprise	Capital Stock	Feed DSEs	Gross Margin	GM per DSE	Percent Return
	\$	DSE	\$	\$	%
Supermarket	70,961	1,953	25,550	13.09	36.01
Butcher	70,456	1,640	21,179	12.92	30.06
Restaurant	70,791	2,378	32,605	13.71	46.06
AGF300	70,399	1,665	21,568	12.95	30.64
APGF50	70,060	2,337	27,502	11.77	39.26
APGF90	70,248	1,964	29,911	15.23	42.58
AP1	70,060	2,473	33,311	13.47	47.55
AP2	69,834	2,511	32,183	12.82	46.09
APY	70,803	2,183	28,521	13.07	40.28
AGF200	70,286	1,855	26,594	14.34	37.84
AGY90	70,456	1,638	20,420	12.47	28.98
Jap feeder steer	70,399	1,655	21,695	13.11	30.82
Korean Type 1A	70,852	1,962	22,960	11.70	32.41
Korean Type 1B	69,792	2,887	33,551	11.62	48.07
Korean Type 2	70,110	2,169	25,614	11.81	36.53



**Table 22. Beef Gross Margins for Victorian Growing Enterprises**

Enterprise	Capital Stock	Feed DSEs	Gross Margin	GM per DSE	Percent Return
	\$	DSE	\$	\$	%
APGF50	33,000	1,567	14,399	9.13	28.77
APGF90	33,000	723	18,233	25.22	80.86
AP1	33,000	1,871	24,625	13.16	49.20
AP2	33,000	2,006	25,646	12.78	30.88
APY	33,000	578	7,763	13.43	45.53
AGF200	33,000	480	10,787	22.47	63.27
KOREA 1A	33,000	301	1,222	4.06	10.59
KOREA 1B	33,000	1,695	17,720	10.45	35.40
KOREA 2	33,000	503	3,321	6.60	18.87

**Table 23. Partial Budget for Changing from AGF300 to APGF90 in Victoria**

<b>Enterprise name:</b>	AGF300 (Breeding and growing out weaners)		
<b>New enterprise:</b>	APGF90		
<b>Region</b>	Victoria		
<b>Change in capital required</b>			\$
Purchases			0
Sales	15 breeding cows @ \$450		-6,750
Capital structures			0
Change in capital required			-6,750
<b>Change in income</b>			
Total GM from new system	85 cows @ \$297		25,245
Total GM income foregone	100 cows @ \$214		21,400
Change in GM income			3,845

**Table 24. Partial Budget for Changing from Growing out AP1 to AGF200 in Victoria**

<b>Enterprise name:</b>	AP1 grow out		
<b>New enterprise:</b>	AGF200 grow out		
<b>Region:</b>	Victoria		
<b>Change in capital required</b>			\$
Purchases	390 steers @ \$330		128,700
Sales	100 steers @ \$330		33,000
Capital structures			0
Change in capital required			95,700
<b>Change in income</b>			
Total GM from new system	390 steers @ \$107		41,730
Total GM income foregone	100 steers @ \$246		24,600
Change in GM income			17,130
Return on capital			18%

**Table 25. Partial Budget for Changing from Growing out AP1 to APGF90 in Victoria**

<b>Enterprise name:</b>	AP1 grow out		
<b>New enterprise:</b>	APGF90 grow out		
<b>Region:</b>	Victoria		
<b>Change in capital required</b>			\$
Purchases	258 steers @	\$330	85,140
Sales	100 steers @	\$330	33,000
Capital structures			0
Change in capital required			52,140
<b>Change in income</b>			
Total GM from new system	258 steers @	\$182	46,956
Total GM income foregone	100 steers @	\$246	24,600
Change in GM income			22,356
Return on capital			43%

## 4.5 Tasmania

### 4.5.1 Beef regions

Two geographic regions can be identified for beef production in Tasmania (as shown in Figure 6):

#### Midlands (extensive farming districts)

Includes Local Government Areas (LGAs) of Bothwell, Campbell Town, Evandale, Fingal, Longford, Ross and Oatlands.

#### North West Coast (intensive farming districts)

Includes LGAs of Burnie, Circular Head, Devonport, Kentish, Latrobe, Penguin, Ulverstone and Wynyard.

In the Midlands region rainfall is generally less than 750 mm per annum. This region is essentially a region for the production of store stock. The climate of this region makes it generally unsuited for the production of finished cattle, with cattle unable to reach the required body weight by an acceptable age. Within Tasmania the Midlands region has become a source of stock for those producers operating finishing operations in the better rainfall regions of the North West Coast.

For stock to be finished in the Midlands region would require investment in irrigation plant and the production of forage crops which, given the climatic extremes of the region, would present unacceptably high production risks and costs for producers. For this reason all the budgets have concentrated on the production of beef from the higher rainfall and climatically more suited North West Coast region.

### 4.5.2 Existing beef production systems

The current beef production system for Tasmania (that has had beef gross margins prepared in recent years) is the Korean Grassfed Type 1B. This system should be identified as the current system for both breeding and finishing operations, with other budgets being compared to it.

### 4.5.3 Production parameters and technical feasibility of producing for new market specifications

The production parameters for new beef enterprises within each region were developed in conjunction with regional farm management economists and beef advisory officers.

