

# final report

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## **Beef property management in the Lochington area**

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## Introduction

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

The Lochington area is located west of Emerald in the Emerald Shire, Central Queensland (see map page 3).

This document contains a description of land-types in the Lochington area, their vegetation, topography, soils, pastures, production capacity and condition. The report 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 ensure accurate plant identification.

This information was provided in 1992 by a group of 8 producers each of whom had at least 10 years experience of beef property management in the Lochington area.

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 Lochington 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.

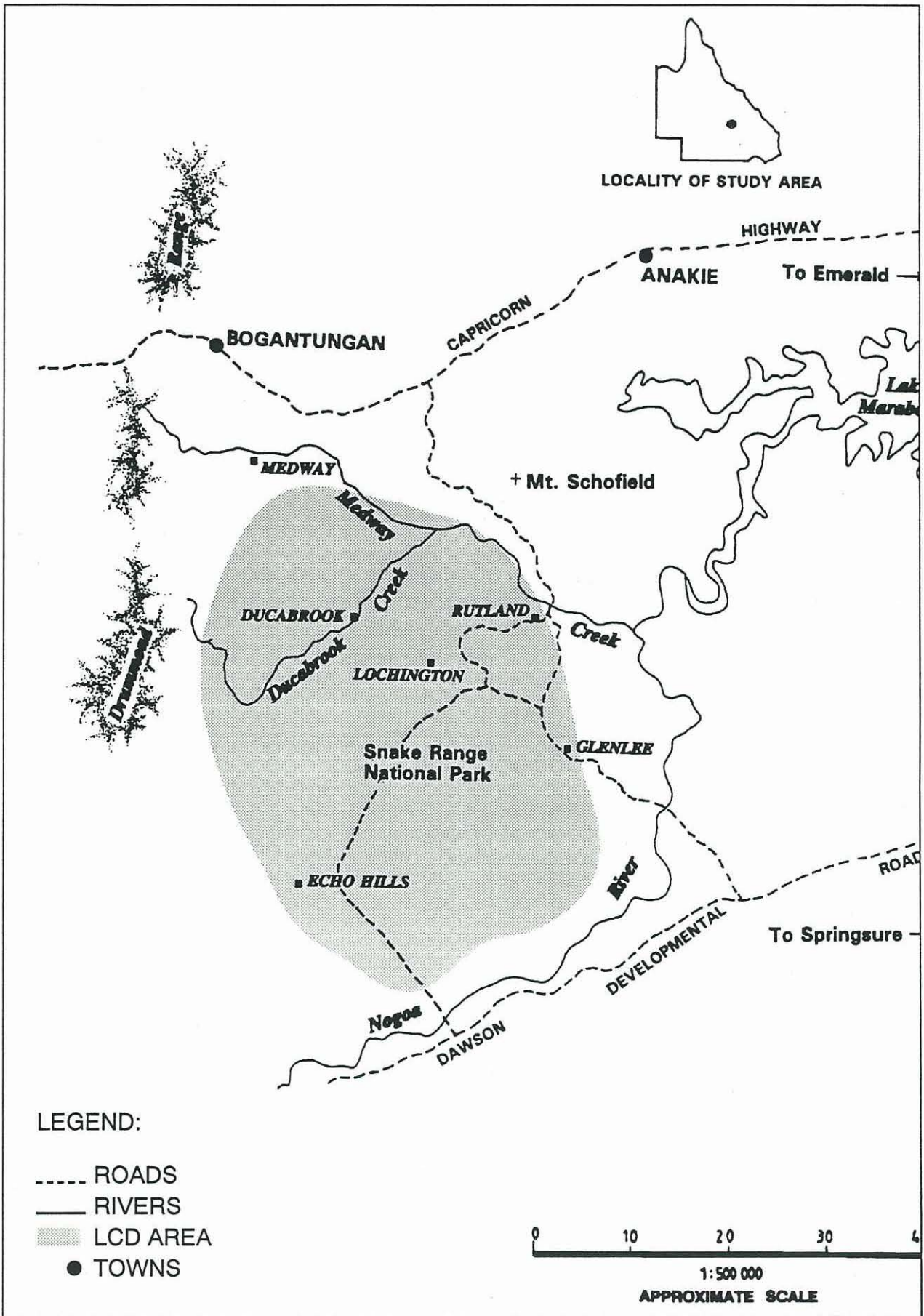
Similar reports are available for other areas in the different pasture communities of Queensland (see Native Pasture Communities map, Addendum 2).

