Northern Territory Government

DEPARTMENT OF **PRIMARY INDUSTRY AND FISHERIES**

THE 2010 PASTORAL INDUSTRY SURVEY

Top End Region

The 2010 Pastoral Industry Survey – Top End Region

Northern Territory Government

Department of Primary Industry and Fisheries

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Bibliography:

Cameron, A. G. (2014). The 2010 Pastoral Industry Survey – Top End Region. Northern Territory Government, Australia.

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To the reader,

I am pleased to be able to write the foreword for the Top End Pastoral Industry Survey.

This Survey provides a snapshot in time and a valuable insight for industry, government, those who may be considering a future in the industry and potential investors. It builds on the 2004 Survey, which has been a guiding resource over a six-year period.

I would like to compliment the Department of Primary Industry and Fisheries (DPIF) on the completion of this survey, which has seen approximately 50% of the pastoral properties in the Top End estate surveyed. It has involved a great deal of work and dedication.

I recommend this publication to you all.

Regards,

Chris Muldoon
Chairman
Northern Territory Cattlemen's Association (NTCA), Top End Branch

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List of acronyms

AE	Adult equivalent
AI	Artificial insemination
BBSE	Bull breeding soundness evaluation
DPIF	Department of Primary Industry and Fisheries
EBV	Estimated breeding value
EID	Electronic identification tag
HGP	Hormonal growth promotants
MLA	Meat and Livestock Australia
NTCA	Northern Territory Cattlemen's Association

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The 2010 Pastoral Industry Survey – Top End Region was based on the 2004 version.

Oxley, T., Leigo, S., Hausler, P., Bubb, A., MacDonald, N. (2006). *2004 Pastoral Industry Survey*. Department of Primary Industry and Fisheries, Northern Territory Government. Document can be found online at: http://www.nt.gov.au/d/Primary_Industry/Content/File/PastoralSurvey_ntwide.pdf

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Researched and written by Arthur Cameron

Executive summary

The Top End is a small, diverse region of the Northern Territory (NT), which produces cattle predominantly for the live cattle export market to South-East Asia. The region has a semi-arid monsoonal climate with reliable wet and dry seasons.

This comprehensive survey was conducted to record pastoral industry practices in 2010 as a follow up to the survey conducted in 2004. Twenty properties or pastoral business units in the Top End were surveyed out of 40. Only 17 (35%) of the properties used for pastoralism in the Top End are formal pastoral leases; the rest are a mixture of freehold land, Crown lease, grazing lease and Indigenous land.

The surveyed properties varied in size from 44 km^2 to 1285 km^2, with an average size of 497 km^2. Most of these properties utilised their land for grazing, but other enterprises were also conducted on them, such as hay production, horticulture and tourism. Most of the properties were either privately-owned with a hired manager (40%), or were run by an owner-manager (35%). The 20 properties had an average of 3600 head of cattle and six of them also had an average of 300 head of buffalo.

All the properties had improved infrastructure in the last two years, spending an average of $344 000, mostly on subdividing paddocks and constructing staff accommodation. Some properties also developed water points and erected sheds.

The aim of the majority of producers (75%) was to breed and sell animals mainly to the live export feeder cattle market. The other enterprises, such as agistment (10%) and growing/finishing cattle (15%) are also generally aimed at the same market. In 2010, 26 509 animals were turned off, predominantly to the live export market in South-East Asia. Cattle were sold during all months of the year.

Producers had improved the efficiency of their enterprises through infrastructure development, such as constructing laneways (90%), subdividing paddocks and establishing water points. They had also improved the efficiency of their businesses by changing the way they used staff and used benchmarking. Some properties did not employ permanent staff in 2010, and those that did, employed fewer in comparison with 2004. The properties employed more seasonal staff in 2010 than in 2004 and helicopters were used more for mustering. Eighty per cent of producers now used financial and natural resources benchmarking to manage their businesses.

There had also been changes to the way producers managed their cattle enterprises to improve efficiency and productivity. Average bull use dropped from 4% to 3.2% between 2004 and 2010, while the use of estimated breeding values (EBVs) to select bulls increased. More properties were culling cows based on age, pregnancy status, temperament and conformation. More producers in 2010 weaned at different weights according to conditions, and more fed weaners hay and/or concentrates. More producers were using rotational grazing, spelling and time control grazing in 2010 compared with 2004.

Compared with 2004, in 2010 marketing issues and government regulations were cited more as hurdles to managing enterprises, while roads and access dropped slightly as hurdles, but continued to be important. Staff availability, weeds and cost of production were seen as lesser hurdles in 2010 than in 2004.

Market access was the main issue to affect profitability, as it increased markedly in importance in 2010 compared with 2004. Government regulation and policy were also issues of increased importance. Cost of production dropped slightly as an issue in 2010, but remained important for profitability. The importance of weeds as a detriment to profitability dropped in 2010, but it was the main issue affecting environmental sustainability.

How the survey was conducted and considerations for the use of the information

This survey follows the 2004 Pastoral Industry Survey (Oxley, et al. 2006). Due to the level of interest in the results of that survey, it was agreed with the industry to repeat it after five years to monitor changes.

Data collection began in May 2011 with an initial aim of completing it by September 2011. However, in June 2011, the live export trade to Indonesia was temporarily suspended after footage of cruelty to animals in some Indonesian abattoirs was aired on the ABC *Four Corners* program. Although the suspension was lifted a month later, the episode left a legacy of uncertainty and a decline in industry confidence. No survey interviews were conducted while the trade suspension was in place. Some interviews were conducted prior to the suspension and some after. Data collection was completed in April 2012. The context and timing of the survey is therefore important when considering the results, especially on questions related to development plans that could be impacted by the change in industry confidence.

Survey forms were emailed, mailed or hand-delivered to producers. Extension officers completed the surveys with producers at convenient locations, including on their properties and at DPIF offices.

All of the surveyed properties had 300 or more livestock. Where producers managed more than one parcel of land in the Top End region, the survey was completed on the business unit rather than on the individual properties. Twenty out of 40 livestock business units were surveyed in the Top End region (50%). This sample of stations account for 29 properties or parcels of land out of a total of 49 (59%) and 9948 km^2 of land out of approximately 34 464 km^2 under pastoral management (29%). In this report, pastoral business units for which data is presented will be referred to as 'properties'.

Since properties vary greatly in land area and cattle numbers, the results have been weighted to provide the most appropriate representation of the industry. Data concerned with cattle production has been weighted on cattle numbers and data related to land management on land area, while questions about business management or staff were not weighted. Where producers were not able to provide cattle numbers, regional estimates were used.

Care must therefore be taken when drawing direct comparisons with the 2004 survey as those results were not weighted. Some producers were not able to answer some of the questions because of lack of history or lack of documentation. In 2010, the managers of three properties had been in their role for one year or less.

Introduction

The Top End or Darwin region is a small but diverse area of the NT, producing feeder cattle predominantly for the live export market to South-East Asia. Production is based on improved and native pastures. Properties with cattle and buffalo range from small family enterprises conducting mixed farming to larger pastoral properties. Enterprises range from those breeding and growing live export steers at one end of the spectrum to properties which only take livestock on agistment. A number of properties conducted supplementary enterprises, such as mining and tourism.

The Top End district extends from Dorisvale Station near Pine Creek in the south to the coast in the north, and from Kakadu National Park in the east to the coast near Wadeye in the west (Figure 1).

DPIF conducted the 2010 Pastoral Industry Survey of the Top End region to assist the industry by providing a tool for benchmarking and planning. The objectives of this survey were to:

- Document the state of the cattle industry in the Top End of the NT to enable government and industry to better assess the benefits of past and current research projects.
- Collect information on industry needs to assist DPIF and other groups, such as industry advisory committees and the NTCA to set priorities for action.
- Determine the most effective ways of providing relevant information to producers in each area of the Top End and to initiate or improve communication between DPIF and cattle producers.
- Provide the industry with up-to-date information on best management practice to prioritise and plan for future research activities.

This report focuses on the Top End region. Similar surveys were carried out in the three other major pastoral regions of the NT: Katherine, Barkly and Alice Springs. The four regional reports are summarised in the 2010 Northern Territory Pastoral Survey report.

Climate and season

The Top End

The Top End region has a semi-arid monsoonal climate with a reliable ‘wet season’ from October to April and a virtually rainless ‘dry season’ from May to September. The wet season is reliable in that there is always rain to grow established pastures. However, there is considerable variation in when the wet season starts, when the rain falls during the wet season (rainfall distribution) and when the wet season finishes. The duration of the wet season can vary dramatically from year to year. More than 90% of the rainfall falls in the months from November to March.

The wet season generally begins with isolated storms in September, which increase in frequency during October and November. This period, known as the ‘build up’ is characterised by high temperatures and high humidity. It is an extremely uncomfortable time for people and animals. Periods of widespread monsoonal rain can occur during late December; however, they tend to occur more frequently in the January-March period. During monsoonal periods, conditions are generally cool and wet. It can be overcast, cool and rain every day for weeks on end. It is not unusual to experience a two-to-three week dry spell during January. February and March are most consistently the wettest months. After March, it rains again from less frequent storms and conditions are again hot and humid.

Rainfall intensity is often high during large thunderstorms, or during cyclones, which threaten the Top End most years and frequently cross the coastline.

Cyclones, while destructive, generally only directly affect the coastal areas of the Top End. During the wet season when cyclones occur, cattle are generally not affected as they are not present on the floodplains at that time of

year. The indirect effect of cyclones is the severe flooding from the heavy rain associated with them. This severe flooding is often widespread, restricting access and movement across the Top End.

The dry season generally lasts from May to September, with virtually no rain falling in the months of June, July and August.

Average rainfall decreases with distance from Darwin on the north-western coastline. Rainfall averages 1917 mm in Darwin but drops to 1428 mm in Pine Creek and to 1220 mm at Douglas Daly Research Farm near the Daly River in the west.

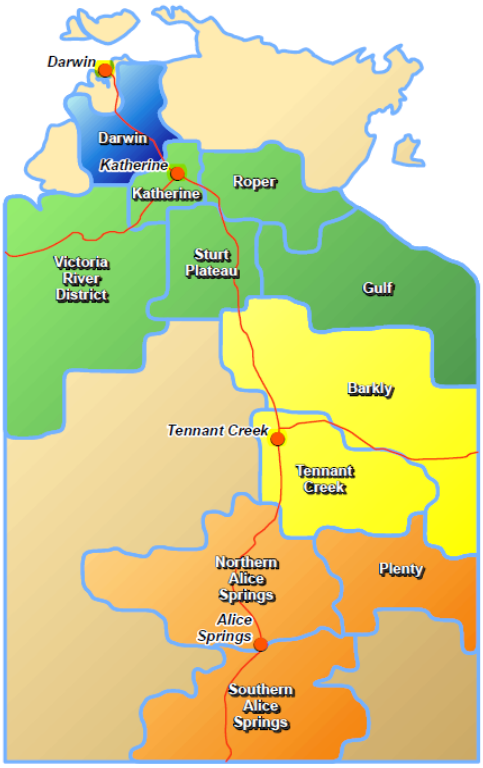


Figure 1. Map of the Northern Territory

Size

Forty one producers managed 49 properties with a total area of 34 464 km^2 predominantly as beef cattle enterprises. The 20 producers surveyed in 2011 managed 9948 km^2 of that area. Two of the properties (with a combined area of 688 km^2) were not stocked in 2010.

The Top End region can be divided into the following four areas based on river catchments: the Adelaide River, the Darwin and Rural, the Douglas-Daly and the Mary River.

Soils and vegetation

The Adelaide River area

Immediately to the east of the Darwin area is the Adelaide River basin. It has two main land types, broad floodplains and low gravelly ridges.

The soils of the lower Adelaide River floodplain are fertile, deep cracking black clays. These floodplains do not have many trees. The native vegetation consists of sedges, rushes and a range of grasses, including paspalums, annual wild rice and spiny mud grass with native hymenachne on the deeper areas and channels.

The soils of the upper Adelaide River floodplains (Marrakai area) are mostly shallow infertile solodic and soloth soils. There are scattered shrubs and trees on these floodplains, including Melaleuca and Eucalyptus. The understorey vegetation is predominantly kerosene and kangaroo grass.

The upland ridge country is predominantly infertile lithosol soils on the ridge tops with infertile yellow and red earths on the slopes. The native vegetation is open Eucalyptus savannah woodland with a component of ironwood and an understorey of acacias and calytrix. The ridge tops are dominated by annual sorghum, while the slopes have a higher component of perennial grasses, including perennial sorghum, as well as kangaroo, ribbon and kerosene grasses.