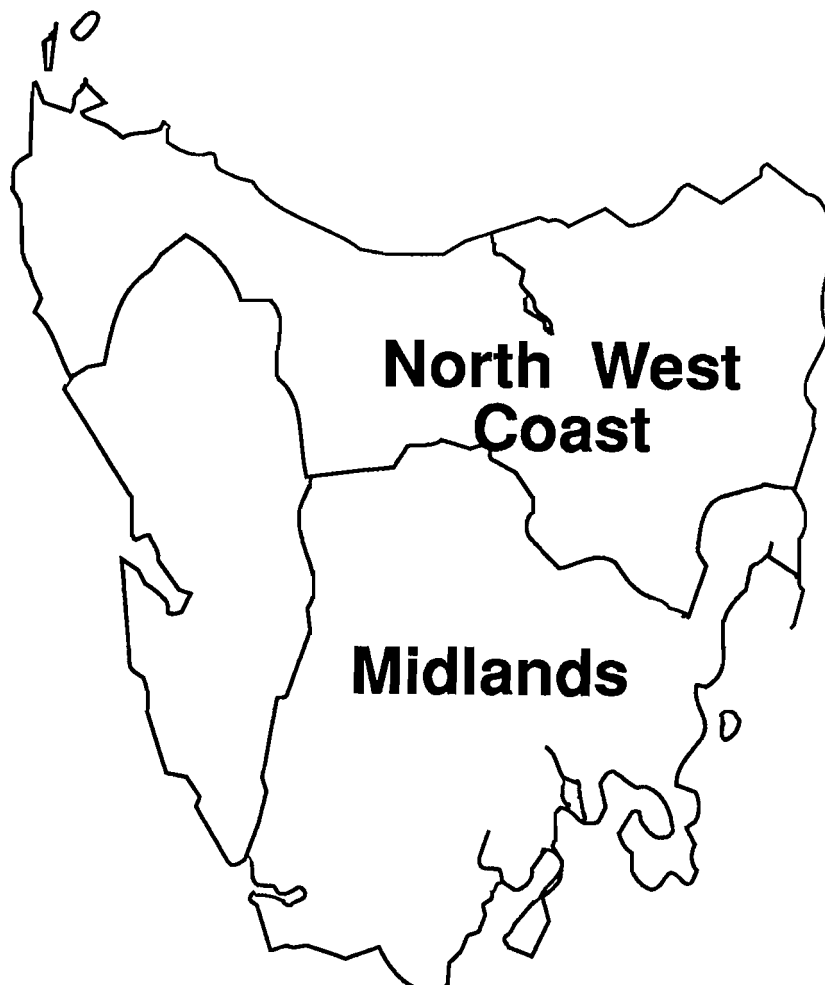
A list of technically feasible beef enterprises for the North West Coast region is shown in Table 26.

**Table 26. Technically feasible new market specifications in Tasmania**

AP1	Korean Grassfed Type 1B
AP2	Korean Grassfed AUSMEAT P1
APY	
AGF200	

A summary of the gross margin budgets for Tasmania is shown in Table 27. The Korean Grassfed Type 1B figures for finishing (trading) and breeding are \$10.52/DSE and \$11.94/DSE respectively. For the breeding budgets the gross margin per DSE of the Korean grassfed Type 1B is higher than most of the other breeding budgets. The AGF200 budget is only 7% larger. Therefore no partial budgets for breeding enterprise changes have been drawn up for Tasmania.

**Figure 6. Tasmanian Beef Regions**



However, in the trading enterprises the changes from Korean Grassfed Type 1B to APY, AGF200, AP1 or Korean Grassfed AUSMEAT P1 all seemed profitable. Partial budgets for these changes are shown in Tables 29 to 32.

**Table 27. Beef Gross Margin Budgets for Tasmania**

Enterprise	Capital Stock	Feed DSEs	Gross Margin	GM per DSE	Percent Return
	\$	DSE	\$	\$	%
<b>Breeding enterprises</b>					
Korean Grassfed Type 1B	77,514	2,344	27,988	11.94	36.11
AGF200	78,260	1,859	23,840	12.82	30.46
APY (Korean Market)	78,446	1,880	20,331	10.82	25.92
Korean Grassfed Type 2	78,384	1,945	20,367	10.47	25.98
APY (Japanese Market)	78,291	1,929	19,216	9.96	24.55
<b>Trading enterprises</b>					
Korean Grassfed Type 1B	10,920	776	8,161	10.52	49.83
APY (Korean Market)	10,920	328	6,453	19.68	118.20
AGF200	10,920	367	9,196	25.06	101.06
AP1 (Japanese market)	10,920	1,013	13,558	13.38	74.50
APY (Japanese Market)	10,920	399	6,075	15.23	74.18
Korean Grassfed AUSMEAT P1	10,920	488	6,225	12.76	57.01

**Table 28. Partial Budget for Changing from Trading Korean Grassfed Type1B Steers to APY for Korea**

<b>Enterprise name:</b>	Korean Grassfed Type 1B Steers 20-36 months		
<b>New enterprise:</b>	APY (Korean Market)		
<b>Region:</b>	North West		
<b>Change in capital required</b>			\$
Herd Capital	new system	10,920	
	old system	10,920	
Change in capital required			0
<b>Change in income</b>			
GM from new system		12,906	
GM of income foregone		5,441	
Change in GM income			7,465

**Table 29. Partial Budget for Changing from Trading Korean Grassfed Type1B Steers to AGF200 in Tasmania**

<b>Enterprise name:</b>	Korean Grassfed Type 1B Steers 20-36 months		
<b>New enterprise:</b>	AGF200		
<b>Region:</b>	North West		
<b>Change in capital required</b>			\$
	Herd Capital	new system	10,920
		old system	10,920
	Change in capital required		0
<b>Change in income</b>			
	GM from new system		11,035
	GM of income foregone		5,441
	Change in GM income		5,594

