final report

Project Code: NAP3.306d

Prepared by: Meat Research Corporation

Date published: January 1992

PUBLISHED BY
Meat and Livestock Australia Limited
Locked Bag 991
NORTH SYDNEY NSW 2059

Beef property management in the Gaeta area.

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

Contents

Introduction

This report contains management guidelines for a beef property typical of the Gaeta area. The guidelines are for sustainable beef production. Sustainable production is defined as production that optimises profit with minimal degradation of the natural resources.

The Gaeta area is located north of Gin Gin, in the Kolan Shire, South East Queensland (see map, page 3).

The report contains a description of the major land types in the area, their vegetation, topography, soils, pastures, production capacity and condition. It also describes suitable enterprises, cattle management and grazing land management. Stocking rates and property sizes are suggested as guidelines for sustainable beef production. A list of common and scientific plant names is included as Addendum 1 to help with plant identification.

The information was provided in 1992 by a group of 15 district producers (representing 9 properties) each of whom had at least ten years experience of cattle and property management. These guidelines were developed by using the Local Consensus Data (LCD) technique. This process involved discussing the best management practices for a hypothetical property typical of the Gaeta area.

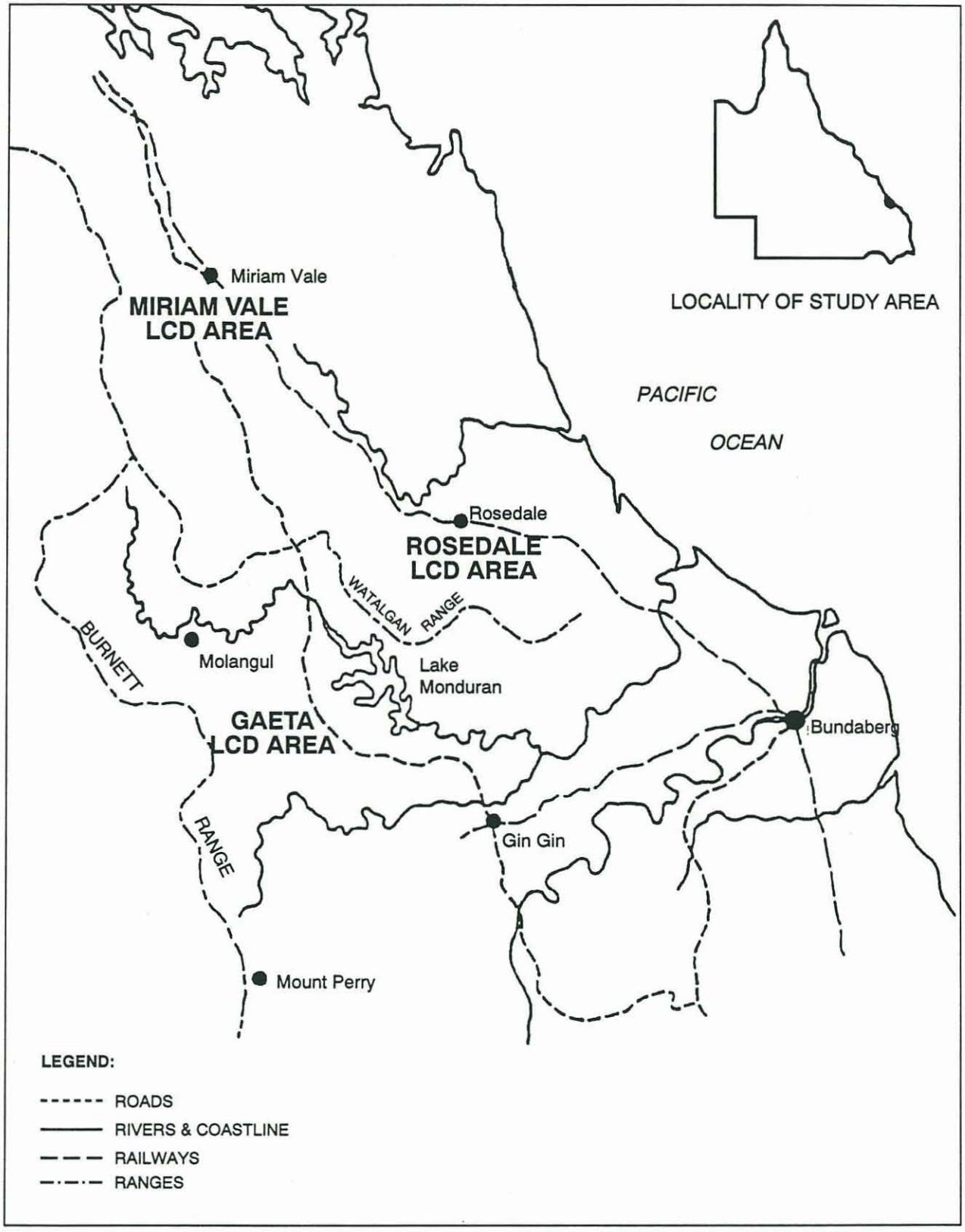
Participating producers agree that this report contains a range of practical, first hand information that contributes to identifying current best practices for local property management.