There are areas of deep levee soils along the middle stretches of the Adelaide River, which are suitable for cropping, horticultural enterprises or improved pastures.

The Darwin and Rural area

This district surrounding Darwin is characterised by flat or undulating terrain of ridges dissected by the Blackmore, Darwin, Elizabeth, and Finniss rivers, as well as numerous creeks.

The upland ridge country is similar to that in the Adelaide River area. There are scattered patches of good deep red earth soils, which are suitable for cropping or horticultural enterprises. There is some fertile cracking clay floodplain on the Finniss River, and there are areas of solodic soils along some of the creeks and drainage lines in the district, which are similar to those of the Adelaide River district.

The Douglas–Daly area

The Douglas Daly area to the south-west of Darwin is mostly flat or undulating terrain with an area of rocky dissected hills in the south-east near Pine Creek and extensive floodplains near the mouths of the Daly and Moyle rivers.

The soils of the lower Daly River floodplain are fertile, deep cracking black clays. These floodplains have large patches of paperbark trees (Melaleucas) in some places. The native vegetation consists of sedges, rushes and a range of grasses, including paspalums, perennial wild rice, swamp rice grass, tropical reed and spiny mud grass with native hymenachne on deeper areas and channels.

The upland ridge country has a mixture of infertile lithosol soils with infertile yellow and red earths on the slopes. There are larger areas of the better Top End cropping and horticultural soils, including Blain, Oolloo, and Tippera along the Daly and Douglas rivers. There are areas of levee soils along the middle stretches of the Daly River, which are suitable for cropping or horticultural enterprises.

The native vegetation is open Eucalyptus savannah woodland with a component of ironwood and an understorey of acacias and calytrix. The ridge tops are dominated by annual sorghum, while the slopes have a higher component of perennial grasses, including perennial sorghum, kangaroo, ribbon, white and bunch spear grasses.

The Mary River area

The Mary River system east of Darwin and adjacent to Kakadu National Park is similar to the Adelaide River, with extensive fertile, cracking clay floodplains on the lower reaches and infertile solodic floodplains on the upper reaches. The floodplains are surrounded by low gravelly ridges. The big difference between the two river systems is that the Mary River floods deeper and for longer each year.

The soils of the lower Mary River floodplain are fertile, deep cracking black clays. These floodplains have large patches of paperbark trees (Melaleucas) in some places. The native vegetation is similar to the Adelaide River floodplains.

The soils of the upper Mary River floodplains (Marrakai area) are mostly shallow infertile solodic and soloth soils with vegetation similar to the upper reaches of the Adelaide River.

The upland ridge country is predominantly infertile lithosol soils on the ridge tops with infertile yellow and red earths on the slopes. The native vegetation is open Eucalyptus savannah woodland with a component of Ironwood and an understorey of acacias and calytrix. The ridge tops are dominated by annual sorghum, while the slopes have a higher component of perennial grasses, including perennial sorghum, kangaroo, cockatoo, giant spear, ribbon and kerosene grasses.

There are only small areas of soils suitable for cropping, with some of the deeper sandy soils being more suitable for tree crops and improved pastures.

A picture of the Top End Pastoral Industry in 2010

Station size

The average size of the 20 enterprises surveyed was 497 km^2 (range 44 km^2 to 1285 km^2). The company-owned properties were generally larger than the privately-owned, owner-manager properties (Figure 2).

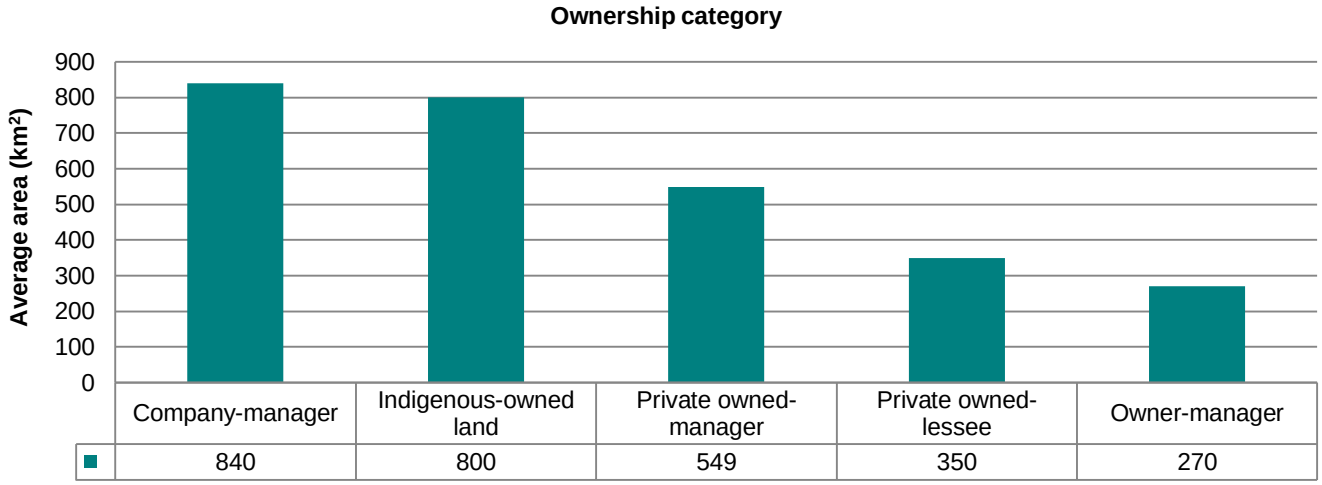


Figure 2. Average property size for different ownership types

Eighty one per cent of the surveyed area was grazed, including 18% that was used for agistment. Nine per cent of the area was classed as ‘not productive’ and 6% as ‘not developed’. Most of the property area was used for grazing (Figure 3). The area used for grazing on Top End properties ranged from 32% to 100%. The ‘other’ enterprises included horticulture and tourism, such as safari hunting. The ‘not productive’ area included areas not fenced. The ‘not productive’ area on Top End properties ranged from nil on 75% of properties and up to 57% on the rest.

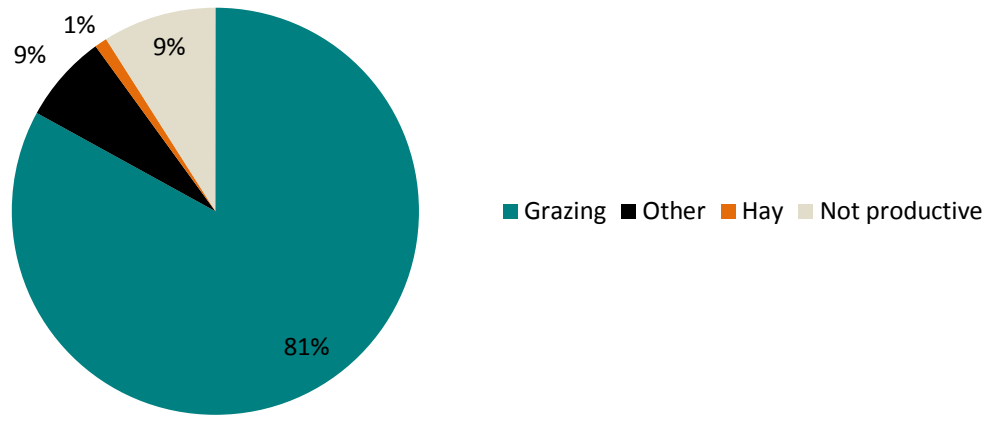


Figure 3. Average proportion of property area used for different enterprises

Those properties that conducted different enterprises or had different specific land uses other than grazing generally allocated a more significant amount of their land area to those specific enterprises or uses (Table 1). The agistment and leased area are included in the grazing area in Figure 3.

Table 1. Top End properties - average area used, individual property average area used and number of properties conducting specific enterprises and land uses

Enterprise/ land use	Area of Top End properties used (%)	Average area of property used (%)	Range of areas of property used (%)	Number of properties
Agistment	14	34	2 - 69	5
Leased land	8	40	29 - 58	4
Other	7	38	0.5 - 100	3
Hay production	1	3	0.1 - 12	8

Current infrastructure

The median number of paddocks, excluding small holding paddocks, on properties was 15 (average 21, range 6 to 64). Paddock size averaged 29 km^2 (Table 2).

Table 2. Average sizes of paddocks on properties (km2)

Paddock size	Average	Median	Range
Largest	77	90	3 - 200
Average	29	29	1 - 89
Smallest	9	5	1 - 30

All properties had permanent yards; 35% of properties had portable yards and 25% had trap yards (Table 3).

Table 3. Percentage of properties with different types of cattle yards

Type of yard	Properties (%)	Median number	Range
Permanent	100	1	1 - 4
Portable	35	1	1 - 3
Trap	25	2	0 - 4

The properties with portable yards generally had only one site, although one property had 30 sites. Three properties had water for stock at their portable yard sites. One of the three properties also had holding paddocks and some permanent yard facilities at the portable yard sites.

Sixty per cent of properties had natural permanent watering points and all properties had man-made permanent watering points (Table 4). The average number of natural watering points on properties was skewed by two properties with natural waterways where there were many permanent watering points, too many to count and a figure of 100 was included. Another property also had 72 permanent natural watering points.

Table 4. Approximate number of permanent watering points

Type	Average	Median	Range
Man-made	15	12	4 – 47
Natural	31	12	0 – 100

Permanent watering points on most properties were equipped with diesel or petrol-powered pumps (Table 5). Water medicators for the distribution of nutrients through drinking water were only used on smaller properties where there were no permanent natural watering points.

Table 5. Equipping permanent waters

Equipped with	Average per property using	Range	Properties (%)
Diesel or petrol powered pumps	4	0 - 20	85
Dams	14	4 - 30	45
Water medicators	1	1 - 2	20
Diesel or petrol-powered generators	20	n/a	5
Electronic monitoring systems	1	n/a	5
Reticulated water	12	n/a	5

All properties had undertaken some infrastructure development in the last two years (Table 6). More than half of the properties had undertaken paddock subdivision and provided accommodation for staff. Almost half of the properties had developed watering points or constructed sheds. Examples of 'other' development included land clearing, wallaby-proof fencing and constructing holding paddocks.

Table 6. Infrastructure development in 2009 and 2010

Infrastructure	Properties (%)
Paddock subdivision	65
Accommodation	55
Water point development	45
Sheds	40
Laneways	35
Drafting yards	25
Roads	25
Boundary fencing	15
Other	10
Trap yards	5

Water point development was conducted on nine properties and included drilling bores, laying poly pipe, constructing dams and installing troughs (Table 7).

Table 7. Water point development in the last two years

Water point development	Number of properties (out of 9)	Average	Median	Range
Bores	3	2	2	1 - 2
Dams	3	3	3	1 - 4
Troughs	7	6	7	2 - 9
Poly pipe (km)	7	26	10	4 - 50

Sixteen producers were able to estimate the cost of their capital development in the last two years (Table 8). The median expenditure per property was $250 000 (range from $1200 to $1.5m). For the surveyed properties, this equated to $49 spent on capital development for every animal equivalent (AE) run.

Table 8. Estimated cost of capital development in the last two years ($)

	Average	Median	Range
Capital cost	344 000	250 000	1 200 – 1 500 000

Ownership

Most properties surveyed in the Top End were either privately-owned with a manager or run by an owner-manager (Figure 4). Owner-manager properties were generally smaller and had fewer cattle than the company-owned properties.