**Table 30. Partial Budget for Changing from Trading Korean Grassfed Type1B Steers to AP1 for Japan in Tasmania**

<b>Enterprise name:</b>	Korean Grassfed Type 1B Steers 20-36 months		
<b>New enterprise:</b>	AP1 (Japanese Market)		
<b>Region:</b>	North West		
<b>Change in capital required</b>			\$
	Herd Capital	new system	10,920
		old system	10,920
	Change in capital required		0
<b>Change in income</b>			
	GM from new system		8,134
	GM of income foregone		5,441
	Change in GM income		2,694

**Table 31. Partial Budget for Changing from Trading Korean Grassfed Type1B Steers to Korean Grassfed AUSMEAT P1 in Tasmania**

<b>Enterprise name:</b>	Korean Grassfed Type 1B Steers 20-36 months		
<b>New enterprise:</b>	Korean Grassfed AUSMEAT P1		
<b>Region:</b>	North West		
<b>Change in capital required</b>			\$
	Herd Capital	new system	10,920
		old system	10,920
	Change in capital required		0
<b>Change in income</b>			
	GM from new system		6,225
	GM of income foregone		5,441
	Change in GM income		784

**Table 32. Partial Budget for Changing from Trading Korean Grassfed Type1B Steers to APY for Japan in Tasmania**

<b>Enterprise name:</b>	Korean Grassfed Type 1B Steers 20-36 months		
<b>New enterprise:</b>	APY (Japanese Market)		
<b>Region:</b>	North West		
<b>Change in capital required</b>			\$
Herd Capital	new system	10,920	
	old system	10,920	
	Change in capital required		0
<b>Change in income</b>			
GM from new system		8,100	
GM of income foregone		5,441	
	Change in GM income		2,659

## 4.6 Western Australia

### 4.6.1 Beef regions

Within Western Australia south of the Tropic of Capricorn two regions were specified (as shown in Figure 7).

#### Agricultural Region

This region comprises an area lying between 28 and 35 degrees of latitude south and 114 and 122 degrees of longitude east. In essence it extends approximately in a line from just north of Geraldton on the west coast to just east of Esperance on the south coast.

#### Pastoral south of the Tropic of Capricorn

The region relevant to this project embraces an area south of the Tropic of Capricorn extending between 114 and 129 degrees of longitude east. It contains areas known as the Pilbara, Gascoyne and the Goldfields.

### 4.6.2 Existing beef production systems

The main existing beef cattle enterprises in the Agricultural region in WA are domestic supermarket, butcher and restaurant for breeding enterprises and the South West weaner growing out enterprise.

In the Pastoral region the main enterprise is breeding weaners for further growing and fattening in the Agricultural region.

### 4.6.3 Production parameters and technical feasibility of producing for new market specifications

The production parameters for new beef enterprises within each region were developed in conjunction with regional farm management economists and beef advisory officers.

The technical and economic feasibility of beef enterprises in WA is shown in Tables 33 and 34. As shown in those tables, in WA there is no market for cattle suitable for the Japanese and Korean markets.

#### 4.6.4 Beef budgets for Western Australia

Gross margins for the following beef production systems have been developed:

##### Agricultural Region

1. Domestic Supermarket/Butcher
2. Domestic Restaurant
3. Pasture Fed 1st Quality
4. Pasture Fed 2nd Quality
5. Feeder Steers for Australian Grain Fed

##### Growing Out Enterprises

6. SW Weaner Steers Domestic Restaurant
7. Pastoral Weaner Steers Domestic Restaurant

##### Pastoral Region

##### Breeding Enterprises

1. Pastoral Weaners for the Agricultural Areas
2. Pasture Fed 2nd Quality

**Figure 7. Western Australian Beef Regions**



**Table 33. Technical and Economic Feasibility of Beef Systems  
in Western Australian Agricultural Region**

AGRICULTURAL REGION		
System	Technically feasible	Economically feasible
Domestic supermarket	Yes	Yes
Domestic butcher	Yes	Yes : in WA as for domestic
Domestic Restaurant	Yes	Yes
APGF50	Yes	No : no market
APGF90	Yes	No : no market
AP1	Yes	Yes
AP2	Yes	Yes
APY	Yes	No : no export
Feeder Steer for Aust Grain Fed 240 days	Yes	No : no market
Feeder Steer for Aust Grain Fed 180-220 days	Yes	No : no market
Feeder Steer for Aust Grain Fed 90-120 days	Yes	Yes : domestic of season market
Feeder Steer for Live Export to Japan	Yes	No : no market
Feeder Steer for Korea Type 1A		
AGF150	Yes	No : no market
Korean Grassfed 1B	Yes	No : no market similar to domestic
Korean Grassfed AUSMEAT P1	Yes	No : no market similar to domestic

Parameters for each system in the Agricultural Region are outlined in each budget. Essentially each budget is based on calving in Autumn (March to May) and turn-off in Summer (December/January). Prices are those which are likely in 1991-92.

Two gross margin budgets have been produced - a traditional gross margin budget (income minus variable costs) and a gross margin which includes the cost of the capital invested in livestock. As will be seen in the budgets the cost of capital invested in the livestock is substantial. In all breeding budgets it is the largest 'cost' while in the trading budgets it is the second largest after cattle purchases.

The results for the Agricultural region in Table 35 indicate that the growing out enterprises return a higher gross margin with capital than any of the breeding enterprises. The main reason for this is because there is less capital tied up in a growing out enterprise. For example, the capital invested in cattle for the South West weaner growing out enterprise producing for the domestic restaurant market is about \$60 000 whereas for the breeding enterprise producing for the same market the capital invested is about \$78 000.