Similar reports are available for other areas within the black speargrass zone as well as some of the other pasture communities of Queensland (see Native Pasture Communities map, Addendum 3). Together, LCD reports offer a pool of practical ideas for sustainable beef production. The reports also identify industry constraints within and across pasture communities together with problems and gaps in information for further research.

These guidelines are based upon experience up to July 1992. Changes in knowledge, technology and market forces may alter the suitability of this information in the future. Producers and organisations involved in the preparation of this report accept no responsibility for adverse effects resulting from the use of the information. Some conclusions may not be endorsed by the Department of Primary Industries (DPI) or the Meat Research Corporation (MRC).

The production of LCD reports is the first step in a process that will include workshops to give beef producers in all areas of Central Queensland an opportunity to participate in developing improved production systems. The process is sponsored by the MRC and the DPI. Readers should consult the DPI for further information or clarification.

Coastal Burnett Region



Location of local consensus data areas

Land types

The black speargrass country in the Gaeta area is made up of blue gum flats (5%) ironbark/bloodwood slopes (40%), spotted gum ridges (35%) and timbered hills and mountains (20%) (see Table 1). The characteristics of each of these land types are discussed below.

Blue gum flats

Most of the timber from these flats was cleared and milled early this century. Blue gum was and is the dominant timber species. Soils are either black cracking clays or sandy loams over heavy clays. These heavy black soils tend to occur on the flats where the surrounding slopes are gravelly. They are generally free from degradation, however, serious erosion can occur at gully heads.

The main pasture species occurring are water couch, foxtail and paspalum. Cattle tend to graze the flats in the dry season, and the higher country when the flats are too wet.

Ironbark/bloodwood slopes

The dominant timber species are broad-leaved ironbark, narrow-leaved ironbark and bloodwood. Patches of Moreton Bay ash occur and mahogany trees are common in the wetter hollows and slopes. The major soil types are sandy soils derived from granite.

Native grass species include black speargrass, kangaroo grass and wild sorghum. Dominant species are determined by the stocking rate.

Problems that arise on this land type are:

- blue couch grass encroachment caused by overgrazing,
- eucalypt and wattle regrowth,
- the invasion of giant rat's tail grass,
- fenced roads acting as nursery areas for weeds, and
- gully erosion initiated by vehicle or cattle tracks.

The country has been cleared for many years but it can still have a recurring problem with black wattle and eucalypt regrowth. Regrowth has to be controlled about every seven to ten years. Stem injection using Tordon® is the preferred method of control. Excessive suckering occurs from stick raking and in some areas, the country is too steep to plough.

Spotted gum ridges

This hilly to ridgy land type is dominated by spotted gum. Soils are light and sandy, with some becoming boggy when wet. Native pasture species are black speargrass and kangaroo grass, with blue couch and wire grass in the degraded areas.