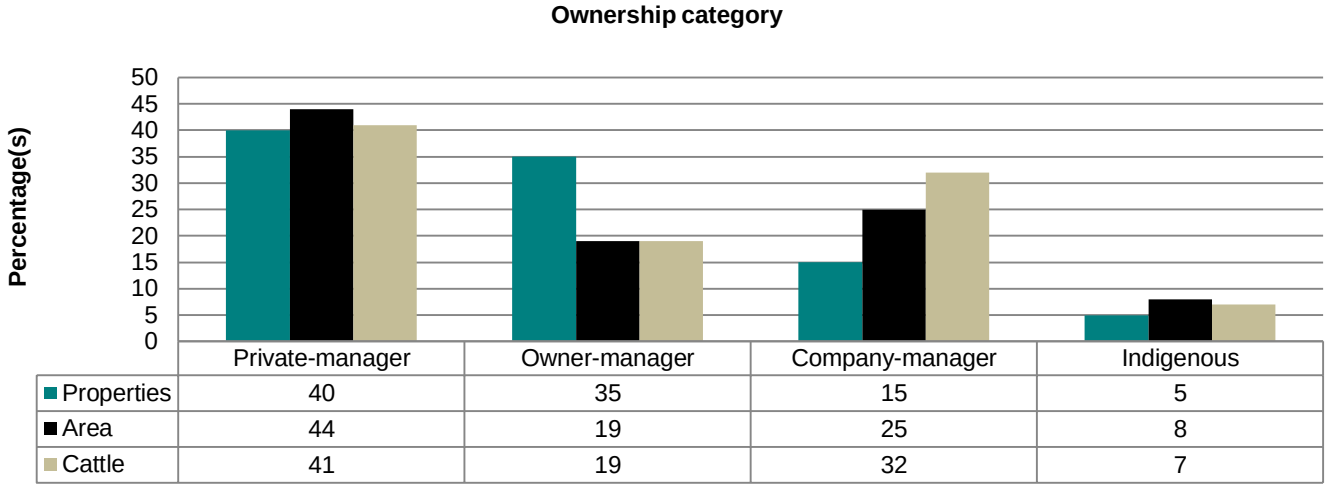


Figure 4. Percentage of properties, areas and cattle under different ownership categories

Fourteen of the properties were run as a stand-alone business, and six were run as part of an integrated production system, with more than one property in the business unit. The properties run as part of an integrated production system included those with a more than one parcel of land in the Top End and/or those integrated with properties in the Katherine Region.

The current owners had owned their property for an average of 14 years (range 2 to 32), while managers had been in their positions for nine years on average (range 1 to 32). The median length of time managers had been in their position was six years.

Tenure

Unlike in the other regions in the NT, the majority of properties running livestock in the Top End were not pastoral properties. Only 17 of the individual parcels of land in the Top End are formal pastoral leases (35%). The remainder are a mixture of freehold land, Crown lease, grazing lease and Indigenous land.

Staff

Overall, producers in the Top End employed a median of 4.5 workers per station. Eighty per cent of Top End properties employed a median of two permanent staff (average 2.6, range 1 to 6). Producers did not include

themselves or their spouses in the number of permanent staff on the properties. Four properties did not employ permanent staff in 2010, and one of them did not employ any seasonal staff (Table 9). Another three properties did not employ any seasonal staff. Those producers who employed seasonal staff did so for an average of 11 to 14 weeks. Six of the 16 producers employed a combination of the different types of seasonal staff listed in Table 9.

Table 9. Percentage of Top End properties employing seasonal staff, median and ranges of numbers and term of employment

Employment type	Properties (%)	Median number	Range	Median weeks	Range of weeks
Station hands	55	1	1 - 8	11	2 - 26
Contractors	45	1	1 - 6	12	3 - 26
Backpackers	25	2	1 - 4	12	5 - 26

Number of cattle

The 20 properties surveyed in the Top End had an average of 3600 (range 1000 to 22 000) cattle and those with buffalo had an average of 300 (range 100 to 700) at the end of December 2010. Including the number of agisted and growing cattle which passed through the Top End properties, a total of 96 089 cattle, including 29 895 breeding cows, were managed by these producers in 2010.

Since the previous survey in 2004, 45% of properties had increased their stock numbers, mainly steers, but also breeders and buffalo, by an average of 821 animals (range 320 – 2000). One property had decreased their herd by 1000 animals and the others had not changed their numbers. These changes in cattle numbers equated to a 6% increase in AE overall on the surveyed properties.

Other enterprises

There were a range of other enterprises (apart from livestock grazing) conducted on 65% of Top End properties. The three most common other enterprises were hay production, tourism and crocodile egg collection (Table 10). The tourism activities include safari hunting and fishing.

Table 10. Percentage of properties with alternative enterprises

Alternative enterprise	Properties (%)
Hay production	30
Tourism	25
Crocodile egg collection	15
Horticulture	10
Mining	10
Mixed farming	10
Station store	5
Pasture seed production	5
Other	5

Labour-saving devices

The main labour-saving device used by producers in the Top End was laneways (90% of properties, Table 11).

Table 11. Percentage of producers using labour-saving devices

Labour-saving device	Producers (%)
Laneways	90
Trap gates	30
Hydraulic cradle	10
Hydraulic crush	5

Turn-off and markets

Main types of cattle enterprises

All of the 20 properties surveyed were cattle enterprises; six of them also had buffalo.

The aim of most producers was to breed and sell livestock mainly to the live export feeder cattle market. The other enterprises of agistment and growing/finishing cattle were also generally to service the same market (Figure 5).

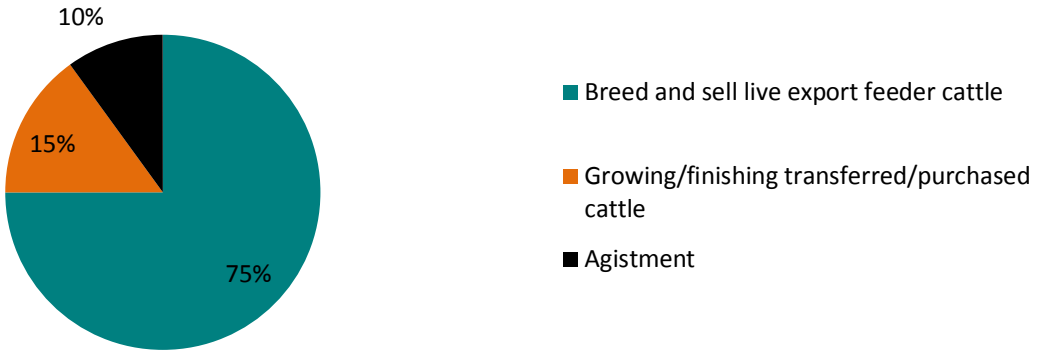


Figure 5. Percentages of enterprises conducted by producers

Finishing purchased or transferred cattle

Eleven properties finished on average 2602 (range 120 to 8000) animals from purchased or transferred cattle from another property.

Agistment

Eight of the 20 properties leased part of their property for agisted cattle, on average agisting 3368 animals each, (range 600 to 15 000) predominantly on the subcoastal floodplains during the dry season.

Markets

Turnoff of cattle and buffalo from Top End properties was predominantly for live export to South-East Asia (Figures 6 and 7). The 'other' market was mostly buffalo trophy bulls from safari hunting enterprises.