When the cost of capital is not considered, the gross margin without capital for the breeding enterprises producing for the domestic supermarket/butcher, domestic restaurant and feeder steer Australian grain-fed markets marginally exceed that for the growing out enterprise based on South West weaners producing for the domestic restaurant market. No breeding enterprise exceeds the gross margin without capital for the growing out enterprise based on pastoral weaners for the domestic restaurant trade.



**Table 34. Technical and Economic Feasibility of Beef Systems in Western Australian Pastoral Region**

PASTORAL REGION		
System	Technical Feasibility	Economic Feasibility
Domestic Supermarket	No	No
Domestic Butcher	No	No
Domestic Restaurant	No	No
APGF50	No	No : no market
APGF90	No	No : no market
AP1	No	No
AP2	Yes	Yes
APY	No	No : no export DS, DB, DR
Feeder Steer for Aust Grain Fed 240 days	No	No : no market
Feeder Steer for Aust Grain Fed 180-220 days	No	No : no market
Feeder Steer for Aust Grain Fed 90-120 days	No	No
Feeder Steer for Live Export to Japan	No	No : no market
Feeder Steer for Korea Type 1A grain Fed 150 days	No	No : no market
Korean Grassfed Type 1B	No	No : no market domestic
Korean Grassfed AUSMEAT P1	Yes	No : no market similar to domestic

**Table 35. Beef Gross Margins for Western Australian Agricultural Region**

Enterprise	Gross Margin	Gross Margin
	Without Capital \$/DSE	With Capital \$/DSE
Growing Out		
Domestic Restaurant		
Pastoral Weaners	15.43	7.68
South West Weaners	14.01	7.20
Breeding		
Domestic Supermarket/Butcher	14.67	6.07
Domestic Restaurant	14.65	6.00
Pasture Fed 1st Quality	11.62	5.05
Pasture fed 2nd Quality	11.46	4.88
Feeder Steers Aust Grain Fed	14.26	4.72

The results are consistent with industry views which consider growing out enterprises are more profitable but entail more risk than breeding enterprises and that producing finished vealers for the domestic supermarket/butcher market or finished trade steers for the domestic restaurant are the most profitable breeding enterprises.

An interesting result is the gross margin with capital for breeding feeder steers for the Australian grain-fed market. While on the basis of gross margin without capital this appears an enterprise as profitable as breeding for the domestic supermarket/butcher and restaurant markets, when the cost of capital is taken into account it is substantially less profitable than either of these. This is because more capital is invested in cattle as more breeding cows are run. As a result the annual capital cost is higher for this enterprise than that of the others.

As outlined above there is no market for cattle suitable for the Japanese or Korean markets. However, this is not to say that it is not possible to produce animals suitable for these markets. At present beef exporters in Western Australia believe returns are higher in other markets, in particular the domestic market. In part this may also reflect the difficulty Western Australian processors have in penetrating these markets. With substantial Japanese and, to a lesser extent, Korean presence in the eastern States it is presumably considerably easier for processors/exporters in these states to make contact with organisations involved in these markets than it is for processors/exporters in Western Australia. Moves are afoot to redress this problem and hence it is worthwhile examining some of the price implications of markets opening up in Japan and Korea for Western Australian beef.

The gross margins in Table 35 provide an insight into the base profitability which would have to be realised to encourage farmers to produce for the Japanese and Korean markets.

In the Japanese market there are three markets open to grass fed cattle producers:

- feeder steers for export to Japan;
- feeder steers for 150-240 day grain feeding; and
- 300-400 kg carcass weight grass fed.

To encourage farmers to produce feeder steers for either export to Japan or for grain feeding in Australia a price in excess of \$1.40/kg live weight would be needed to make the profitability of this enterprise comparable with breeding for the domestic supermarket/butcher or domestic restaurant market.

While producing pasture fed 1st quality beef is not the most profitable breeding enterprise, it is one which is very flexible and therefore is subject to less risk than other enterprises. Farmers with production systems aimed at this market are likely to be well placed to produce grass fed beef for the Japanese market. If they were to receive prices comparable to those in the eastern States for the traditional 'Jap Ox' (\$2.25-2.35/kg carcass weight) then this enterprise would be comparable in profitability to those based on the domestic supermarket/butcher and restaurant markets.

In the Korean market three markets are open to grass fed producers :

- feeder steers for 150 day grain feeding;
- 180-280 kg carcass weight grass fed under 30 months; and
- 225-340 kg carcass weight grass fed under 36 months.

In terms of the feeder steer market, a price of \$1.40/kg live weight would be required to make the profitability of this enterprise comparable with breeding enterprises producing for the domestic supermarket/butcher and restaurant markets.

An enterprise producing for the under 30 months grass fed Korean market would be similar to the breeding enterprise based on the domestic restaurant market. Hence if a price in excess of \$2.25/kg carcass weight was received there would be an incentive for farmers who normally produce trade steers for this market to produce for the Korean grass fed under 30 months market.

Producing for the under 36 months grass fed Korean market would require a system similar to that for the Australian grass fed 1st quality breeding enterprise. A price of between \$2.25-2.35/kg carcass weight would induce farmers to produce animals suitable for this market.

In summary for the Agricultural region, the gross margins developed indicate growing out enterprises are more profitable than breeding enterprises. However, they also tend to entail more risk. Hence most farmers in the agricultural region operate a breeding enterprise. Of the breeding enterprises, producing for the domestic supermarket/butcher or the domestic restaurant market is the most profitable.

If the Japanese and/or Korean markets were to be opened up to WA producers the gross margin budgets indicate a price of about \$1.40/kg live weight would be required to induce farmers to produce feeder steers for grain feeding for the Japanese or Korean markets. For the Japanese grass fed and Korean (under 36 months) grass fed markets a price of between \$2.25-2.35/kg carcass weight would be needed. For the Korean grass fed (under 30 months) a price in excess of \$2.25/kg carcass weight would induce farmers to produce for this market.