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 this 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 which will include workshops to give all beef producers (in local areas in Central Queensland) an opportunity to participate in developing improved production systems. The process is sponsored by the MRC and the DPI.

Readers should consult appropriate representatives of the Lochington producer group or the DPI for further information or clarification.



\* Location of the Lochington area.

## Land-types

There are 6 different land-types in this area (Table 1). This section of the report provides a description of each land-type. Problems with each land-type and opportunities for improved management are also discussed.

### Brigalow land-types

Although brigalow is the most dominant species there are very few pure stands in this region (Table 1). Several other tree species occur in association with brigalow, and so this type of country has been divided into 3 distinct land-types. All 3 land-types are undulating and consist of low ridges with a network of gullies.

### Brigalow/sandalwood

This land-type is the most abundant, covering approximately 75% of the Lochington area (Table 1). The vegetation consists of a brigalow and sandalwood mix and is considered the most productive country. It is the most developed land-type in the area.

Prior to the 1960s, this country had remained in its natural state. During the 1960s this country was 'pulled', and it was re-pulled in the 1970s. In the 1980s, blade-ploughing was introduced to control sucker regrowth. Ripper mounted cutter-bars have proved more effective than a drawn blade-plough on the undulating topography and hard setting soil of this land-type. The narrow width of the cutter-bar ensures that a consistent cutting depth is maintained.

The brigalow/sandalwood land-type reaches its optimum productive potential about 18 months to 2 years after 'pulling' or blade-ploughing. After 3 - 6 years the quality of the pasture begins to decline. Developed areas with regrowth problems are still 20-30% more productive than virgin country because of the presence of buffel grass.

Buffel has proved to be the most successful of the introduced grasses. Buffel has difficulty in establishing in this country, so loosening the soil (e.g. with blade or disc-ploughs) to encourage seed establishment is

recommended. Other introduced grasses include purple pigeon grass and urochloa. Silk sorghum can also be grown but dies-out 3 years after planting. Legumes such as seca (grows well on harder soils), verano and siratro can be planted in association with blade-ploughing.

### Brigalow/sandalwood/silver-leaved ironbark

This land-type comprises about 5% of the Lochington area (Table 1). Silver-leaved ironbark trees occur mainly along the ridges. This country was developed in the same way as brigalow/sandalwood country, with some ring-barking on the silver-leaved ironbark ridges in the 1960s. Small areas have been treated with Graslan® with good success. Natural pastures such as black speargrass are present in stands of silver-leaved ironbark.

### Brigalow/sandalwood/yapunyah

The presence of yapunyah trees distinguishes this land-type from the other brigalow land-types. This land-type constitutes 5% of the Lochington area and is characterised by self mulching red soil and patches of small pebbles (Table 1). The development of this country is similar to that of the brigalow/sandalwood land-type. There is also a small percentage of brigalow and blackbutt on soil with flintstone and this is regarded as good buffel growing country.

### Range country

Range country covers 5% of the Lochington area (Table 1). The upper slopes consist of a mixture of narrow-leaved ironbark, wattle and lancewood trees, while on the lower slopes silver-leaved ironbark and sandalwood are the dominant tree species present. Trees on the lower slopes have been ring-barked and Graslan® has been applied to some areas, while the upper slopes have been maintained in their natural state. This land-type has timber reserves for yard building.

## Lancewood country

This is the smallest land-type occurring in only 1% of the Lochington area (Table 1). Lancewood country is not recommended for development. Lancewood trees occur mostly on the ridges with a slate type shale soil. This country forms the upper part of local watersheds. Rosewood trees are also present along ridges. Cypress pine trees are present on sandy soils and buffel grass has spread into these areas.

This country is a good source of winter forage as cattle feed on lancewood saplings and native pastures.

This land-type has timber reserves for yard building. Mature cypress pine trees are thought to have potential for milling.

## River and creek flats

River and creek flats cover 10% of the area and have a diversity of vegetation (Table 1). The main tree species include coolibah, poplar box and blue gum higher up in the gullies; silver-leaved ironbark on the finer silty soils; and brigalow and sandalwood. Coolibah trees occur either mixed with brigalow or in separate stands. Bauhinia (a useful fodder tree in dry times) is present throughout the river and creek flats.

Brigalow has been 'pulled' and some ring-barking has taken place on the box flats. Where country has been 'pulled' or ring-barked, woody weeds such as black wattle and turkey bush have invaded. This is mainly due to a lack of fire and a succession of dry years. Buffel grass has spread throughout the flats except in stands of coolibah where urochloa is present. Green panic grass has established on the box flats, and Rhodes grass has been planted with limited success. Paspalum grass was planted on the box flats after ring-barking and has adapted well because of its frost tolerance.