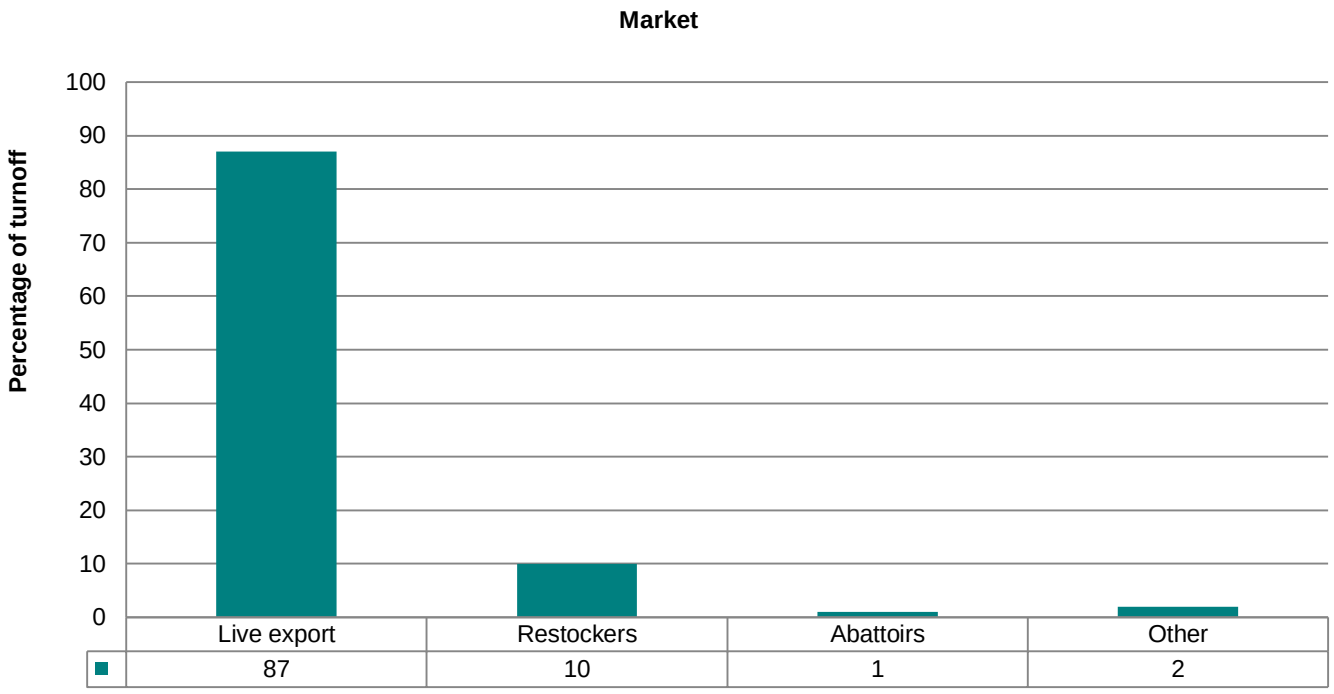


Figure 6. Type of market for Top End stock

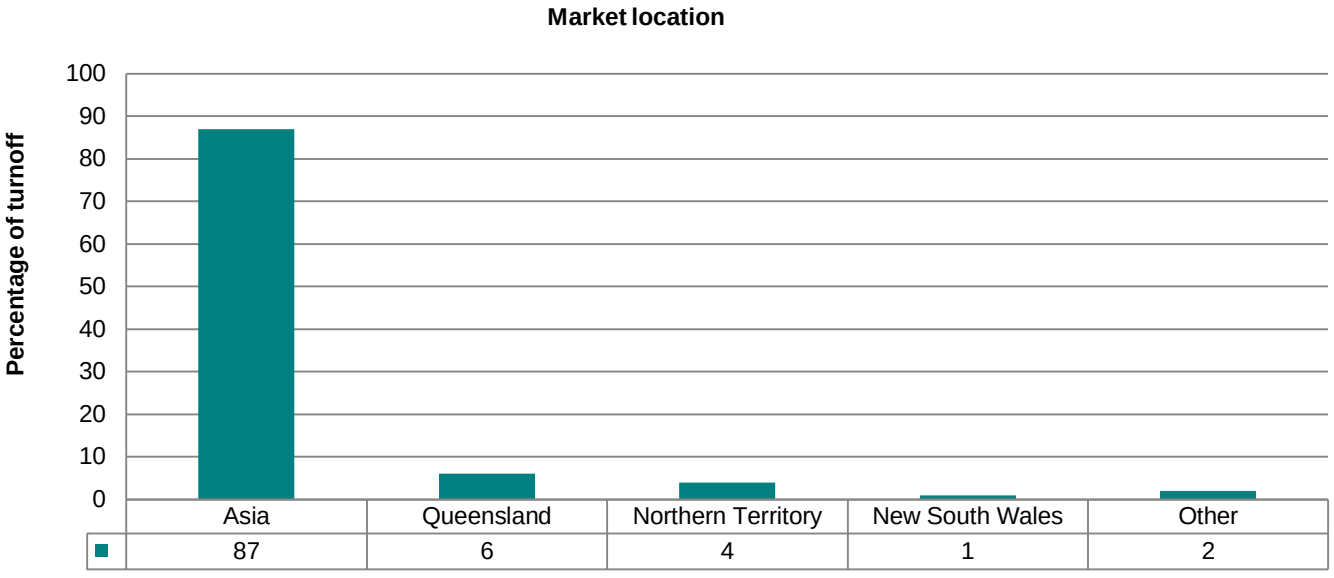


Figure 7. Location of market for Top End stock

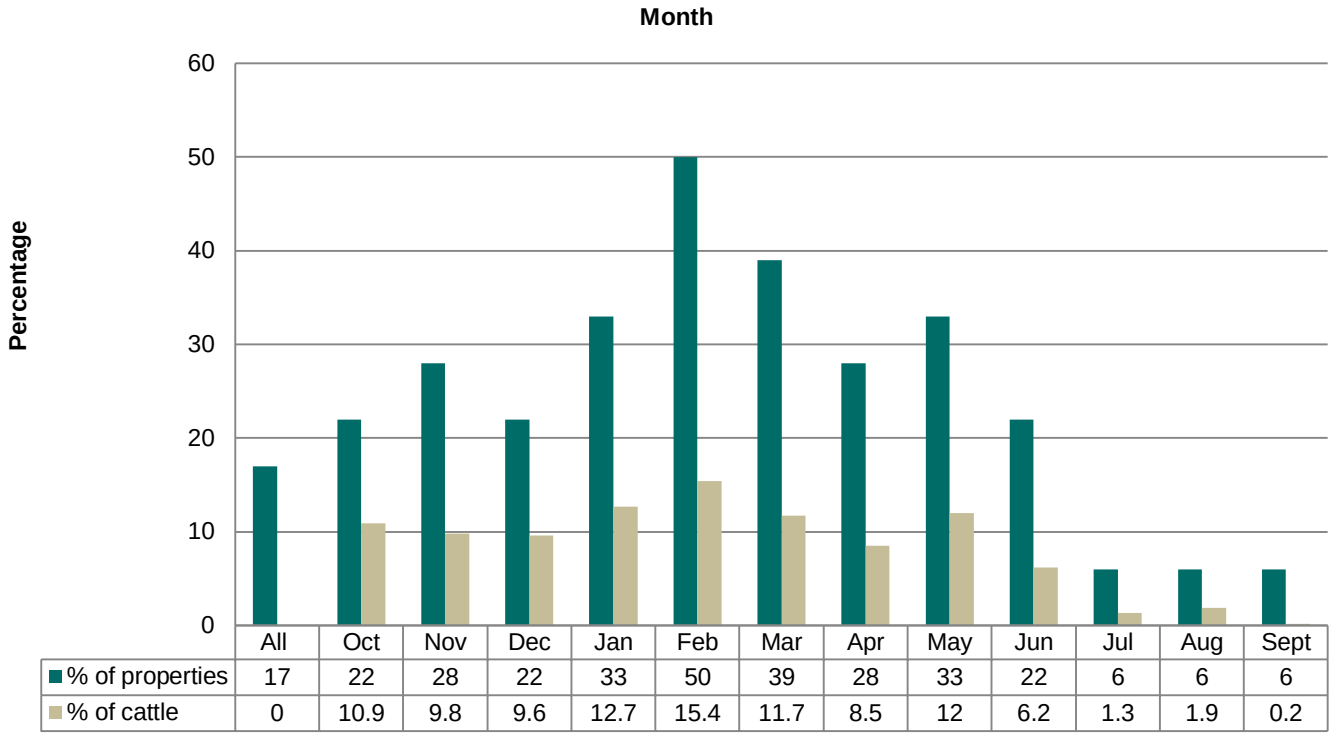
Turn-off

Producers were asked to detail the type of animals turned off in 2010. Eighteen of the 20 producers were able to provide details of their turn-off. As expected, the turn-off was predominantly live export steers and heifers (Table 12).

Table 12. Type of animals turned-off in 2010, number and percentage of properties, average weight, average age and percentage of total turnoff

Animal type	Number of properties	Properties (%)	Average weight (kg)	Average age (years)	Total turn-off (%)
Steers live export feeder	15	83	294	2.1	45
Heifers live export	10	55	283	2.3	35
Bulls live export	4	22	589	n/a	0
Cows live export	4	22	394	4.0	2
Steers – slaughter live export	3	16	419	4.0	0
Bulls slaughter	3	16	611	8.1	1
Cows interstate	3	16	367	10.3	1
Cows NT	n/a	n/a	n/a	n/a	3
Bulls NT	1	6	n/a	n/a	0
Mickies – live export	1	6	300	2.0	1
Cows slaughter	1	6	366	10.0	3
Feeder steers NT	2	10	279	2.0	10

While stock can be turned-off from some properties in all months of the year in the Top End, most are turned-off between October and June inclusive (Table 13). Few are turned-off in the July to September period. Turn-off between October and January is predominantly from properties on coastal floodplains. From January on, during the wet season, most turn-off is from smaller properties where livestock are grown out on improved pasture (Figure 8).



	All	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
% of properties	17	22	28	22	33	50	39	28	33	22	6	6	6
% of cattle	0	10.9	9.8	9.6	12.7	15.4	11.7	8.5	12	6.2	1.3	1.9	0.2

Figure 8. Percentage of properties and cattle turn-off by month

Producers were asked what strategies they used when the 350-kg Indonesian weight limit restrictions were enforced in 2010.

Most producers used a variety of strategies to manage through the enforcement of the Indonesian import restrictions, including holding stock over, selling to slaughter and adjusting management to prevent steers exceeding 350 kg (Table 13).

Table 13. Strategies used by producers following the Indonesian import restrictions

Strategy	Producers (%)
Held cull cows over	60
Held heavy steers over	40
Managed so steers were under 350 Kg	40
Sold cull cows to slaughter	20
Sold heavy steers to slaughter	20
Sold cull cows to interstate saleyards	10
Other	10
Sold heavy steers to interstate saleyards	5
Sold to another live export market	5
Sold steers to another company property	5
N/A	10

Cattle management

Predominant breed of cattle

The Top End herd was predominantly Brahman or Brahman crossbred cattle with minor components of Charbray, Romagnola and Senepol (Figure 9). The British breeds were Shorthorns and Herefords.

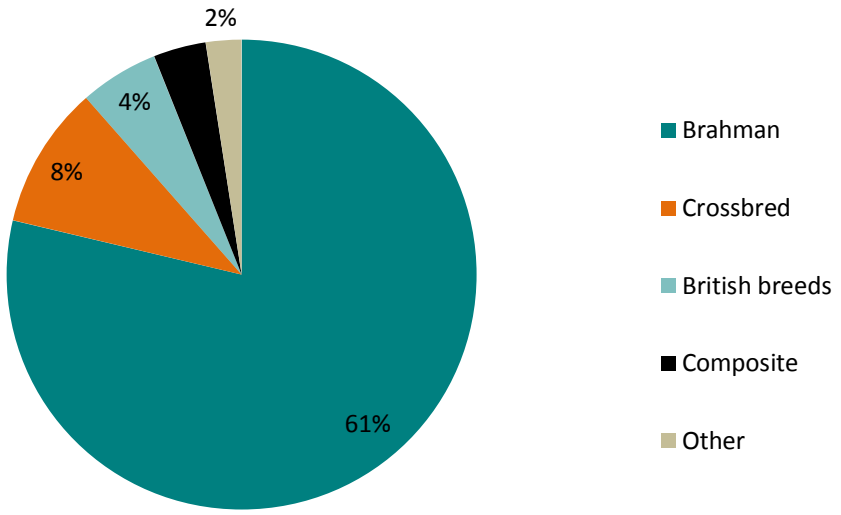


Figure 9. Percentage of cattle by breed in the Top End

Breeding aims

Most of the herds in the Top End currently are high grade Brahman. The highest priority for one third of producers with breeding herds was to crossbreed for improved herd performance (Table14). The next highest breeding priority was to select for specific traits within breeds. A further 27% of producers were concentrating on other areas of management rather than breeding.

Table 14. Breeding goals of producers (%)

Breeding goal	First priority	Second priority	Third priority	Total
Upgrade to Brahman	13	7	0	20
Select traits within breeds	13	20	7	40
Upgrade to another tropical breed	7	0	0	7
Crossbreed for improved herd performance	33	7	7	47
Other	7	0	0	7
Crossbreed to suit market	0	7	7	13
To develop a composite breed	7	0	7	13
Concentrating on other areas of management	27	7	7	40

*Note: Percentage numbers do not add up to 100 due to overlap

Mustering practices

All producers in the Top End used motorbikes to muster cattle and to assist helicopter mustering (Table15). Over half of producers also used horses and 40% used dogs to assist with mustering.

Table 15. Mustering methods used in the Top End

Mustering Method	Producers (%)
Motorbike including quad bikes	100
Helicopter	90
Horses	55
Dogs	40
Trap yards	30
Buggies	15

The 14 properties with stock horses had an average of 10 horses (range 1 to 25) each. Horses and dogs were more likely to be used on smaller properties.

All properties in the Top End with breeders conducted a first-round muster each year, but only 64% conducted a second-round muster and no properties conducted a third-round muster.

The first-round muster usually begins in May for the majority of producers (65%), and ends in July (64%) (Table 16). Dates are determined by the rate at which country dries out to allow access. The duration of the muster varies from one to three months (Table 17). A majority of the properties were small and completed their muster within one month (57%), with the larger properties taking up to three months.

Table 16. Month for the beginning and the end of the first-round muster (% of producers)

Month	April	May	June	July
Start of muster	14	65	21	
End of muster			36	64

Table 17. Duration of the first-round muster

Months	1	2	3
Properties (%)	57	29	14

The second-round muster was less concentrated than the first-round muster, and fell into two periods, July/September and October/December (Table 17). The majority of properties again completed their second-round musters within one or two months (Table 18).

Table 18. Month for the beginning and the end of the second-round muster (% of properties)

Month	July	Aug	Sept	Oct	Nov	Dec
Start of muster	11	22	11	11	33	11
End of muster	0	22	11	0	44	22

Table 19. Duration of the second-round muster

Months	1	2	3
Percentages of properties	44	44	11

Estimates of the cost of mustering averaged $11.55 per animal (ranging from 50 c to $50 per animal). The majority (71%) were in the range $10 to $15.

Bulls

Bull percentage

Top End producers aimed to run an average of 3.2 bulls per 100 cows (ranging from two to five).

Feral bulls

Seven producers had problems with feral bulls in their herds and estimated that they made up 5.5% of their total bull numbers (range 1 - 20%).

Source of bulls

Bulls were mainly sourced from commercial breeders in the NT and Queensland stud breeders, although a significant number of producers bred their own replacement bulls (Table 20).

Table 20. The percentage of properties purchasing bulls and the percentage of bulls purchased from different sources

Bull source	Properties (%)	Bulls purchased (%)
Commercial breeders	38	39
Queensland Studs	69	37
Breed own	38	17
NT Studs	19	4
WA studs	6	2
Within company	6	1

Use of EBVs

EBVs were used by 44% of the properties when sourcing and selecting bulls. This equated to 36% of bulls sourced by surveyed properties being selected using EBVs. The majority used EBVs for selecting all of their bulls, with the minimum only selecting half of their bulls using EBVs.

EBV traits

The producers who responded to this question all considered fertility as the most important EBV trait when selecting bulls (Table 21).

Table 21. Traits considered most important for bull selection

EBV Trait	Number of producers		Producers (%)	
	Most important	Second most important	Most important	Second most important
Fertility	6	0	100	0
Growth rates	0	2	0	33
Carcase traits	0	1	0	17

Factors for selecting bulls

The main factors considered by 13 producers when selecting bulls were temperament, structure and conformation, and EBVs, but polled bulls were also being considered (Table 22). Some producers only considered one or two factors.

Table 22. Rank of factors used for selecting bulls (% of properties)

Factor	1st	2nd	3rd	4th
Temperament	38	46	15	0
Structure and conformation	23	31	15	16
Polled	0	8	38	31
EBVs	23	8	15	8
Fertility	8	0	0	0
Semen traits	8	8	0	8

Bull reproductive soundness testing

Reproductive soundness testing of bulls was carried out by 66% of properties, either through a bull breeding soundness evaluation (BBSE) or just by semen testing. Two out of 10 properties which had their bulls tested had a BBSE performed on the majority of their bulls (average 95% of bulls). Eight out of ten properties had all of their bulls tested for semen quality. This equated to about 15% of bulls on the surveyed properties undergoing a BBSE test and 50% undergoing semen testing. Of those tested, 40% were tested prior to purchase, 50% were tested after purchase, on average every two years, and 10% were tested before and after purchase.

Selection indices

Five producers use selection indices to select bulls (out of 15 producers who sourced bulls). Four used the Northern Live Exporters Index to select bulls and one used another index.

Breeder management

Weaning percentage and calf loss

Producer estimates of average weaning percentages for different classes of females are presented in Table 23.

Table 23. Average weaning percentages in female cattle classes

Female cattle class	First calf heifer	Second calf heifer	Breeders	Old cows
Average weaning (%)	73	40	61	64

Producers estimated calf losses for breeding cows (Table 24).

Table 24. Average calf losses in breeders

Female cattle class	Breeders
Average calf loss (%)	3.1

Cull cattle

Producers with breeders culled an average of 12% (0% to 30%) of their cows each year. A majority of producers culled cows on age and pregnancy diagnosis results (Figure 10).