For the Pastoral region production options are limited by the harshness of the environment and distance from markets. Two gross margin budgets have been produced as indicated above. Essentially each budget is based on calving in Summer (November to March) and mustering and sale in Winter (May to August). However, this can vary according to seasonal conditions particularly rainfall. The principal market for pastoral cattle is Perth (Midland).

The results of the gross margin analysis are illustrated in Table 36. These indicate that on a gross margin without capital basis the two enterprises are comparable. However, when the cost of capital is taken into account producing for the pasture fed 2nd quality market is substantially more profitable than producing for the weaner market.

**Table 36. Beef Gross Margins for Western Australian Pastoral Region**

Enterprise	Gross Margin Without Capital \$/DSE	Gross Margin With Capital \$/DSE
Pastoral Weaners	42.79	5.05
Pasture Fed 2nd Quality	45.17	9.31

In the main this result occurs because relatively high prices can be achieved for finished pasture steers in the winter months in WA. This is because there are few finished Agricultural region cattle available between April and August. Hence prices rise substantially. Since most stations in the Pilbara and Upper Gascoyne areas receive summer rains they are normally able to turn off cattle in winter. This result is broadly in line with industry views.

Some pastoralists prefer to turn off weaners for the Agricultural region. For the gross margin for the enterprise to be comparable with turning off bullocks for the pasture fed 2nd quality market, either the price received would have to rise (by about \$0.10/kg live weight) or the branding percentage would have to increase (to about 80%). The possibility of achieving a higher price is reasonably high as there is increasing interest in growing out pastoral weaners in the agricultural areas. There may also be potential to achieve a higher branding percentage although the budget already assumes a 15% difference (75% compared to 60%) between the two enterprises due to weaning. The death rate is also assumed to be lower because of weaning.

As discussed above there is no market in WA for cattle suitable for the Japanese and Korean markets. However, moves are afoot which may enable Western Australian processors/exporters to participate in these markets. Despite this the potential for the Pastoral Region to directly supply these markets is limited.

Where the Pastoral region may benefit from these markets is that there may be increased demand from the Agricultural region for weaners to grow out for the domestic restaurant trade or store steers to grow out for the pasture fed 1st and 2nd quality markets, particularly if farmers in the Agricultural region breeding cattle are induced to supply the Japanese and/or Korean markets. This could result in higher prices for pastoral cattle.

In summary for the Pastoral region the gross margin budgets developed suggest an enterprise producing finished 4 year old bullocks for the pasture fed 2nd quality market is more profitable at present than an enterprise producing 6 month old store weaners for the Agricultural region. In essence this result is due to the sale of finished bullocks on the Perth market during winter - a period when few finished cattle from the Agricultural region are available. To make the weaner enterprise comparable in profitability either price would have to rise (about \$0.10/kg live weight) or branding percentages increase (to about 80%).

There would appear to be only limited potential for the pastoral enterprises to participate in the Japanese or Korean markets should they become available. Indirectly however, they could benefit if these markets did become available.

## 4.7 South Australia

### 4.7.1 Beef regions

Four regions were identified for beef production in SA (as shown in Figure 8):

#### Adelaide Hills (including Fleurieu Peninsula)

Area extending over all of the Fleurieu Peninsula and as far north as the southern boundary of the Barossa Valley (including Kangaroo Island).

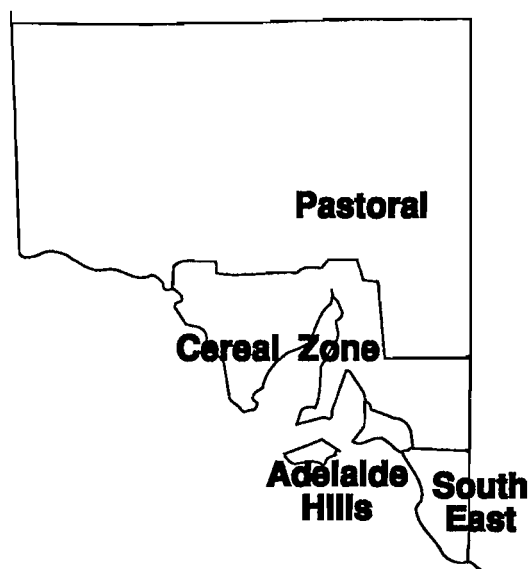
#### South East

The boundary extends from the township of Tintinara in the upper south east to Mt. Gambier in the south.

#### Cerecal Zone

The area between the 300 mm and 500 mm isohyets of mean annual rainfall.

**Figure 8. South Australian Beef Regions**



### Pastoral Area

All that area which lies beyond the 250 mm isohyet of annual rainfall. Includes the north of the Riverland, east of southern Flinders Ranges and north of the upper Eyre Peninsula.

#### **4.7.2 Existing beef production systems**

The main beef enterprise in SA is the traditional pasture fed vealer or yearling system producing for domestic butcher, supermarket and restaurant trade. In the Pastoral Zone AP2 is the main beef enterprise.

#### **4.7.3 Production parameters and technical feasibility of producing for new market specifications**

The production parameters for new beef enterprises within each region were developed in conjunction with regional farm advisory officers.

The environmental factors in SA, particularly the use of available pasture, and the existing alternative farm enterprises combine to dictate the possible new beef production systems (beef grades) in SA. These enterprises are shown in Table 37.