## Enterprises

The Lochington area is suitable for breeding, growing and fattening beef cattle. Developed brigalow/sandalwood country is ideal

fattening country, with 90% of fat cattle turned off being eligible for the 'Jap Ox' market. This land-type is also used for breeding and growing young cattle.

River and creek flats and brigalow/sandalwood/silver-leaved ironbark are recommended for breeding.

Brigalow/sandalwood/yapunyah country is suitable for breeding and for fattening of cows and steers (for the Korean and EEC markets).

Lancewood and range country is suitable for breeding and fattening of spayed cows for the US market, although fattening depends on seasons and the amount of sucker regrowth in range country.

## Cattle management

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

### Breeding objectives

Cross breeding is recommended in this area to gain the benefits of hybrid vigour. High tick resistance is selected for in this area. Less than half Brahman content is enough to provide tick and heat resistance, European and British breeds make up the remaining content of locally updated breeds (Table 2). An important trait when selecting breeders is their ease of calving. This may mean that traits such as weight are less important.

The type of animal being bred for fattening is an early maturing, and fast growing animal with good weight for age.

### Bulls

Bulls should be selected on temperament, ability to serve (gauged by the number of calves on the ground), and quality of progeny. When available, Estimated Breeding Values (EBV's) can also be used. Bulls should also be culled at approximately 8 years, although exceptional bulls may be kept with a reduced number of cows (Table 2). Bulls with damaged pizzles, should also be culled.

## Cows

Maiden heifers are culled because of poor temperament and bad conformation. Temperament is an important trait, as bad tempered animals affect the rest of the herd. Animals must be heavy boned to produce a marketable product.

Breeders are culled at 8-10 years or as soon as they miss a calf (Table 2). In this latter case cows can be spayed, fattened and sold.

Cows that do not produce good calves can be sold as cow/calf units.

## Mating

Both continuous and seasonal mating are recommended for the Lochington area.

### *Continuous mating*

Continuous mating takes advantage of the cows natural cycle, as cows are more likely to conceive because of continual exposure to bulls. Bulls that stay with the herd all year round are easier to manage, especially Brahmans. This system also provides an ongoing cash flow with cows calving over a longer period. Calving occurs from October to February and 2 brandings are necessary.

At weaning cows should be pregnancy tested and any empty cows should be culled. Bull percentages range from 4-5% with *Bos indicus*, and 2-3% with *Bos taurus* breeds, (depending on paddock sizes and number of watering points).

### *Controlled mating*

Seasonal mating allows for a more uniform calving with cows calving between December and February. Also shy breeders are recognised and culled much earlier, thus increasing herd fertility. A disadvantage of this system is cows may get too fat and not cycle.

In drought periods bull introductions can be delayed until rain. If no rain falls bulls can be left out altogether. For ease of management, bulls should be put back into the same paddock every year as they are territorial. Bull percentage is 3%. Bulls can be tested for soundness before being placed with breeders.

## Reproduction rates

Branding percentages range between 75-90%. Minimal losses are expected between branding and weaning.

## Weaning

Calves are weaned from 6-9 months. In dry seasons, weaning as early as 4 months may be necessary. Weaning is also a good time to cull any 'wild' animals and vaccinate against tick fever. At weaning, training is important. Weaners are fed in yards for 5-7 days where they are handled as much as possible. Hay is fed at the rate of 1 bale to 5-10 head, and weaners should be placed under the least stress as possible. They are then placed in small paddocks for about 7 days where they are worked with horses and dogs. Motorbikes and vehicles may also be used to get weaners used to them.

## Mustering

Mustering is mainly done on horseback into laneways. It is recommended that enough labour be available when mustering. The fewer musterers the greater the chance of cattle escaping, making mustering more difficult the next time round. The labour required depends on paddock size and difficulty in mustering. Special traps off waters are effective, especially in range country.

Helicopters may be used in rough country in combination with horses. This method can be used when there are time constraints and labour shortages. It is also an effective way of mustering 'clean-skins'.

Another method is the use of fixed wing aircraft for spotting cattle while radio contact maintained with musterers on the ground.

## Cattle deaths

Deaths vary between 1-2%. Deaths are caused mainly by three day sickness and cancer eyes in Herefords.