Problems occur with wattle regrowth when:

- the land is over-cleared, i.e. cleared and not developed properly,
- the land is over-stocked,
- bulldozers are used for clearing.

Due to a natural reduction of grass around the base of spotted gum trees, there is the potential for more erosion on this land type than on the others. When grass cover is low, sheet erosion and erosion around gully heads can be a problem.

The only timber treatment recommended is the removal of 'rubbish trees' by selective clearing. To minimise erosion, no timber should be cleared on creek banks.

Hills and mountains

This is the high country of steep slopes, stunted narrow-leaved ironbark and spotted gum trees. Supplejack trees are common in stony areas and zamia palm occurs extensively. Large areas of zamia (commonly 600 to 700 acres, but up to 15 000 acres) have been fenced out and are unused. Small patches of the palm can be poisoned with Tordon 50D®. A local control measure is to make a hole in the growing point and pour in about 200 ml of diesel.

The country is virtually unusable due to the lack of water, but some winter grazing may occur. Timber treatment is considered

uneconomical. More of this land type is found in the north and west of the area than in the south and east.

Enterprises

Beef production is the main industry in the area. Breeding and store production is considered most suited to the area, with some 'finishing' on the better classes of country developed with improved pastures.

Many producers breed and sell fat cattle, turning off up to $4^{1}/_{2}$ (some $5^{1}/_{2}$) year old bullocks. A problem in turning off younger finished animals is the loss of liveweight experienced each winter.

Cattle management

This section describes the type of cattle and their management which best suit local conditions.

Breeds and breeding

Cattle should have $^{1}/_{2}$ to $^{3}/_{4}$ *Bos indicus* content. This provides the degree of tick resistance and drought tolerance required in this area. To achieve the required *Bos indicus* content either a straight breeding program using a Brahman derived breed (Droughtmaster, Braford, etc.) or a crossbreeding system can be used. The use of some European blood may be beneficial.

Bulls

The recommended bull to cow ratio is 3% for Brahman and 2 to $2^{1}/_{2}$% (1 bull to 40 to 50 cows) for British breeds. Bulls are used for two to three seasons with heifers and four to five seasons with the older cows. They are generally bought as three year olds and sold at seven to eight years of age. Some points bulls are selected for include:

- visual growth assessment,
- growth rate using performance figures,
- length and depth of body, eye muscle area,
- masculinity,
- looseness of skin to allow for growth,
- a short head in Brahmans,
- structural soundness.

Cows

Select replacement heifers at 15 to 18 months of age depending on breed. About a third of the heifers are kept as replacements. They are mated as two year olds to calve at three years of age. These heifers should be kept on a good plane of nutrition for three months before calving, until mating. Mate from November to March so that the heifers calve by December. Culled heifers are generally fattened or spayed and fattened and sold for slaughter. Many producers are not in favour of selling their 'brand' for breeding.

Pregnancy test and remove empty breeders from the breeder paddock at weaning. Condition or fatten culls before sale. Some producers prefer to spay these culls before fattening.

Breeders are culled for age at eight to ten years, but consideration should be given to culling a little earlier (6 to 10 years). Culling on a pregnancy test at less than six years old is not a common practice in the area.

Mating

Both seasonal and continuous mating are practised in the area. Seasonal mating is the recommended practice and is favoured by about two-thirds of the area's producers because:

- it helps organise the work program,
- it cuts down on labour,
- it allows pregnancy testing and culling of empty females,
- calves are born at the optimum time of the year.

The main reason that continuous mating is still used on some properties is that they have no bull paddocks available to hold bulls successfully. Both seasonal and continuous mating generally produce a similar calving rate.

Seasonal mating extends for five months from 1 November to 31 March.

Reproduction rates

The area's average weaning rate is probably about 65% to 75%, ranging from 55% to 80%.

Branding

Castrating is done with a knife - a sure method.

De-horning is normally done with cup de-horners, but for smaller calves a knife may be more suitable.

Weaning

Weaning should be completed by mid June. In drier years calves can be weaned as early as January to remove stress from the breeders.