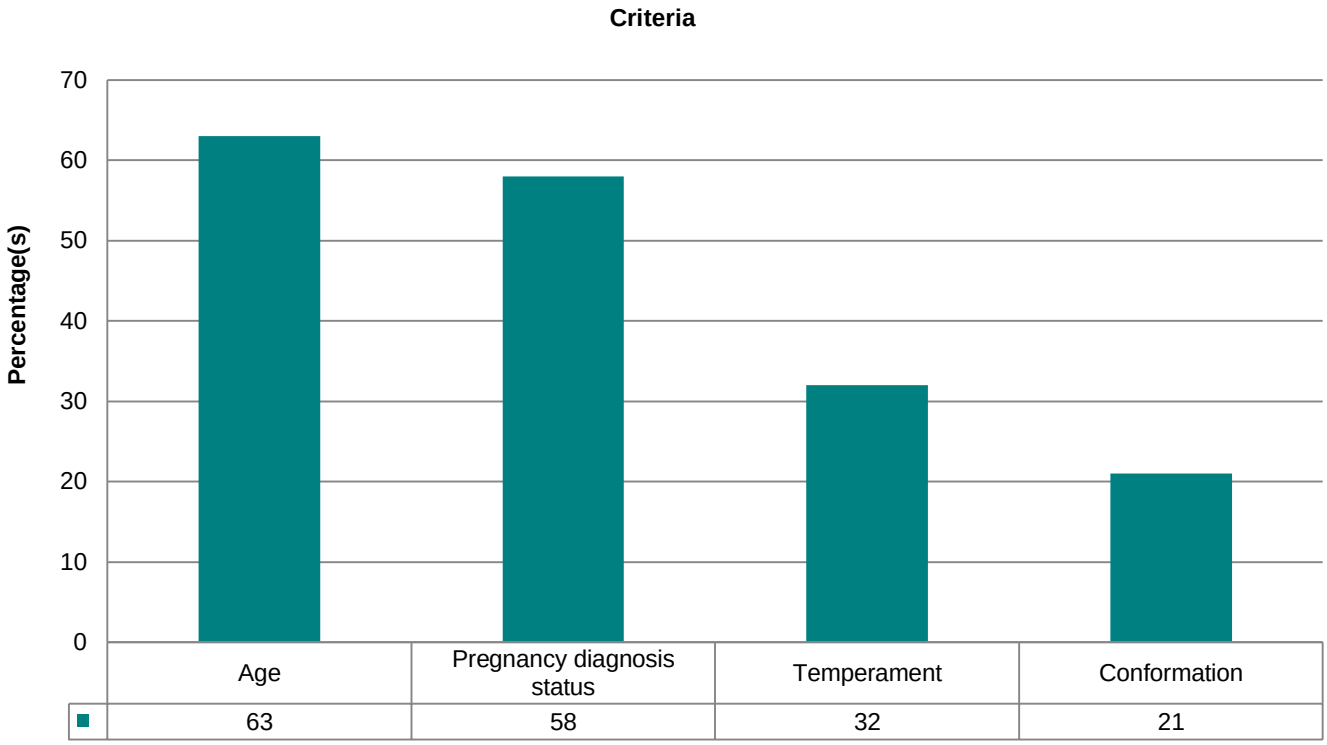


Figure 10. Percentage of properties that culled based on specific criteria

Breeders are culled at an average age of 11 years (range 10 to 12).

Twenty one per cent of properties with breeder herds spayed on average 61% of cull cows (range 50% to 80%). This equates to 7% of all breeding cows. No properties in the Top End spayed cull heifers. All properties which spayed used the dropped ovary spaying method and one property also used Webb spaying.

Segregation

Of the surveyed Top End properties with breeding cows, 50% segregated on pregnancy status, 31% segregated on body condition and 19% segregated on age.

Pregnancy testing

More than half of Top End properties with breeding herds who responded to this question pregnancy- tested all cows and heifers every year (Table 25). All of the remaining properties pregnancy-tested only their dry cows, with one property testing only dry cows, cull cows and heifers.

Table 25. Female stock classes pregnancy tested annually

Normal yearly pregnancy testing	Properties (%)
All cows and heifers	58
Dry cows only	33
Dry cows, cull cows and heifers only	25

Half of Top End producers pregnancy-tested their own cows; the remainder used qualified practitioners and vets (Table 26). One producer pregnancy-tested his cattle and also used a vet.

Table 26. Pregnancy testers used on Top End properties

Pregnancy tester	Property (%)
Self	50
Qualified tester	33
Vet	25

Herd performance recording

Identification of stock

Eighty five per cent of producers identified 64% of surveyed stock individually with electronic identification devices (EIDs), visual ear tags or EID plus tags. The majority of these producers individually identified all of their stock.

Producers identified mainly heifers and steers individually for management purposes. Most producers did not intend to individually identify other classes of stock for this purpose (Table 27).

Table 27. Classes of stock identified for management purposes

Class of stock	Cattle (%)					
	Heifers	Steers	Breeders	Bulls	Other	None
Currently	45	45	35	20	5	35
Planned	10	10	15	20	0	80

Half of the Top End properties surveyed recorded weight for management purposes. Other commonly recorded traits were pregnancy status, lactation (wet/dry cow) status and age (Figure 11). Seven properties (35%) did not record these traits for management purposes.

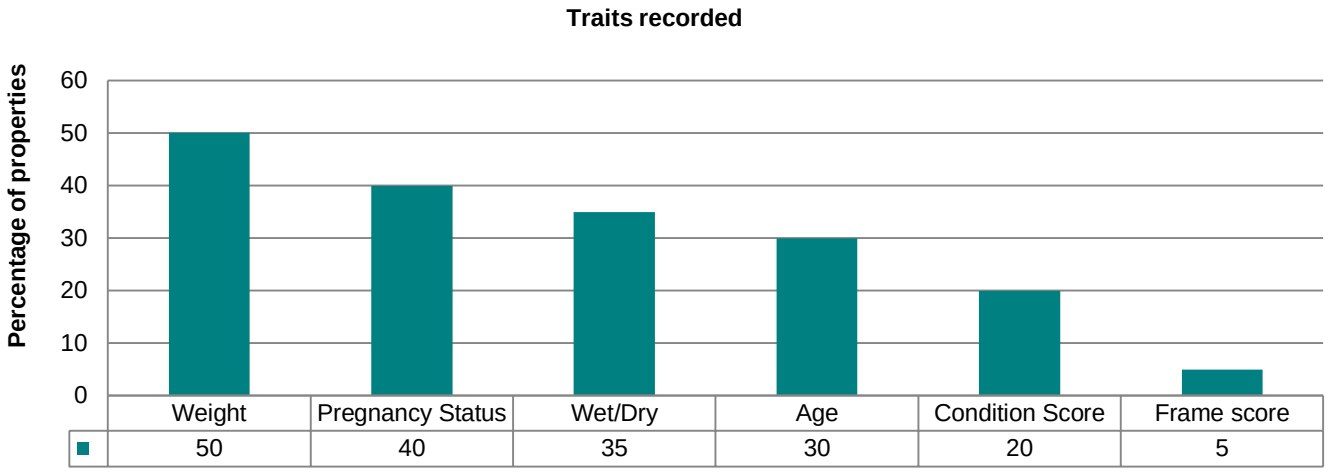


Figure 11. Traits recorded by properties for management purposes

Artificial insemination or embryo transfer

None of the producers surveyed currently used artificial insemination or embryo transfer.

Continuous or controlled mating

A majority of heifers and breeders in the Top End were continuously mated (Table 28)

Table 28. Percentage of properties where heifers and breeders were continuously mated or control mated

Females	Continuously mated (%)	Control mated (%)
Maiden heifers	79	21
First calf heifers	79	21
Breeders	64	36

Those producers who control mated their females started joining between September and February, and completed mating between December and May. The duration of joining was in the range two to six months, with an average of four months (Table 29).

Table 29. Months of joining control-mated females and the duration of joining

Females	Starting month	Ending month	Average duration (months)	Range of duration (months)
Maiden heifers	Sep - Feb	Dec - May	5	3 - 6
First-calf heifers	Sep - Feb	Dec - May	4	2 - 6
Breeders	Sep - Feb	Dec - May	4	2 - 5

The main reason why properties did not use control-mating was their inability to control bulls (55%), including scrub bulls (Figure 12).

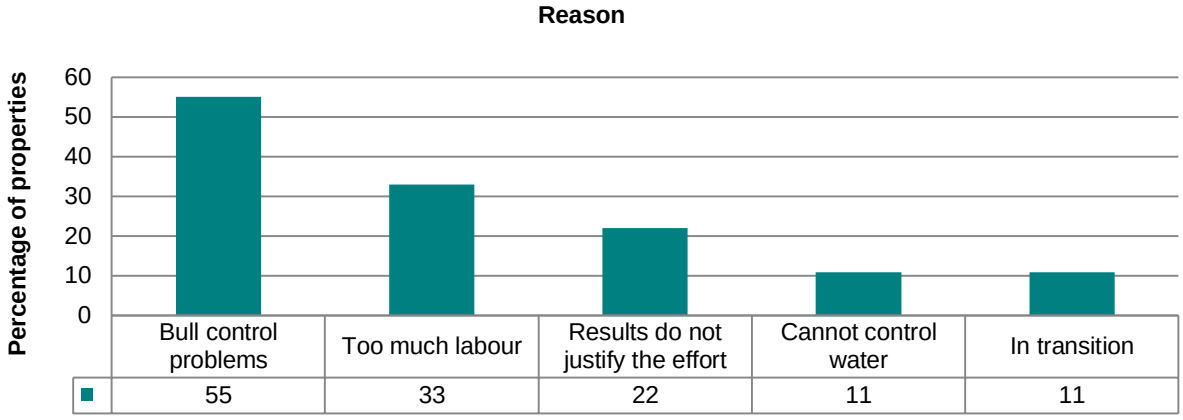


Figure 12. Reasons for not control mating

Mortality rates

Estimated mortalities were highest in old cows and second-calf heifers (Table 30). Accurate mortality rates were generally difficult to estimate.

Table 30. Estimated mortality in different classes of stock and number of respondents

	Weaner heifers	First-calf heifers	Second-calf heifers	Breeders	Old Cows	Weaner Steers	Steers
Mortality (%)	2.6	3.3	5.1	4.2	6.4	2.7	1.8
Number of respondents	12	8	6	11	10	10	13

Heifer management

In 2009 and 2010, nine properties (75% of those who responded to this question) retained on average 66% (range 30% to 100%) of their heifers as replacements. Three properties sold all of their heifers. The other eight properties surveyed either did not have a breeding herd or could not specify the percentage of heifers which were sold.

Most replacement heifers were selected before joining or at a pregnancy test after first mating (Table 31).

Table 31. Stage of life for heifer selection

Life stage	Proportion of producers (%)
At weaning	25
Before joining	38
Pregnancy test after mating	38
As yearlings	16

Fertility, type, conformation, temperament and weight were all rated highly (scale 1 to 5) for selecting replacement heifers (Figure 13).

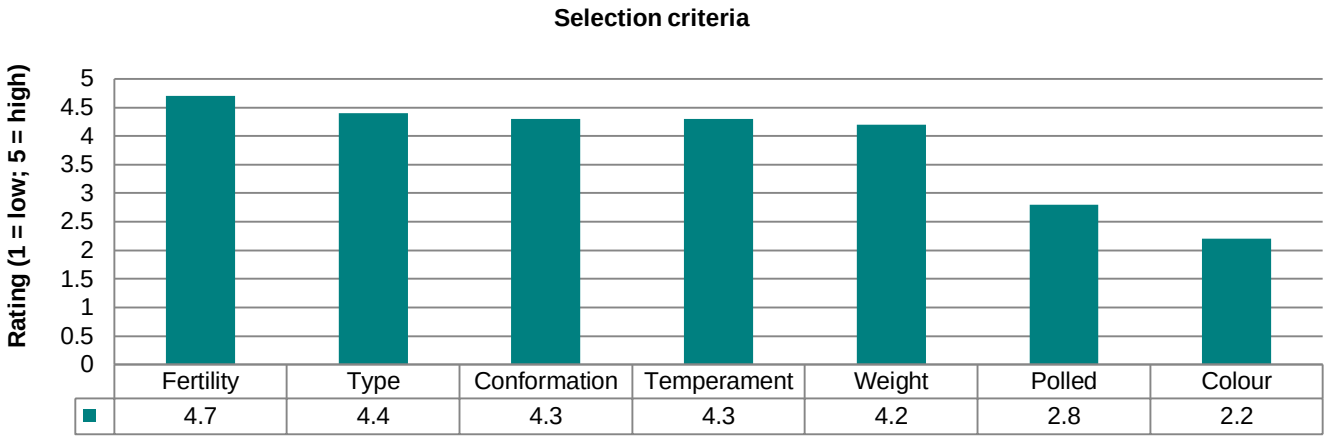


Figure 13. Selection criteria for replacement heifers

Sixty per cent of producers segregated heifers from breeders. The majority of heifers were segregated until the start of their second joining (Table 32).