## Herd health

It is recommended to use the following vaccinations:

- tick fever
- three day sickness
- vibriosis
- '5 in 1' (2 shots 6 weeks apart)
- leptospirosis (2 shots 4 weeks apart, followed by an annual booster).

The greatest cost of a property's herd health program is tick control. Tick problems in this area will increase with rainfall. Ticks can be treated by dipping or paddock spelling for 90 days after rain. Light stocking rates also help reduce tick numbers.

Buffalo fly can be a problem, the main method of treatment is by the use of backrubbers. Any animals with cancer eyes should be culled to eliminate the disease from the herd.

Good hygiene is recommended especially when castrating, as tetanus has been a problem in this area.

## Supplements

No supplementary feeding outside drought periods is undertaken. There is no economic return in supplementary feeding, because this area is not considered to be mineral deficient.

## Markets

The main aim is to turn-off fat cattle weighing between 600-640 kg liveweight at 3 years of age. These cattle would be eligible for the Japanese market. Other markets include Korea, USA, EEC and Australia's domestic market. Meatworks determine which market the various cuts of meat go to, thus one carcass may be serving several markets. Regardless of this producers should still aim towards specific market requirements.

Another option is selling cull cattle to feedlots to get them to a marketable weight. This is not a common practice.

## Grazing-land management

This section describes management to sustain the natural resources for long term beef production.

### Stocking rates

Recommended stocking rates reflect a balance between optimal production and conserving pasture for the next group of introduced cattle (Table 1). Stocking rates on brigalow/sandalwood country are dependant on the stage of property development. Blade-ploughed country has a higher carrying capacity than country with regrowth present. Breeders can be run at stocking rates up to 20% higher than for male cattle without compromising the condition of cows with calves. On the river and creek flats, breeders can be run at higher than normal stocking rates to utilise pastures before they deteriorate.

### Management for a feed reserve

As seasons are erratic in this area, there is a need for a grass reserve for use during dry seasons and periods after frost. To achieve this reserve, stocking rates need to be conservative even though available pasture does not appear to be fully utilised during the growing season.

Lower stocking rates are recommended to allow grass to regenerate more rapidly (because only the leaves are eaten and stems are left). At a higher stocking rate the whole plant is grazed, taking longer to regenerate. Alternatively, pastures can be grazed down and paddocks then spelled. This would apply where grazing pressure is increased prior to fat cattle being turned-off, and the paddock is not restocked until the grass has regenerated. However, there is a concern if pastures are grazed too low, these areas may be susceptible to weed invasion such as parthenium. Another aim of paddock spelling and conservative stocking rates is to allow pasture grasses to seed every year.

Having grass cover helps reduce soil erosion. It is considered that a good grass coverage is



a more effective form of erosion control than trees on the flatter country. Trees however will control wind erosion.

Instability of market prices can hinder decisions on managing pasture for a feed reserve as there may be a tendency to hold cattle longer in some cases.

## Dry season management

Routine stock management practices can minimise the ill effects of a dry season. As the dry season lengthens supplementary feeding may start, and only after an extended 'dry' is agistment considered.

### *Stock management*

A decision to reduce stock numbers should be made when surplus grass reserves start to run out. If by the end of May grass reserves are depleted, then lightening off should take place as the chances of rainfall occurring until spring are small. Enough grass is needed to carry stock through winter and beyond in case no spring rain falls.

With extended dry conditions bullocks are destocked first, regardless of whether or not they are finished, they should be sold before they lose weight. Old poor cows should be culled a year earlier than normal and not replaced. First calf heifers should be placed on better country, e.g. blade-ploughed paddocks. Replacement heifers should not be joined and culled heifers can be sold as stores to available markets (e.g. feedlots).

Cows should not be burdened with calves during the driest part of the year (June - November). Calving should occur between November and January (period of summer rainfall) or even as late as March if the summer is dry. Calves can then be weaned in early winter, which can be 1 to 2 months earlier than normal. Bulls can be placed in either better paddocks or paddocks closer to the homestead where they can be hand fed under closer supervision.

### *Supplementary feeding*

Supplementary feeding is generally not recommended, however at certain times it cannot be avoided. Commencement of feeding should occur prior to pasture decline

(after winter). Once feeding has started it must be maintained for the duration of a dry spell. Weaker cattle should be separated and supplemented before their condition deteriorates. No cattle should die before feeding starts.

Molasses and urea are the best dry season supplements and are cheaper than grain. However, storage facilities must be adequate. Molasses tanks should be either concrete or fibreglass, waterproof and hold between 3000-5000 gallons. A mixer is required when using urea.