Weaners are kept in yards for from three to four days to up to 15 days and fed hay (forage sorghum, lucerne or Rhodes grass). They should then be tailed-out daily for a further ten to fourteen days and then once per month if required. Scours can result if weaners are held in the yards too long.

Train weaners to:

- eat hay and supplements,
- work through yards,
- drink out of troughs,
- be worked by horse or bike,
- feed from a vehicle,
- quieten them.

Marketing

Most store cattle are sold at open auction. A quality store beast in good condition is needed and the vagaries of the market have to be weathered. Many stores sell at Gin Gin because of reduced transport costs. Stores suited to the lotfeeding market generally bring better prices at Biggenden. It is worthwhile to get a good market 'connection'.

Stores should be sold at 18 to 24 months so they can be finished before they become six toothed (3 to $3^1/_2$ years old). Demand for stores is closely related to the season and particularly with the spring break. Calves can be sold off the breeder as a 'fat'. Buying and selling is often done in June or July for tax purposes.

Class weights - the following are average weights for various classes of stock:

Brahman cross

Weaners	-	180 kg liveweight
Yearlings	-	240 kg liveweight

Charolais

Terminal sire 9 to 10 months (good conditions)	-	up to 280 kg liveweight
Bullocks $4^1/_2$ year olds	-	320-360 kg dressed weight
Cull cows mature	-	450 kg liveweight

Herd health

The death rate of young breeders is considered to be 2 to 3%. Deaths in growing cattle may be up to 3%. Some diseases can cause higher death rates. For example, Pompe's disease can increase the weaner death rate by 2 to 3%. The main diseases encountered in the area include:

Blackleg

Use a '5-in-1' vaccine at weaning. Usually only a single dose is used.

Botulism

Not a major problem.

Buffalo fly

Dip and spray every three to four weeks for six months (summer). Treat five to seven days before stock are slaughtered. Back-rubbers are an alternative control method. Flies are a bigger problem than ticks. Stock may be culled for susceptibility to buffalo fly; susceptibility is judged by the extent of irritation sores.

Leptospirosis

Females and heifers should be vaccinated to lift calving from 50% to 80%.

Three-day sickness

Vaccination is essential for bulls and should be considered for bullocks.

Tick fever

Vaccination is essential but many do not vaccinate.

Ticks

Dip before shifting stock, in a dry season after showers, and going into a dry season.

Some herds are not dipped at all while some are dipped three to four times per year. A few British herds may have to be dipped once a month.

Dipping in a poor season following showers should be considered as there is enough moisture for the ticks to hatch but not enough to produce good cattle feed. Cattle in poor condition will quickly deteriorate if the ticks are not killed.

Vibriosis

Bulls should be vaccinated using two initial doses and an annual booster.

Worms

Drench all weaners. It may be beneficial to drench again at two years of age, but this is not a general recommendation.

Dry season and drought management

In normal years no extra feeding is done. As the dry winter/spring progresses, stock numbers are reduced by selling, agistment or feedlotting. In a drought the breeders are fed molasses, urea and protein. Only a small percentage of graziers use blocks as normal management because they are considered too expensive except for use in drought time.

It is recommended that phosphorus be fed to breeders on all types of country from January to May. Not many producers follow this practice due to its cost.

Grazing land management

Set stocking rates are normally used but rotational grazing is sometimes practiced to spell paddocks. No slashing of pasture is practised. With over-grazing (heavier than 1 adult equivalent (AE*)/5 acres) wire grass and blue couch take-over. The recommended long term stocking rate for each land type is listed in Table 1. The overall stocking rate for mixed paddocks of blue gum flats, ironbark/bloodwood slopes and spotted gum ridges is 1 AE/10 acres.

Pasture improvement

The development of country and the introduction of improved pasture grasses and legumes is a gradual process, which is regulated by the availability of finance.

Legumes in native pastures

Start with the country that is the cheapest to develop. Chisel plough and plant Wynn cassia and fine stem stylo, which is particularly suited to the sandy granite soils. If finance allows, apply a half bag of superphosphate at planting and apply a maintenance dressing of 1 bag/acre every two to three years. Normally native pastures augmented with legumes are not fertilised.