#### **4.7.4 Beef budgets in South Australia**

The gross margin budget summaries for SA are included in Table 38. The pasture fed yearling enterprise is the base against which the other enterprises can be compared. Apart from the Korean 1B enterprise, there appears to be no incentive to move away from the traditional yearling production system - given current market prices for older animals. It is quite obvious that, over the years, producers have worked this out for themselves, as evidenced by the predominance of vealer/yearling operations.

The only exception to the above statement is Korean 1B which probably has an edge due to the profit returned from growing out heifers. But with only a 10% increase in gross margin per DSE from changing in the South East, it is unlikely to influence the market. There is an anomaly with this enterprise in the Cereal Zone, which can be explained by an increased feed DSE requirement. This effectively reduces a similar gross margin (as obtained in other regions) to a lower return per DSE.

In the South East region of SA most of the area comprises high rainfall mixed farming, and therefore a beef producer with a 'hypothetical' 100 cow herd is more or less locked into a grazing/cropping situation. To adapt the herd to an export market, would therefore increase beef cattle DSEs by at least 50%.

Assuming that additional land purchase is not an economic option, difficult and possible irreversible decisions would need to be made regarding downgrading machinery to match reduced cropping area and similar capital investment strategies.

Sheep, cattle and crops (which in many cases includes pasture seed production), would provide income throughout the year. To forego this security, together with the short term lack of cash flow arising from the retention of yearlings until sold as bullocks, very attractive market incentives need to be offered.

Further assurances are necessary, when one realises that to embark on the export system requires the exclusion of selected heifers and young cows from the breeding program right now, and their subsequent sale, to make room for growing yearlings. This is inviting an enormous risk, considering the market downturn in remaining farm commodities.

The end result would see a reduced herd size, possible to a level where a two bull unit could be regarded as limiting genetic improvement.

In summary, secure contracts at a premium price, to be honoured two years hence, are the level of assurance required.

**Table 37. Beef Production Systems According to Regions in South Australia**

	Adelaide Hills	South East	Cereal Zone	Pastoral Area
<b>JAPANESE MARKET</b>				
Beef Grade				
APGF50	*		*	
APGF90	*	*		
AP1	*	*		
AP2				*
AM				
APY	*	*	*	
AGF300				
AGF200				
AGF150				
AGY90	*	*		
Japanese Feeder Steer				
<b>KOREAN MARKET</b>				
AGY90	*	*		
Korean Grassfed high quality type 1B				
APY	*	*	*	

\* Technically feasible.

In the Adelaide Hills grazing enterprises dominate these properties, but as farm size tends to be smaller, options here are also limited, and any commitment will be a two to three year decision which cannot be reversed. There is a similar problem to WA in that the exercise can only be assessed hypothetically, due to a very low throughput.

**Table 38. Beef Gross Margin Budgets for South Australia**

Enterprise	Capital Stock \$	Feed DSEs DSE	Gross Margin \$	GM per DSE \$	Percent Return %
<u>Adelaide Hills</u>					
APY	73,992	1,707	21,530	12.61	29.10
APGF50	91,436	2,221	27,779	12.51	30.38
AP1	106,635	2,559	33,106	12.94	31.05
Korean 1B	108,564	2,546	36,278	14.25	33.42
<u>South East</u>					
APY	73,992	1,707	22,270	13.05	30.10
APGF50	91,436	2,220	28,255	12.73	30.90
AP1	106,635	2,574	33,582	13.05	31.49
Korean 1B	108,564	2,553	36,795	14.41	33.69
<u>Cereal Zone</u>					
APY	72,480	1,851	24,918	13.46	34.38
APGF50	91,436	2,406	30,583	12.71	33.45
AP1	106,635	2,579	32,704	12.68	30.67
Korean 1B	108,564	3,091	36,279	11.74	33.42
<u>Pastoral Zone</u>					
AP2	489,599	15,465	194,556	12.58	39.74

Animals would need to be slaughtered in Adelaide and transported in refrigerated vans to eastern State ports. In the Cereal Zone distance and market volume would be problems encountered here also, and due to a much lower stocking rate than the Adelaide Hills and South East areas, expansion of a beef enterprise would have to be at the expense of substantial reductions in sheep and/or cropping.

Market and also seasonal risks would almost certainly deter producers from switching to export markets.

In the Pastoral Zone it was considered that any changes in herd structure on the outback stations would be totally impractical, not only from a freight and consistent carcase quality viewpoint, but also due to the sheer inability of a beast to reach the weight for age specifications.

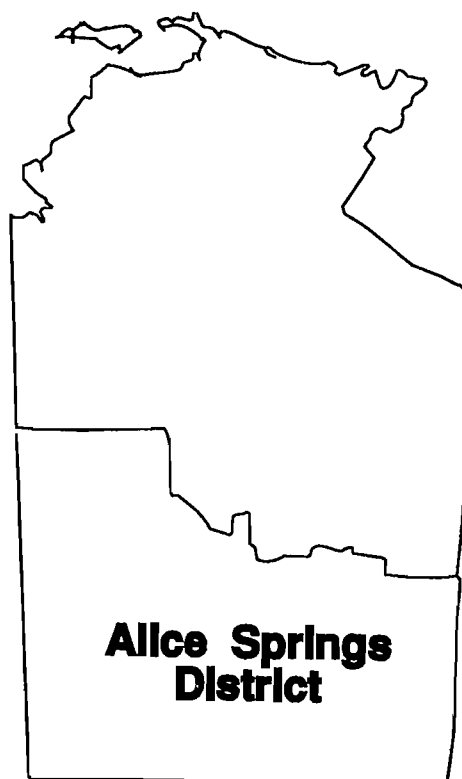
In overall terms, it was therefore concluded that the best prospects for switching to Japanese/Korean markets, would come from the South East. It is probably that cattle in this area would supplement the market supply of Victoria's Western Districts.