Feeding weaners may be necessary on range type country. Weaners can be fed molasses along with meatmeal and/or cottonseed when available. On brigalow/sandalwood country breeders are supplemented, but it is not necessary to feed weaners and dry cattle. In dry times cattle will eat the leaves of bauhinia, yellowwood (although poisonous), wait-a-while and supplejack.

### *Agistment*

Agistment is regarded as a last resort and is not a viable proposition because of the high costs involved. It is generally not successful as cattle cannot be directly supervised. Agistment would only be considered if the local area was severely drought affected and adequate feed was available in nearby areas.

## Introduced pasture species

Pasture types which have shown some promise in the Lochington area include:

### *Grasses*

- Buffel grass
- Green panic
- Silk sorghum
- Purple pigeon grass
- Paspalum
- Urochloa

### *Legumes*

- Seca
- Verano
- Siratro

## Fire

Some pastures benefit from fire, while others are better left unburnt. The exact level of benefit for the pastures in this area is not fully understood. Burning decisions should be based on experience, and prevailing weather conditions. Burning should only occur after rain.

Fire has the potential to remove rank grass, enabling the growth of sweet leaves with a higher protein content. However there is also a concern that fires could burn uncontrolled on properties with a large body of grass following a good season.

River and creek flats should be burnt after storm rain (between October and December), when a good body of grass and soil moisture are present. If there is a carry-over of soil moisture after winter, then this country can be burnt earlier.

It is recommended that brigalow/sandalwood/silver-leaved ironbark country be burnt every 2 years to make black speargrass more palatable.

Range country should only be burnt occasionally to reduce fuel build-up. Benefits from fire for pasture in range country are considered marginal and regular fires may increase woody weed growth. However wattles may need to be checked by an occasional fire.

## Tree management

It is recommended that patches of timber (about 20%) be retained for conservation and aesthetic purposes. Timber should be left along water courses to about 100 metres on either side, particularly old established gums, to prevent erosion and also to serve as wildlife corridors between properties. These corridors are considered important to conserve fauna such as koalas, sugar-gliders and the many bird species in this area. It is also important to preserve these features for future generations. It is considered uneconomical to clear all timber on a property.

To date, about 90% of the brigalow land-types and 50% of the river and creek flats in this area have been cleared, while no clearing

has taken place in range and lancewood country. This uncleared country would probably amount to more than 20% on individual properties.

## Brigalow regrowth control

It is recommended that after 'pulling' mature brigalow, country be seeded with buffel grass and silk sorghum. The pasture can be grazed for 3-4 years depending on the rate of regrowth and rainfall. The next step to control the initial regrowth is to either burn or stick-rake. Burning requires locking-up the paddock for 1-2 years to build-up a fuel reserve. However, the cost of destocking makes this option less economical than stick raking. Subsequently the pasture is grazed for 4-5 years, then blade-ploughed when regrowth is too thick. Blade-ploughing is considered a cheap long term option for regrowth. Ripper mounted cutter-bars are more suitable than drawn blade-ploughs in the harder soils because they are narrower and maintain a constant soil depth.

It is recommended that country which is too steep to stick-rake or blade-plough should not be 'pulled' at all. One particular regrowth control method involves 'double pulling' an area. 'Re-pulling' in the opposite direction breaks the timber up more effectively.

## Fences and water

Fencing strategies include following and separating watersheds where practical by fencing along ridges. The direction and length of original fences has caused problems, and replacement costs are expensive in many cases.

River and creek flats are included in most paddocks. It is desirable to have a mixture of flats and higher 'country' in the one paddock.

In range country, paddock sizes vary from 2000 to 8-10 000 acres. This includes inaccessible areas which are too small to fence in. Lancewood country is usually all in one paddock, or fenced in with other land-types when only in small areas. Average paddock sizes are about 1200 acres.

On brigalow/sandalwood country paddocks vary from 500-600 acres where there is no regrowth, to 1500-2000 acres in areas with regrowth present. Smaller paddocks are easier to muster and reduce labour costs. Laneways in paddocks are also recommended to assist with mustering.

The availability of water is the biggest constraint in the area. The main water source is from surface runoff into rivers, creeks and dams. There are only a few bores in this area as this supply of water is not always guaranteed. It is recommended that dams be a minimum of 15 feet deep to offset evaporation (approximately 6 ft per year). As a reserve for dry periods an extra twelve months supply of water is also needed. This reserve storage may need to accommodate for longer periods (about 3 years) on blade-ploughed country where there is little runoff.