Improved grass and legume pastures

Plough and prepare seedbed. Callide and Katambora Rhodes grass are the species of choice. Callide is better suited to the heavier flats, while Katambora is better suited to the lighter slopes and ridges. Fine stem stylo, siratro, and Wynn cassia are the preferred legumes. If finances allow, apply an initial fertiliser dressing at planting (2 bags/acre) and a maintenance application of a half bag/year applied every two to three years. Superphosphate is the commonly used fertiliser. When soil phosphorus levels are reasonable, either naturally or through continual use of fertilisers, the use of a fertiliser with a lower phosphate content and a higher sulphur content (e.g. SF45) gives good results at a cheaper cost than superphosphate.

* One AE is equal to a 3 year old steer (450kg liveweight)

Spell improved grass pastures for two to four months over the wet season. This allows native pastures to be used at their best and the improved grasses to set large amounts of seed. It is particularly important to manage the grazing of establishing pastures. The grazing management of grass/legume pastures revolves around balancing the grass/legume growth. Grass can choke out the legume if spelled too long or grazed too lightly.

Established pastures can be stocked at 1 AE/2 to 4 acres for 9 to 11 months of the year, depending on the rainfall.

Improved pastures are usually used to 'finish' turnoff stock or for special classes of stock such as weaners. Well-improved properties can carry weaners on improved pastures right through to sale as finished stock. Cows weaned in June at 380 kg liveweight should put on about 120 kg liveweight from June to January if stocked at 1 beast to 3 acres.

Tree management

Commercial timber and timber for property use should be selectively retained during clearing. Blue gums remaining on the flats should also be left standing.

Tree injection with Tordon® is being used every 5 to 8 years to kill regrowth because there is usually not enough grass to carry a regrowth killing fire. Although good fires can control young regrowth, the primary use of fire in normal years is to get rid of excess mature grass. Tordon® should be used in autumn (when sap is moving down) because this results in less suckers. Graslan® is not used in the area as it does not kill wattle at economic application rates. Velpar® should only be injected as spraying can cause problems of overkill. Effective control of Moreton Bay ash is achieved using diesel and Starane® at 50:1* as a basal-bark spray.

Bulldozing of 10 to 14 year old trees should be done in the wet and then raked in the dry.

Black wattle is considered a pest as it suckers profusely from the roots once disturbed. To reduce the sucker problem, land should be ploughed and cropped or sown to pasture straight after stick-raking.

Erosion

Gully erosion is the only erosion of concern in the area. Spotted gum and some black soil flats are the most susceptible soil types. A suggested method of stabilising gully erosion is to batter the breakaway and divert the water with a bank.

There does not appear to be a salting problem in the area.

Fences, yards and waters

Fencing should be arranged to hold about 100 breeders, or their equivalent, in each paddock. This number of stock is considered a manageable number for family labour. In the absence of family labour, casual labour might be employed at the rate of about three man-days per month.

Fencing is considered the key to efficient stock handling and can determine the amount of labour and the number of yards required. A four barbed fence is the recommended design. Contractors are usually employed for fencing and 'Tordoning'.

One set of yards is adequate for a 9000 to 10 000 acre property, but two sets are sometimes used. The number of yards depends on the property shape, the location of existing yards and the availability of timber.

Stock water is mainly derived from creeks and dams.

Pests

The major weed pests are:

- Blady grass
- Flannel weed
- Giant rat's tail
- Grader grass
- Groundsel
- Lantana
- Love grass
- Poison peach
- Zamia

Major animal pests include:

- Dingoes
- Hares
- Pigs
- Rabbits

* Starane® is not registered for use with Moreton Bay ash.

Flora and fauna conservation

Timber is needed for animal protection. Timber is also regarded as an asset for use on the property or for sale. Hills act as natural flora and fauna reserves.