## 4.8 Northern Territory

### 4.8.1 Beef regions

In the Northern Territory the cattle region is the Alice Springs district, as shown in Figure 9. This district is the area bounded in the south by the SA border, in the east by the Queensland border, in the west by the WA border and in the north by the boundary of the Victoria River and the Barkly Tableland pastoral districts.

**Figure 9. Northern Territory Beef Region**



#### 4.8.2 Existing beef production systems

The existing beef enterprises involve turning off steers at 2 to 3 years and 3 to 4 years or age. The two beef enterprises basically represent two turnoff ages for similar low cost extensive grazing enterprises. Weight and condition for age of steers turned off depends to a large extent on rainfall and its distribution over the period of three or four seasons when the beasts are on pasture. The difference between growth rate of steers which have experienced good seasons versus below average seasons is quite marked.

#### 4.8.3 Production parameters and technical feasibility of producing for new market specifications

The production parameters for new beef enterprises within the Alice Springs district were developed in conjunction with regional farm management advisers.

In this district the technically feasible alternative beef enterprises are Korean grassfed Type 1B and AUSMEAT P1. Most sale stock (except cull breeding stock) should make these grades in a run of average non-drought years. In drought years properties will not be able to turn off stock to reach these specifications. In practice some properties will be drought-affected while others will not. The whole of the region could potentially produce to these specifications. In a run of good years the specifications may be reached without supplementation.

#### 4.8.4 Beef budgets for Northern Territory

The gross margin budgets for the Alice Springs district are summarised in Table 39. The two existing enterprises involve turning off steers at 2 to 3 years and at 3 to 4 years. The potential system is a Korean grass-fed system. Budgets for this system have been developed using an expected price and that price with a premium of 20 c/kg live weight. The main results are in terms of gross margin per AE and gross margin after interest per AE. The latter measure includes imputed interest on herd capital at 15%.

In a run of three good seasons the tops of the district's turnoff can make a Jap Ox specification. In a run of average years steers will generally reach a weight at 2.5 years which will be at the minimum specification for Korean Grassfed AUSMEAT P1.

**Table 39. Beef Gross Margin Budgets for Northern Territory**

	Capital Stock	Total Adult Equivalent (AE)	Gross Margin	GM per AE	GM per AE after Interest (a)
	\$	AE	\$	\$	\$
Steers 2-3 yo turnoff	841,995	4,928	272,043	55.20	29.57
Steers 3-4 yo turnoff	903,140	4,928	288,734	58.59	31.10
Korean Grassfed AUSMEAT P1	856,119	4,928	280,073	56.83	30.77
Korean Grassfed AUSMEAT P1 (20c/kg live weight premium)	877,781	4,928	327,628	66.48	39.76

(a) At 15% interest.

In practice the seasons experienced vary within the district giving rise to a mixture of turnoff ages, weights and condition. With the exception of periods of widespread drought over two or more years there should always be a proportion of the district's turnoff which reach Korean grassfed specifications.

A number of factors mitigate producers targeting the Korean market. While the gross margin for supplementing to reach the Korean Grassfed AUSMEAT P1 is quite attractive when a premium of 20 c/kg is offered, such a premium may only exist when there are large orders about and suitable cattle are scarce. Producers will only target this market if a suitable price premium is available on a predictable basis.



The Korean Type 1B and AUSMEAT P1 grassfed specifications stipulate a maximum age of 6 tooth. Over much of the Alice Springs district, age branding or good control over steer age groups does not occur. Offerings of mixed age groups will reduce buyer confidence and hence price premiums, and confuse price signals to producers.

The use of supplements to increase weight and condition of steers is a largely untried practice in the district outside of drought conditions. There will be an uncertainty in the minds of producers as to the worth of supplements as seasonal effects have a much greater impact on growth and condition. Possibly this perception would be unjustified were a price premium for better quality cattle to exist. The real payoff from supplementation of steers it seems is not in weight gains but improving the value of the meat that is already on the animal.

The gross margins for supplementation do not assume increased feed consumption. Feed availability in the district fluctuates considerably such that increased consumption is a consideration at some times and not at other times.

## 5. Information programs

The terms of reference for this project require the provision of advice on how the information generated can be distributed to beef producers 'as a guide for their thinking and as a format they can use for their own property budgets'.

One vehicle for this process is the beef advisory and extension programs and networks within the State Departments of Agriculture. These regionally-based beef advisory/extension officers operate within all Departments, and in some cases the officer networks are very extensive. With their established clientele and operations they will be the obvious place to begin this process. In fact these officers have been widely consulted by the economists in the course of developing the budgets for this project, so they will already identify with the project and have a feeling of ownership over the budget information.

The basis for dissemination of information will involve the preparation of pamphlets or handbooks in which the production parameters, budgets and comments will be set out. There should also be a discussion of using budgets for farm planning and enterprise selection. These booklets can then be used in Departmental field days, seminars and discussion groups in conjunction with the computer models.

In Victoria, South Australia and NSW the budgets and computer model could be distributed to people involved in the Beef Manager Program. In Tasmania the Department of Agriculture has developed a Beef Productivity Plan which offers a range of technical and economic information to beef producers for both individual on-farm analysis and broader group extension services. In NSW it is intended to bring out a state-wide Beef Budget Handbook in which a consistent and more-detailed approach is taken to presenting beef budgets as a basis for farm planning. In Queensland information packages could be developed at the regional level (including a short glossy publication), including fine tuning the data generation for smaller geographic areas. In South Australia, Department of Agriculture publications and fact sheets will be upgraded to include information from this project.