Paddocks up to 1000 acres should have either a central watering point, or two watering points at either side. Good positioning of water points makes for even grazing. Cattle should not have to walk more than a mile for water. Troughs are also recommended in laneways as well as paddocks, to assist in moving cattle. These troughs when accessible provide an extra watering point in the main paddocks, and also helps even out grazing.

## Pests

### Plant Pests

#### *Noogoora burr*

This plant can be chemically controlled. There is some concern that it is developing resistance to rust.

#### *Parthenium*

This plant is currently present in isolated patches along roadsides and on over-stocked country. However by grazing at a lighter rate, an increase in other pasture species will choke it out. Parthenium is not considered a problem in buffel country yet, but could become a problem if not controlled.

#### *Rubber vine*

Rubber vine can be chemically controlled.

#### *Parkinsonia*

This pest can be chemically controlled.

#### *Mother-of-millions*

This plant can be chemically controlled.

#### *Turkey bush*

Chemical control is unknown.

#### *Black wattle*

Black wattle is wide spread along creek flats but control is unknown.

#### *Sandalwood*

Sandalwood can be effectively controlled by blade-ploughing.

#### *Prickly acacia and whitewood*

These are not considered problem plants, but if left unchecked they may a problem.

It is recommended that general control strategies should include the whole catchment in addition to individual properties. Plants such as parthenium and rubber vine need to be controlled at the catchment head waters to prevent them spreading downstream and affecting other properties. Problem plants on individual properties should also be controlled to reduce their spread.

### Animal pests

#### *Kangaroos*

The kangaroo population has increased significantly since the introduction of blade-ploughing in this area.

It is felt that there is more scope for kangaroo harvesting although it is difficult to convince the relevant authorities of this.

There is a reluctance to use commercial shooters because of the possibility of introducing parthenium.

#### *Pigs*

Pigs are not a major problem, although they can spread diseases such as leptospirosis and eat forage crops. They can be controlled by trapping and/or shooting.

## Dingoes

Dingoes kill calves mostly in range country and the threat from dingoes will increase in dry periods when cows and calves have to search further for water, and there is also possibility of cows and calves being separated. Dingoes however, do have a role to play as natural predators by keeping kangaroo and pig numbers in check. Interbreeding of dingoes with domestic dogs is also a problem as these animals are more vicious in nature.

## Property sizes

The average property size is between 15 000-20 000 acres and is capable of running approximately 1000 head, consisting of 350 breeders plus fat cattle. Such a property would include areas of regrowth and would allow for maintaining a pasture reserve for dry periods. Properties in this area range from 7500-100 000 acres.

It is recommended that a viable property in this area would cover 15 000-20 000 acres and run 1000 head. This property would be debt free and be able to support a family. A larger property would require additional labour especially if the rest of the family was unable to help.

The following recommendations will help ensure the long-term viability of a property in this area:

- development and maintenance, for example, blade-ploughing and maintaining regrowth control, should be ongoing as much as finances allow
- properties should remain a viable size and not split up into smaller 'starvation blocks'.

## Acknowledgments

The producers in the Lochington area are thanked for giving generously of their time in documenting their experiences for sustainable beef production in the Lochington area.

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

The following officers of the Department of Primary Industries facilitated Local Consensus Data meetings and produced the reports: Piet Filet, Hugh Wright, Jacqui Willcocks.

Norma Tasker, Desley Lorroway and Leanne Harder are thanked for the professional formatting of these documents.

Table 1. Land-types and their management in the Lochington area.

Land-type % of area	Enterprises	Recommended stocking rate	Improvements	Constraints
Brigalow, sandalwood 75%	Fattening/ breeding	'Blade-ploughed': 1:10 acres (males) 1:7-8 acres (females) Regrowth present: 1:19 acres (males) 1:17 acres (females)		Regrowth
Brigalow, sandalwood, silver-leaved ironbark 5%	Breeding	'Blade-ploughed': 1:10 acres (males) 1:7-8 acres (females) Regrowth present: 1AE:20 acres		Regrowth
Brigalow, sandalwood, yapanyah 5%	Breeding/ fattening	'Blade-ploughed': 1AE:10 acres Regrowth present: 1AE:16 acres		Regrowth
Range 5%	Breeding/ fattening	Uncleared: 1AE:50-60 acres		Inaccessible, unsuitable for development
Lancewood 1%	Breeding/ fattening	Uncleared: 1AE:50-60 acres		Unsuitable for development
River and creek flats 10%	Breeding	Growing season: 1AE:2 acres Clay pans: 1AE:25 acres 'Blade-ploughed': 1AE:10 acres		Woody weeds, blackwattle, turkey bush, noogoora burr

Adult Equivalent (AE) is defined as 1 cow + calf, 1 steer (2-2<sup>1</sup>/<sub>2</sub> years old) or 1.2 bullocks

Table 2. Beef property management data in the Lochington area.