Concern was expressed about the effect of Avomec® and other chemicals on dung beetles and other beneficial insects. People are concerned about the residual effects of chemicals used to kill trees and other chemicals, that may not yet be evident. Generally, the effects are not considered when treating trees and stock.

Property sizes

A living area is understood to be the minimal debt area required for a family of two adults and two school age children. To achieve this living area, it is considered necessary to run 1000 head of mixed cattle on about 8000 to 12 000 acres (3250 to 4800 ha) depending on country type and degree of development.

The majority of properties range in size from 6000 acres (2400 ha) to 15 000 acres (6100 ha) with 10 000 acres (4000 ha) being about average.

Acknowledgments

The following producers are thanked for giving generously of their time in documenting their experiences for sustainable beef production in the Gaeta area:

Mr and Mrs Arnold Ballantyne, Mr and Mrs Lysle Ballantyne, Mr and Mrs John Bowes, Mr and Mrs Bill Campbell, Mr and Mrs Allan Hill, Mr Reg Hinton, Mrs Hazle Marland, Mr Tom Roffey, and Mr and Mrs Peter St Henry.

The Meat Research Corporation provided financial support for the Local Consensus Data process and the production of the reports.

The following officers of the Department of Primary Industries facilitated the LCD meetings and produced the reports:

Roger Cheffins, Russ Scarborough and Jim Wright.

Table 1. Land types and their management in the Gaeta area.

Land type % of area	Enterprises	Recommended stocking rate	Improvements	Constraints
Blue gum flats 5%	Breeding, growing, fattening	1AE*/7 acres	Most trees cleared	Erosion on some gully heads; regrowth
Ironbark/ bloodwood slopes 40%	Breeding, growing, fattening Fattening	1AE/12 acres 1AE/10 acres 1AE/3 to 4 acres	Timbered Open or well developed Improved pasture	Weed invasion; regrowth. Spell for 2 to 4 months
Spotted gum ridges 35%	Breeding, growing Breeding, growing	1AE/25 acres 1AE/15 acres	Timbered Selectively cleared	Erosion; wattle regrowth
Hills and mountains 20%	Breeding	1AE/50 to 100 ac	None	No water; zamia

* 1AE = 1 Adult Equivalent = a 3 year old steer (450 kg liveweight).

Table 2. Farm management data for the Gaeta area.

Category	Data
Actual Property sizes:	
Range	6000 to 15 000 acres (2400 to 6100 ha)
Average	10 000 acres (4000 ha)
Recommended living area/herd size:	
Area	10 000 acres (4000 ha)
Cattle	1000 mixed head
Breeds	Brahman crosses ($^1/_2$ to $^3/_4$ Brahman)
Mating system	Controlled mating
Mating season	November to March
Bull %	$2^1/_2$ to 3%
Reproduction rates:	
Range	55 to 75%
Average	65 to 70%
Weaning	By mid June. As early as January in bad years
Turn off weights (native pastures):	
Bullocks $4^1/_2$ to 5 year old	320 to 360 kg dressed weight
Yearlings	240 kg liveweight
Cull cows	450 to 500 kg liveweight
Cull cow age	6 to 10 years old
Cull bull age	6 to 7 years old
Herd health:	
'5-in-1' vaccination	All weaners
Botulism vaccination	Where it occurs
Buffalo fly	Treat when required; back-rubbers
Leptospirosis vaccination	All breeders annually
Three-day sickness vaccination	Bulls
Tick fever vaccination	All weaners
Ticks	Dip before the dry & if needed when cattle are poor
Vibriosis vaccination	All bulls annually
Worms	Drench all weaners
Supplements:	
Phosphorus	Breeders - January to May
Molasses/urea/protein meal	In drought