Table 32. Stage when heifers ended segregation from breeders

Stage	Properties (%)
Until start of second joining	66
After weaning first calf	17
Pregnancy test after first joining	17

All of the producers who did not segregate heifers from breeders did not believe that it was worth it.

Heifers in the Top End were most commonly joined as they approached two years of age (Figure 14) and when the majority weighed 250 kg or more at joining (Figure 15).

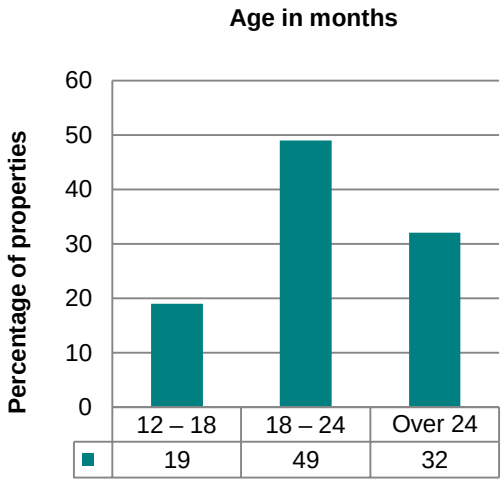


Figure 14. Age when heifers were first joined

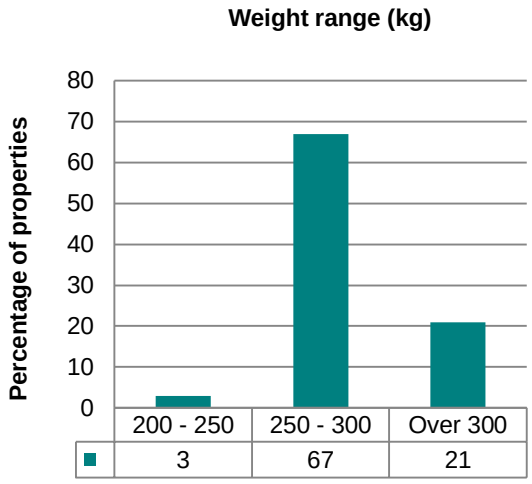


Figure 15. Weight range of first joined heifers

Half of the properties with heifers weighed them one or more times before joining, 60% weighed at weaning, 80% weighed before joining and 40% weighed at 12 to 18 months of age.

The majority of properties (64%) used their own herd bulls to mate with their heifers (Table 33).

Table 33. Age of bulls mated with heifers

	Herd bulls	Less than three years old	Over five years old
Percentage of properties	64	27	9

The most important factors when weaning calves from heifers were the condition of the heifers (89% of producers) and pasture condition (56%) (Figure 16).

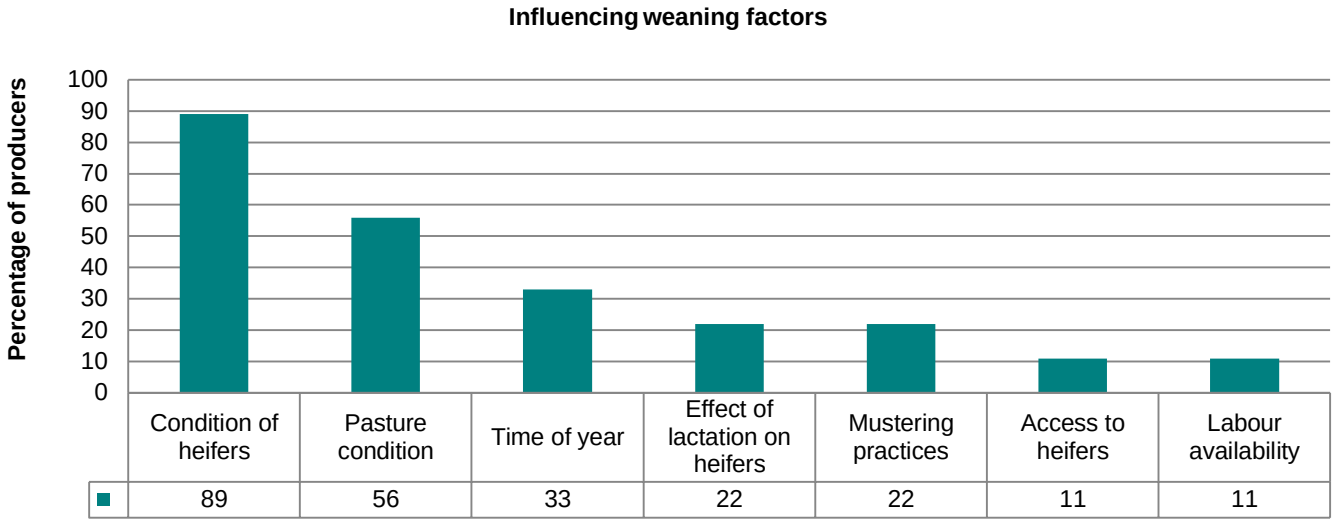
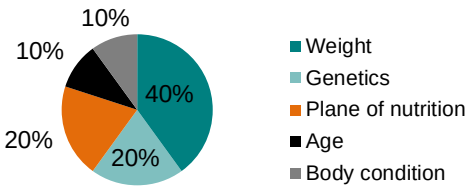


Figure 16. Factors that influenced the time when calves were weaned from heifers

Producers believed that the main factor that affected fertility in maiden heifers was weight (40%) (Figure 17) and in first-calf heifers, body condition (40%) (Figure 18).



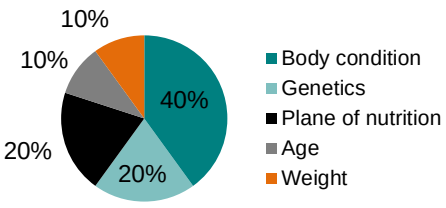


Figure 17. Main factors that affected fertility in maiden heifers

Figure 18. Main factors that affected fertility in first-calf heifers

The three most important strategies for improving heifer performance in the Top End were managing young heifers separately from breeders, preventing out-of-season pregnancies (bull control) and early weaning of calves from heifers (Table 35). The lowest rated strategy was mating heifers for the first time as yearlings, followed by improving joining weights by using light stocking rates.

Table 34. Strategies for improving heifer performance

Strategy	Rating (1 = low; 5 = high)
Early weaning of calves from heifers	5
Managing young heifers separately from breeders	5
Preventing out-of-season pregnancies (bull control)	5
Age of bulls used	4
Bull fertility testing	4
Bull percentage used at mating	4
Genetic/selection for fertility	4
Improving joining weights through supplementation	4
Improving joining weights through better use of paddocks	4
Time of year that weaning occurs	4
Use of pregnancy testing	4
Vaccination against disease	4
Improving joining weights by using light stocking rates	3
Mating heifers for the first time as yearlings	2

Management of young stock

Weaning

Top End properties that practiced weaning, weaned on average 87% of their calves. Some properties did not have breeders.

Most producers weaned at a different weight each year, which depended on seasonal and breeder conditions (Figure 19).

Figure 19. Percentage of properties using different weaning methods

The average weight of first-round weaners was 164 kg (range 110 kg – 200 kg) and of second-round weaners 126 kg (range 90 kg – 150 kg).

Average minimum weaning weights were generally about 100 kg for both mustering rounds, except in bad years when producers weaned at an average of 76 kg (Table 35).

Table 35. Minimum weights of weaners in the Top End (kg)

Timing	Average	Range
First round	107	78 - 150
Second round	97	78 - 120
In a bad year	76	50 - 90

Producers generally spent one to two weeks educating their weaners, mainly by feeding them in the yards, working them through the yards and tailing them out (Table 36). Most properties used a combination of these methods.

Table 36. Processes used by properties with weaners and number of days of processing

Process	Properties (%)	Average number of days
Feed in yards	88	10
Work through yards	88	5
Tail out	71	6
Move to another paddock	12	n/a
Move to another property	6	n/a

Fifty six per cent of producers treated all weaners equally and did not segregate their weaners into weight ranges. Forty four per cent fed weaners weighing less than 100 kg differently and 38% weaners in the weight range 100 to 150 kg separately (Table 37).

Table 37. Feeding strategies for weaners (percentage of properties)

Feeding strategy	Weaner weight range (kg)		
	Less than 100	100 - 150	All
Short term feeding in yards with hay	0	0	65
Short term feeding in yards with concentrate	25	20	30
Put on spelled pasture	5	10	30
Feed throughout the dry season	10	5	10
Feed to target weight	0	0	5

Generally producers employed a combination of feeding strategies for their weaners. The spelled pasture option included weaners which were agisted on the floodplains during the dry season.

Weaner pellets or copra meal were the most common form of concentrate fed to weaners (Table 38).

Table 38. Form of concentrate fed to weaners (percentage of properties)

Concentrate	Weaner weight range (kg)		
	Less than 100	100 - 150	All
Weaner pellets	15	10	45
Copra meal	10	5	25
Mineral supplement	0	5	15
Cottonseed meal	10	0	10
Corn	0	0	5

Year branding

The majority of producers (79%) used the calendar year for their annual branding, while 14% used the financial year for branding; one property (7%) did not brand by year.

Dehorning

Most producers dehorned using dehorning knives and/or dehorning scoops. A small percentage of producers did not dehorn their cattle, or had a polled cattle herd (Table 39).

Table 39. Tools used to dehorn cattle

Tool	Properties (%)
Dehorning knife	60
Scoops	60
Hydraulic/pneumatic dehorners	10
Did not dehorn	15
Ran mostly poll cattle	10

Nutritional management

Supplement

Eighty per cent of producers fed a supplement to stock at some time of the year. This question was not relevant to four properties on floodplains where supplements were not offered. A number of producers outlined their specific mineral supplementation strategies for different classes of stock (Table 40).

Table 40. Mineral supplementation strategies used (% of producers)

Class of cattle	Time of year		
	All year	Dry season only	Wet season only
All stock	50	6	13
Breeders	12	13	13
Sale steers	6	13	0
Bulls	0	6	0
Weaners	0	13	0

The form of supplement varied as 60% of producers used some type of loose mix to provide mineral nutrients to their stock (Table 41).

Table 41. Percentage of producers who used different mineral supplement types by season

Form	Block	Home loose mix	Ready mixed loose	Custom loose mix	Water medicator
Wet season	35	20	10	30	5
Dry season	30	20	10	30	10

The main mineral most producers supplemented in the wet season was phosphorus and in the dry season it was nitrogen in the form of urea (Table 42).

Table 42. Main mineral supplement provided by season (% of properties)

Main mineral supplement	Phosphorus	Nitrogen
Wet season	78	22
Dry season	35	65

The estimated cost of mineral supplement for the wet season was $10.60/animal (range $4.20 to $50.00) and for the dry season $14.10/animal (range ($2.60 to $50.00). Approximately half of the cost estimates for each season were in the range of only $10 to $20 per animal.

Faecal tests to determine supplementation needs

Only three producers used near infra-red reflectance spectroscopy to determine the timing of mineral supplementation. A further three had used it and discontinued the practice, one because they had achieved the necessary knowledge they required and two because they had found the results difficult to interpret.

Most properties did not provide any production feeding to stock. A small number of properties fed out homemade or propriety feed mixes to some classes of stock (Table 43).

Table 43. Classes of stock provided with production feeding (number of properties)

Class of cattle	Type of feed mix	
	Homemade	Propriety
Breeders	1	0
Sale bulls	0	1
Weaners	1	1
Yearling steers	0	2

Hay production

Twelve of the producers surveyed (60%) produced hay. Most (91%) of them produced hay for their own use. A few producers sold their hay (Table 44). The ‘other’ market included sale to live cattle export yards.