Category	Data
Bull %	Seasonal - 3% Continuous - 4-5% ( <i>Bos indicus</i> ) - 2-3% ( <i>Bos taurus</i> )
Cull bull age	8 years
Cull cow age	8-10 years
Breeds	< 50% <i>Bos indicus</i> British and European breeds
Mating systems	Seasonal and continuous
Reproduction rates	75-90%
Weaning age	6 months 4 months in dry periods
Death rates	1-2%
Health procedures	
Tick Fever	Weaners should be vaccinated
Three day sickness	Bulls should be vaccinated
Vibriosis	
'5 in 1'	Calves - 2 shots, 6 weeks apart
Leptospirosis	Breeders - 2 shots, 4 weeks then an annual booster
Supplements	
Molasses/urea	Fed in dry periods and droughts
Meatmeal and/or cottonseed	When available
Turn-off age/weight	Steers - 3 years at 600-640 kg liveweight
Property sizes	
Range	7 500 - 100 000 acres
Average	15 000 - 20 000 acres
Recommended living area	15 000 - 20 000 acres, carrying 1000 head (consisting of 350 breeders plus fat cattle)

## Addendum 1. Plant names.

Common names	Botanical names
Bauhinia .....	<i>Lysiphyllum hookeri</i>
Blackbutt .....	<i>Eucalyptus cambageana</i>
Black speargrass .....	<i>Heteropogon contortus</i>
Black wattle .....	<i>Acacia</i> spp.
Blue gum .....	<i>Eucalyptus tereticornis</i>
Brigalow .....	<i>Acacia harpophylla</i>
Buffel grass .....	<i>Cenchrus ciliaris</i>
Cypress pine .....	<i>Callitris glaucophylla</i>
Coolibah .....	<i>Eucalyptus coolabah</i>
Green panic .....	<i>Panicum maximum</i> var <i>trichoglume</i>
Lancewood .....	<i>Acacia shirleyi</i>
Mother-of-millions .....	<i>Bryophyllum tubiflorum</i>
Noogoora burr .....	<i>Xanthium pungens</i>
Narrow-leaved ironbark .....	<i>Eucalyptus crebra</i>
Purple pigeon grass .....	<i>Setaria porphyrantha</i>
Poplar box .....	<i>Eucalyptus populnea</i>
Paspalum .....	<i>Paspalum dilatatum</i>
Parthenium .....	<i>Parthenium hysterophorus</i>
Parkinsonia .....	<i>Parkinsonia aculeata</i>
Prickly acacia .....	<i>Acacia nilotica</i>
Rhodes grass .....	<i>Chloris gayana</i>
Rosewood .....	<i>Acacia rhodoxylon</i>
Rubber vine .....	<i>Cryptostegia grandiflora</i>
Sandalwood .....	<i>Eremophila mitchellii</i>
Silk sorghum .....	<i>Sorghum</i> spp. hybrid
Seca .....	<i>Stylosanthes scabra</i> cv. <i>seca</i>
Siratro .....	<i>Macroptilium atropurpureum</i>
Silver-leaved ironbark .....	<i>Eucalyptus melanophloia</i>
Supplejack .....	<i>Ventilago viminalis</i>
Turkey bush .....	<i>Eremophila longifolia</i>
Urochloa .....	<i>Urochloa mosambicensis</i>
Verano .....	<i>Stylosanthes hamata</i> cv. <i>verano</i>
Wattle .....	<i>Acacia</i> spp.
Whitewood .....	<i>Atalaya hemiglauca</i>
Wait-a-while .....	<i>Capparis lasiantha</i>
Yellowwood .....	<i>Terminalia oblongata</i>
Yapunyah .....	<i>Eucalyptus thosetiana</i>

Addendum 2. Native Pastures Communities map.