A second approach to information dissemination will involve going beyond these traditional Departmental methods. One premise for such an approach is the perception that the penetration of such methods into the farming community may not be high. An alternative, more pro-active, approach would involve a dropout leaflet being inserted into rural papers and mailed to all secretaries of farmer organisations.

These leaflets would advertise information seminars and workshops, since many farmers may prefer to attend these rather than read a budget handbook. The seminars or workshops could present a line-up of keynote speakers, including a Consultancy Team representative, Agriculture Department Regional Beef Officer, MRC spokesperson, Meat Exporter and a Producer, with a positive title such as 'Growing Beef for New Profitable Markets'.

The ideas presented here for the two main approaches can be further discussed and refined as part of the important stage beyond this project.

## 6. Commercialisation of software

Two computer models were used in developing the gross margin budgets. For the northern beef industry the BREEDCOW/DYNAMAMA herd budgeting package was used. This package runs on the SMART Spreadsheet package. It is already available commercially at \$300 for a single licence copy and \$400 for a lab kit (single copy, plus 10 additional 5 1/4 inch discs). A copy of the order form is shown on the next page. The model is currently being developed as a stand-alone package, which will be cheaper for beef producers to purchase because no spreadsheet package is necessary.

For the southern beef industry the model used was CATTLE CASH. This model is a macro-driven add-on to the EXCEL Spreadsheet program. It has been commercialised as part of this program and will be sold as a NSW Agriculture R&D model from Trangie Agricultural Research Centre. The CATTLE CASH model is advertised widely by NSW Agriculture and an order form is also shown.



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# BREEDCOW AND DYNAMA

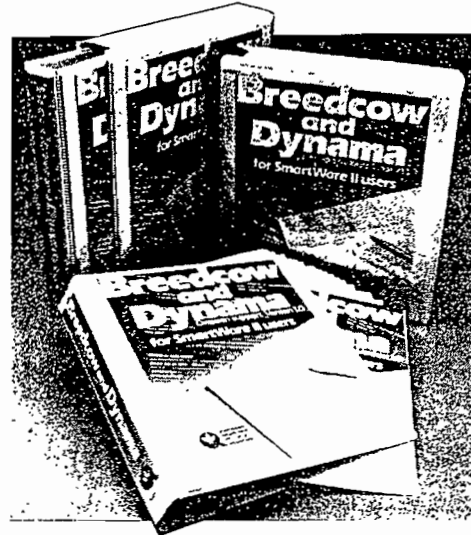
Developed by W. E. Holmes

The BREEDCOW/DYNAMA herd budgeting package comprises two Smart Spreadsheet herd models, one steady state and one multi-year, plus a set of Smart 'project files' that perform routines on these spreadsheets such as optimising turnoff age, transferring data from BREEDCOW to DYNAMA, summarising worksheets, and some copying and printing options.

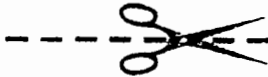
BREEDCOW calculates stabilised herd structure, turnoff, gross margin and capital value of herd. Sales per cent of each age group, cow culling age and bullock turnoff age may be manipulated, manually or automatically, to determine the combinations that maximise herd gross margin. Data requirements are calving and death rates, cattle sale prices, per herd direct costs for each class of stock, and the required herd size.

DYNAMA calculates changing herd structure and turnoff over time. It may start with manual entries of stock numbers or draw these automatically from BREEDCOW, where it is intended to look at changing turnoff and cash flow patterns while moving from one stabilised herd situation to another; for example, after adopting a package of husbandry or pasture practices. DYNAMA incorporates calculation of cash flow and debt situation over periods as long as 11 years.

This package is of value to beef cattle producers, agribusiness staff, research and extension officers and tertiary students.



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# NSW AGRICULTURE

## CATTLE CASH

**Developed by Ben Bootle**

**CATTLE CASH** has been developed to provide a dynamic gross margin budgeting tool which can be used to analyse the economics of a variety of beef cattle enterprises. The program operates as an "add-in" to the popular Microsoft® Excel® spreadsheet package.

**CATTLE CASH** is an automated spreadsheet which asks the operator a series of questions about the beef cattle enterprise. The information the program requires includes production assumptions, outputs, labour requirements, the prices of both inputs and outputs, and feed requirements. This information is then collated and arranged in four spreadsheets which then perform the complex calculations automatically. The end result is a comprehensive gross margin budget which reports all the standard gross margin information such as income and variable costs, total gross margin (net returns), and gross margin per cow as well as reporting a number of other novel gross margin returns such as gross margin per unit of feed consumed, gross margin per operator labour hour and percentage return on capital invested in livestock.

**Other reported information on the beef cattle enterprise includes:**

- . a livestock trading account,
- . a list of production assumptions,
- . cattle herd structure,
- . livestock capital inventory, and
- . calculations of the amount of feed required by all categories of cattle in the enterprise.

When analysing the economics of alternative beef cattle enterprises the question which must be addressed is are the cattle more efficient converters of feed to dollars. **CATTLE CASH** addresses this by comparing the difference between the costs associated with a particular enterprise, in dollar, labour, capital and feed consumption terms.

**Some of the uses CATTLE CASH** has had to date include:

- optimum cast for age cow sale age,
- optimum sale cattle turn-off age and weights,
- optimum joining times,
- breed comparisons,
- feed requirements, and
- alternative reproductive technologies.

**System Requirements:**

**CATTLE CASH** requires all the features needed for Microsoft® Excel® and Windows®, these include:

- . PC 386,
- . 2 MB of Installed Random Access Memory, and a Hard Disk.

Software requirements are Microsoft® Excel® and Windows®.



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