Table 44. Purposes for making hay

Purpose	Number of properties	Number of properties with sole purpose	Number of properties with multiple purposes
Own use	11	7	4
Sale to other	3	1	2
Sale to pastoral properties	2	0	2
Sale to processing	1	1	0

The 12 properties produced an average of 996 tonnes of hay (range 10 tonnes – 6000 tonnes, median 200 tonnes) in 2010.

The approximate amount spent on fertiliser for hay production was mostly less than $99 per hectare (Table 45).

Table 45. Amount spent on fertiliser for hay production ($/ha)

Amount	Number of properties
$ 0 - 24	5
$ 25 - 49	1
$ 50 - 99	3
$ 100 or more	1
Do not know	2

The main issues that affected hay production were weeds and the cost of production, followed by a lack of alternative markets. Other issues included pricing on quality, transport and weather variability.

Seventy six per cent of hay producers had a weed management plan for hay production. Most had their weed management plan in their head (88%); some had it as part of a pastoral management plan.

Some factors limited the expansion of hay production, including markets and the cost of growing hay (Figure 20).

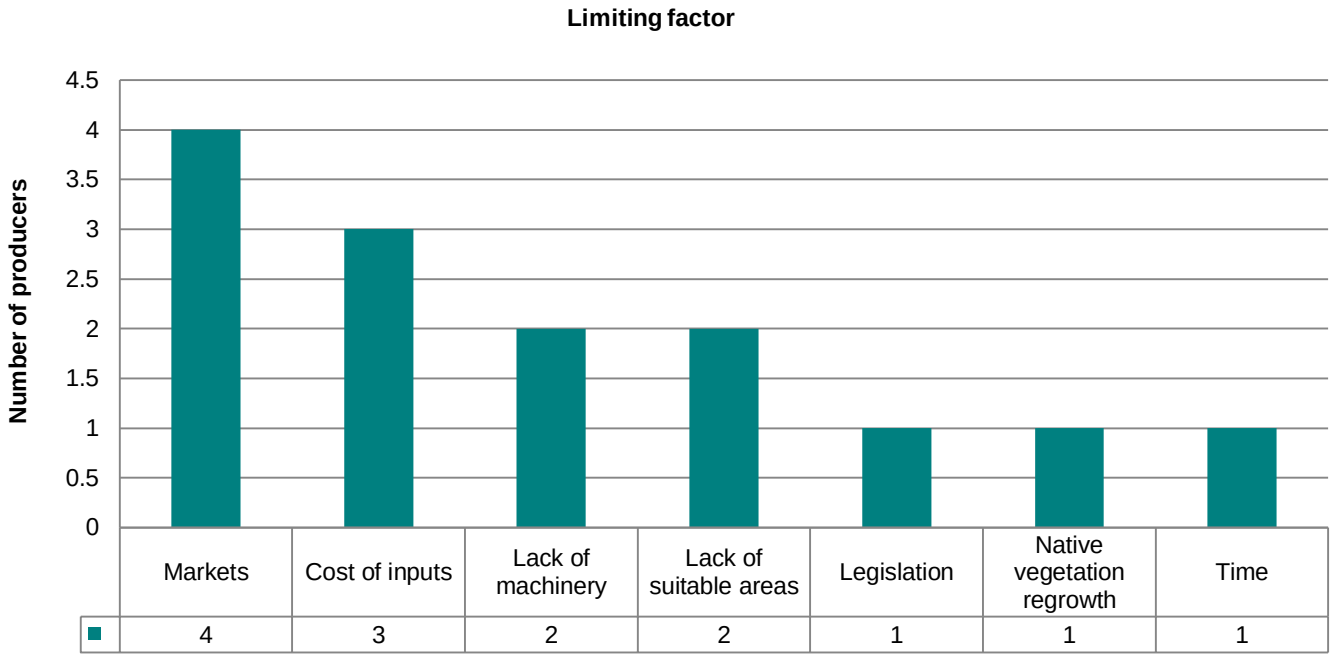


Figure 20. Factors that limited the expansion of hay production

Producers felt that they could best improve hay production through rotation of grasses and legumes, better weed control, better machinery and planting of multi-use perennial species. Other ways included managing fertiliser applications more efficiently in terms of type and amount, increasing the area available for hay production through clearing more land or planting rice as a hay crop.

Animal health

Common problems

Buffalo flies and cattle ticks were considered to be the two most common animal health problems in the Top End by the producers surveyed (Figure 21).

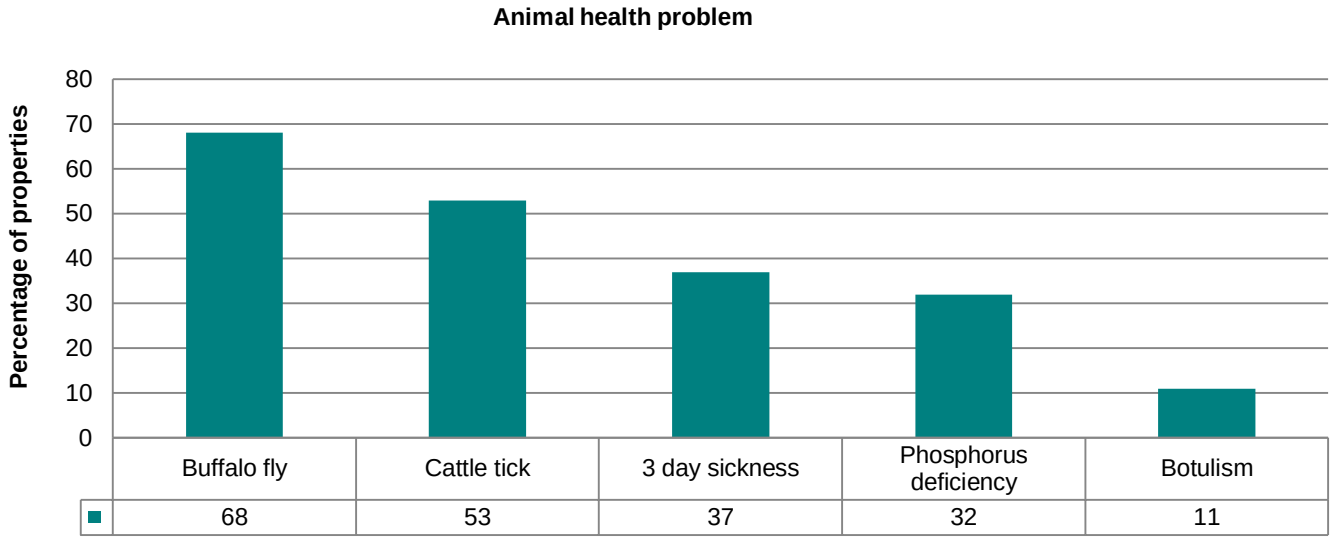


Figure 21. Most common animal health problems

Eighteen out of 20 producers surveyed vaccinated against botulism, 11 used an annual/conventional vaccine and seven used a long-lasting vaccine. One used a combination of annual and long-acting vaccines.

Four of the five producers who vaccinated against vibriosis did so every year.

Health treatments

Eighteen properties responded to the question on what health treatments they used on different classes of stock. Most treated all of their stock against botulism (Table 46).

Table 46. Percentage of properties that treated animals against various ailments

Ailment	Class of stock							
	All	Breeders	Breeding heifers	Bulls	Sale steers	Weaners	Yearling heifers	Yearling steers
Botulism	80	0	0	0	10	0	0	0
Clostridial diseases	20	0	5	0	0	15	5	5
Buffalo flies control	45	0	0	0	15	10	15	15
HGP	0	0	0	0	30	0	0	30
Lice	15	0	0	0	0	5	0	0
Leptospirosis	0	5	0	0	0	0	10	0
Pestivirus	0	5	5	5	0	0	0	0
Red water fever				1				
Tick fever	40	0	0	10	5	5	0	0
Vibriosis	0	10	0	0	0	0	5	0
Worms	35	5	5	5	15	10	0	5
Wound antisepsis	35	0	0	5	0	15	0	0
3-day sickness	0	0	0	0	0	0	0	0

Hormonal growth promotants (HGP)

A majority of producers in the Top End (65%) used HGPs on their cattle. A majority of those who did not use HGPs (57%) felt that there was a lack of benefit for the cost, two producers ran agistment properties and did not have their own cattle and one found it impractical.

Grazing management

Carrying capacity

Producers estimated the current carrying capacity of their properties at an average of 8155 AEs (range 1000 to 33 000, median 3200). With the current plans for infrastructure development, the average carrying capacity of the properties was expected to increase to 8682 (7% increase) in five years and to 8929 (9% increase) in 10 years.

Almost all properties adjusted stocking rates during the dry season. The main adjustments were to reduce numbers to match carrying capacity (37%) and increase numbers to match carrying capacity (37%) (Table 47). The contrast in management is between properties with and without coastal floodplains. Upland properties reduced their numbers during the dry season as feed quality and feed quantity decreased. Properties with floodplains increased

their carrying capacity during the dry season as the floodplains were spelled during the wet season when flooded and grazed as they dried out towards the middle of the year. The 'other' method was mostly agistment of young stock on the floodplains during the dry season. Producers did not consider destocking because of the reliable wet and dry seasons.

Table 47. How stocking rates were adjusted during the dry season

Stocking rate adjustment method	Properties (%)
Increase numbers to match carrying capacity	37
Reduce numbers to match carrying capacity	37
Early sale of steers	16
Early wean	16
Cull cows	11
Other	32
Do nothing	5
Destock	0

Each of six producers used a combination of two or three of these measures to adjust stocking rates.

All producers but one used one or more indicators to assess feed availability. Most used historical information and experience or looked at the condition of the cattle (Figure 22). The 'other' indicator used by one producer was to assess the burnt country.

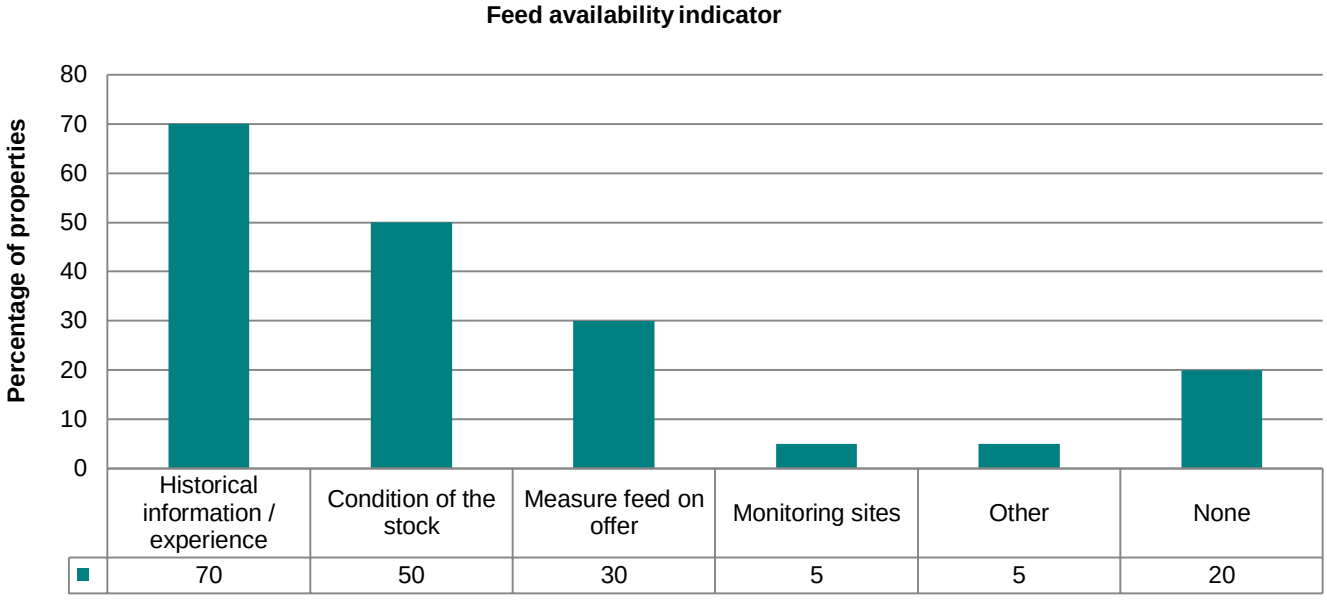


Figure 22. Indicators used by producers to assess feed availability

Ninety three per cent of producers assessed feed availability frequently through the year, 6% assessed it at the end of the growing season and 11% used other timings, such as assessing all of the time or assessing burnt country during the dry season.