QUEENSLAND  
DEPARTMENT OF PRIMARY INDUSTRIES

**NATIVE PASTURE COMMUNITIES**

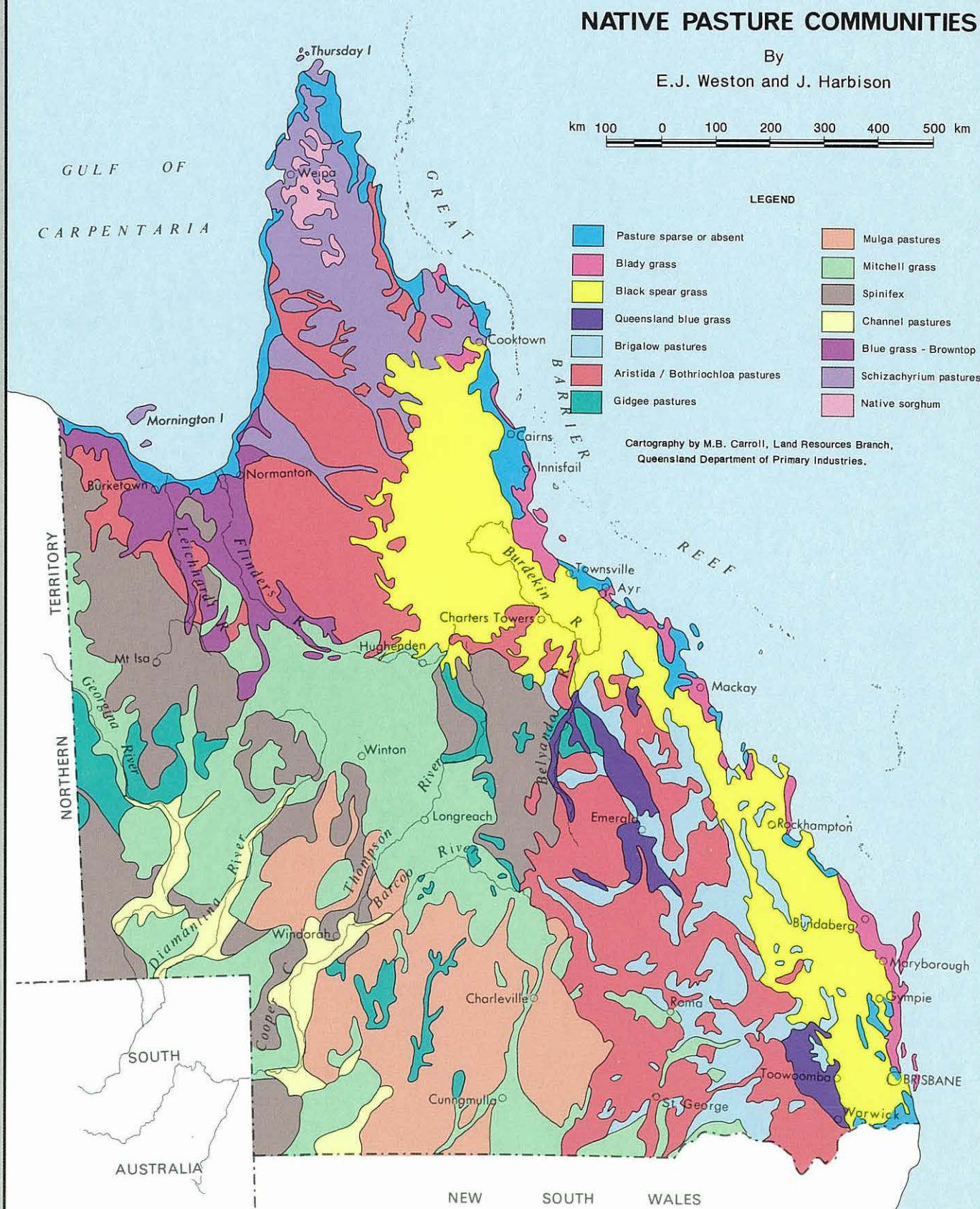
By  
E.J. Weston and J. Harbison



LEGEND

- |  |                                  |  |                        |
|--|----------------------------------|--|------------------------|
|  | Pasture sparse or absent         |  | Mulga pastures         |
|  | Blady grass                      |  | Mitchell grass         |
|  | Black spear grass                |  | Spinifex               |
|  | Queensland blue grass            |  | Channel pastures       |
|  | Brigalow pastures                |  | Blue grass - Browntop  |
|  | Aristida / Bothriochloa pastures |  | Schizachyrium pastures |
|  | Gidgee pastures                  |  | Native sorghum         |

Cartography by M.B. Carroll, Land Resources Branch,  
Queensland Department of Primary Industries.



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