Addendum 1. Plant names

Common	Botanical
Blady grass	*Imperata cylindrica*
Bloodwood, red barked	*Eucalyptus erythrophloia*
Blue gum	*Eucalyptus tereticornis*
Couch grass, blue	*Digitaria didactyla**
Couch grass, water	*Paspalum distichum*
Fine stem stylo	*Stylosanthes guianensis* var *intermedia**
Flannel weed	*Sida cordifolia*
Foxtail (swamp foxtail)	*Pennisetum alopecuroides*
Giant rat's tail grass	*Sporobolus pyramidalis**
Grader grass	*Themeda quadrivalvis**
Groundsel	*Baccharis halimifolia**
Ironbark, narrow-leaved	*Eucalyptus crebra*
Ironbark, silver-leaved	*Eucalyptus melanophloia*
Lantana, bush	*Lantana camara**
Love grass (African love grass)	*Eragrostis curvula**
Mahogany	*Lophostemon suaveolens*
Moreton Bay ash	*Eucalyptus tessellaris*
Paspalum	*Paspalum dilatatum**
Poison peach	*Trema tomentosa*
Rhodes grass, Callide	*Chloris gayana* cv. Callide*
Rhodes grass, Katambora	*Chloris gayana* cv. Katambora*
Siratro	*Macroptilium atropurpureum* cv. Siratro*
Speargrass, black	*Heteropogon contortus*
Spotted gum	*Eucalyptus citriodora*
Supplejack	*Lophostemon confertus*
Wattle, black	*Acacia flavescens*
Wattle, black	*Acacia leiocalyx*
Wild sorghum	*Sorghum leiocladum*
Wire grass	*Aristida* spp.
Wynn cassia	*Cassia rotundifolia* cv. Wynn*
Zamia palm	*Cycas media*

(* Introduced plants)

Addendum 2. Climate data

The climate of the Coastal Burnett region is subtropical with long, hot summers and mild winters. Annual rainfall varies from about 1200 mm on the coast to 1000 mm in the west of the region. Approximately 70% of the rain falls in the November to April period.

In winter, generally mild conditions occur on the coast with an increase in the frequency and severity of frosts in inland areas in June to August.

Monthly rainfall data (mm) is given for various official recording stations situated within the region.

GIN GIN POST OFFICE	Lat 25°00' Long 151°58'								Elevation 70 meters				
	J	F	M	A	M	J	J	A	S	O	N	D	Year
Mean rainfall	186	162	130	71	60	58	52	31	40	71	86	122	1038
Median rainfall	152	111	90	50	46	34	32	26	29	59	64	103	1051

MIRIAM VALE POST OFFICE	Lat 24°20' Long 151°34'								Elevation 55 meters				
	J	F	M	A	M	J	J	A	S	O	N	D	Year
Mean rainfall	211	214	141	75	59	58	50	31	35	67	88	141	1165
Median rainfall	167	142	100	55	37	41	30	24	28	50	76	124	1115

MOLANGUL POST OFFICE	Lat 24°45' Long 151°33'								Elevation 244 meters				
	J	F	M	A	M	J	J	A	S	O	N	D	Year
Mean rainfall	186	146	108	60	63	51	50	33	31	71	105	119	1028
Median rainfall	162	110	63	41	66	31	32	25	22	73	97	96	998

ROSEDALE POST OFFICE	Lat 24°38' Long 151°55'								Elevation 45 meters				
	J	F	M	A	M	J	J	A	S	O	N	D	Year
Mean rainfall	216	187	131	70	57	60	52	32	34	70	88	126	1127
Median rainfall	154	127	88	45	40	33	30	25	25	52	65	104	1096

Median rainfall is the 50% probability of receiving that amount of rain.

Temperature data is not available from within the region. Bundaberg's mean maximum and mean minimum temperatures (°C) have been used as it is the closest recording station to the Gaeta area.

BUNDABERG AIRPORT	Lat 24°54' Long 151°18'								Elevation 31 meters			
	J	F	M	A	M	J	J	A	S	O	N	D
Mean maximum	29.3	29.3	28.5	26.9	23.9	22.1	21.3	22.7	24.8	26.4	27.9	28.7
Mean minimum	20.9	20.8	19.6	17.2	13.4	11.0	9.2	10.2	12.9	15.9	18.6	20.0

Addendum 3. Native Pasture Communities map