A majority of the producers (67%) could estimate the carrying capacity of their different land types or rank them. The ranking order was black-soil floodplains, then upland improved pastures, then upland native pastures, which is the expected order.

Water point development

The upper limit of distance from water that producers planned infrastructure around was mostly from 2 to 5 km (range 1 km to 10 km, median 4 km, Figure 23).

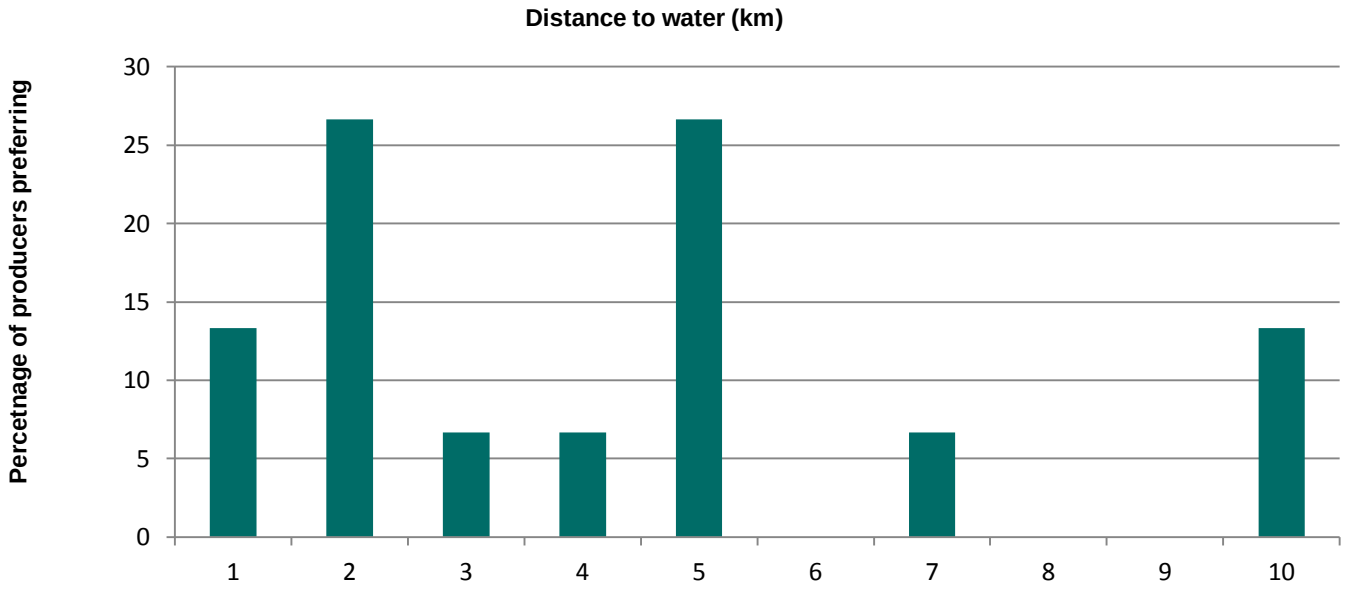


Figure 23. Percentage of producers who planned infrastructure based on distance to water

Most producers thought that while increasing water points would distribute cattle more evenly through a paddock, other methods were also considered, such as fencing, supplement location and fire (Figure 24).

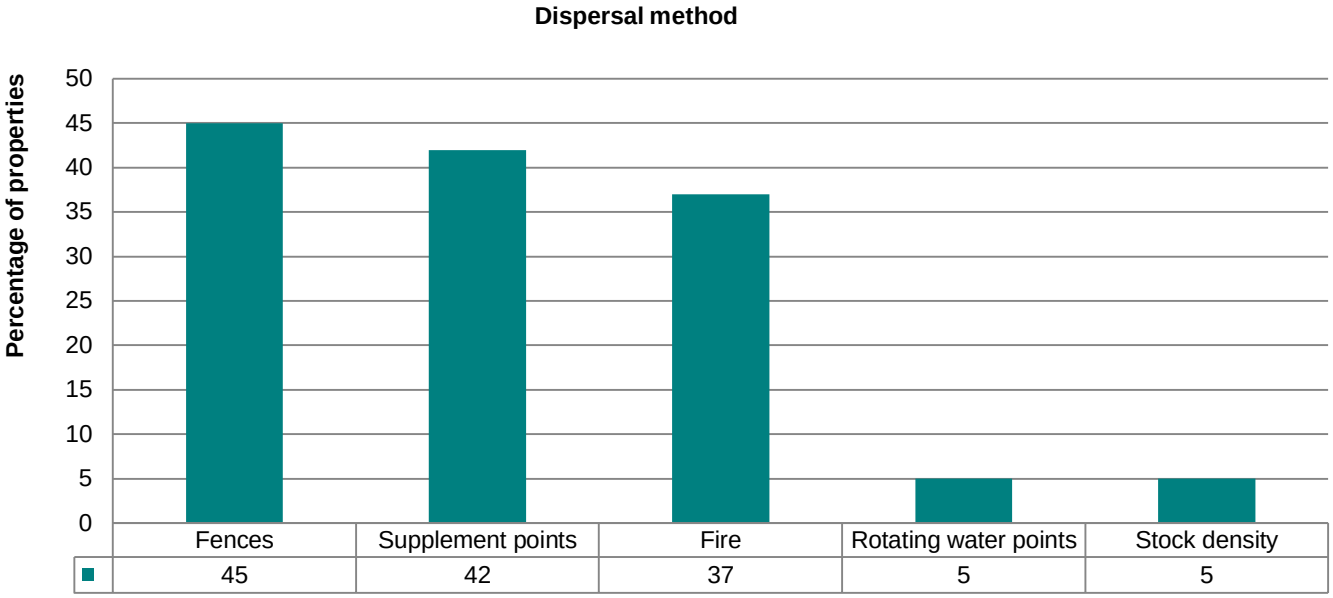


Figure 24. Methods used to distribute cattle grazing pressure (% properties)

Grazing strategies

While most properties used rotational grazing on at least some of their area, the majority used a mix of grazing strategies, including spelling (Figure 25).

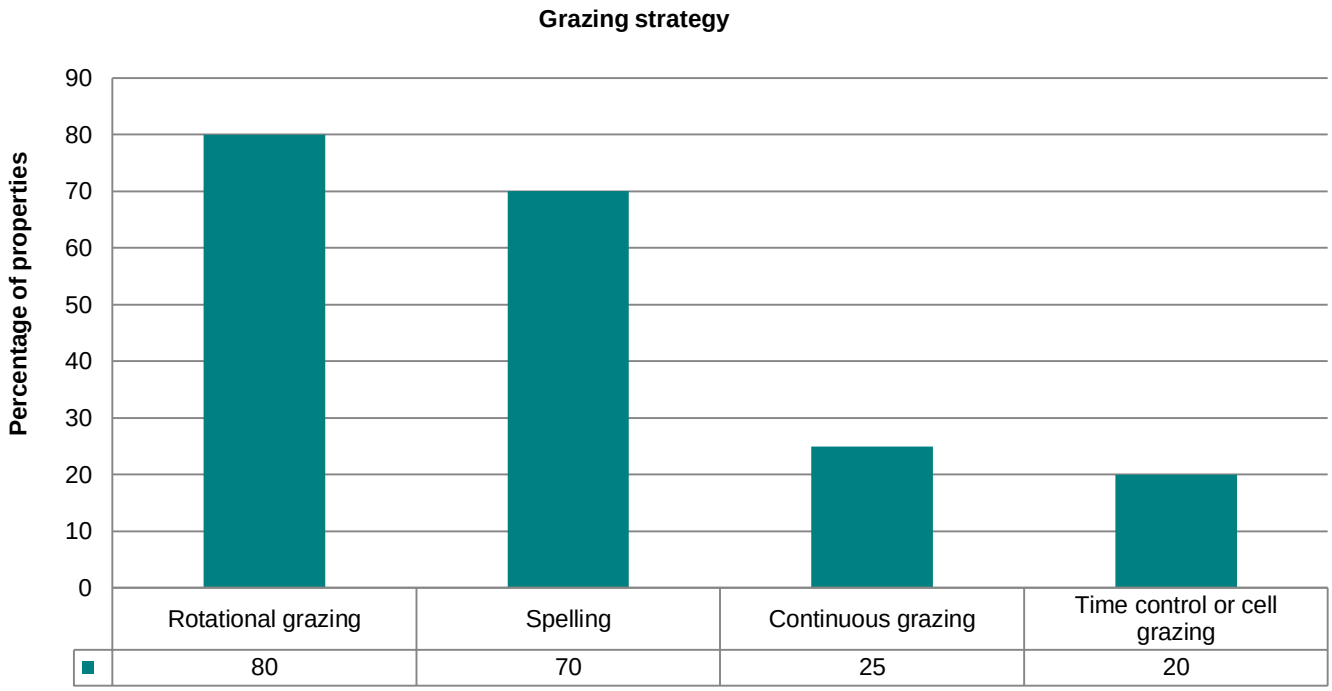


Figure 25. Grazing strategies used on Top End properties

Over half of Top End properties (55%), representing 62% of the surveyed area chose to exclude some areas of their properties from regular grazing because those areas were unsuitable for grazing, were not economic to develop, or too difficult to muster cattle on them (Figure 26).

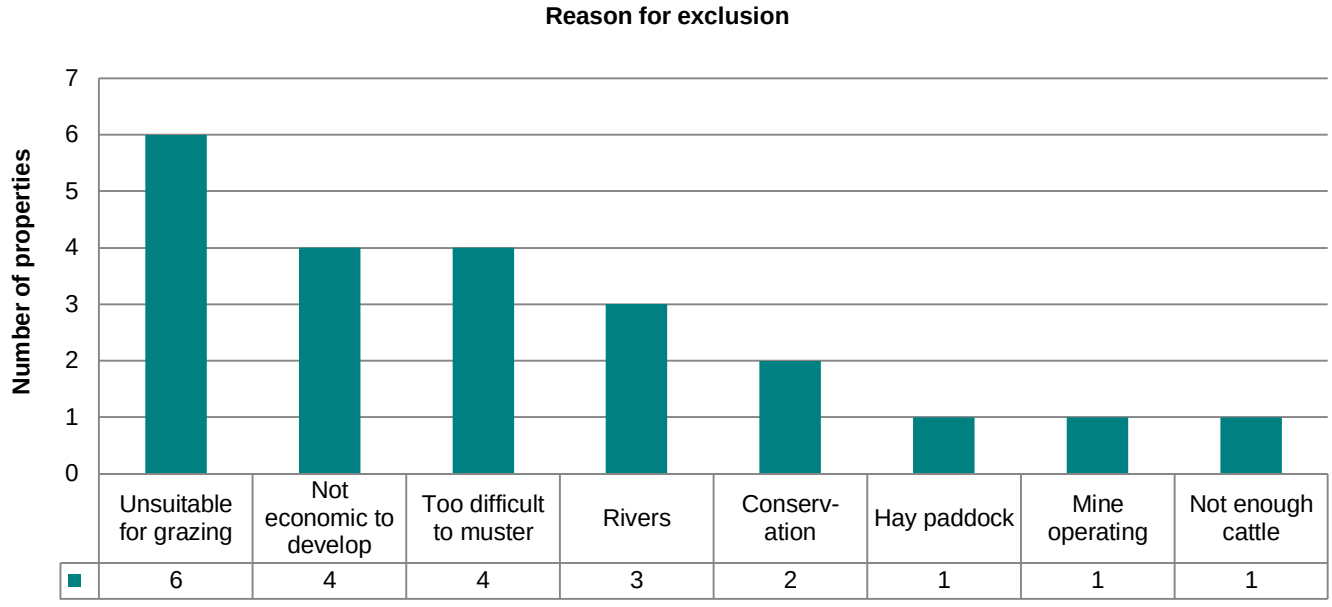


Figure 26. Reasons why some areas of properties were excluded from regular grazing

Seven out of the eight producers who did not exclude areas of their properties from grazing would consider doing it in the future.

Fire

Top End properties are often affected by fire. In the previous year, 55% of the properties were affected by wildfires, which producers estimated burnt an average of 16% of the properties (range 5% to 66%). In addition, 65% of producers intentionally burnt on average 24% of their properties (range 1% to 55%). The main reason for burning was wildfire mitigation (Figure 27). Producers often used fire for more than one reason. The annual cost of lost production from wildfire was estimated by seven producers to be $45 029 (range $0 to $200 000, median $10 000).

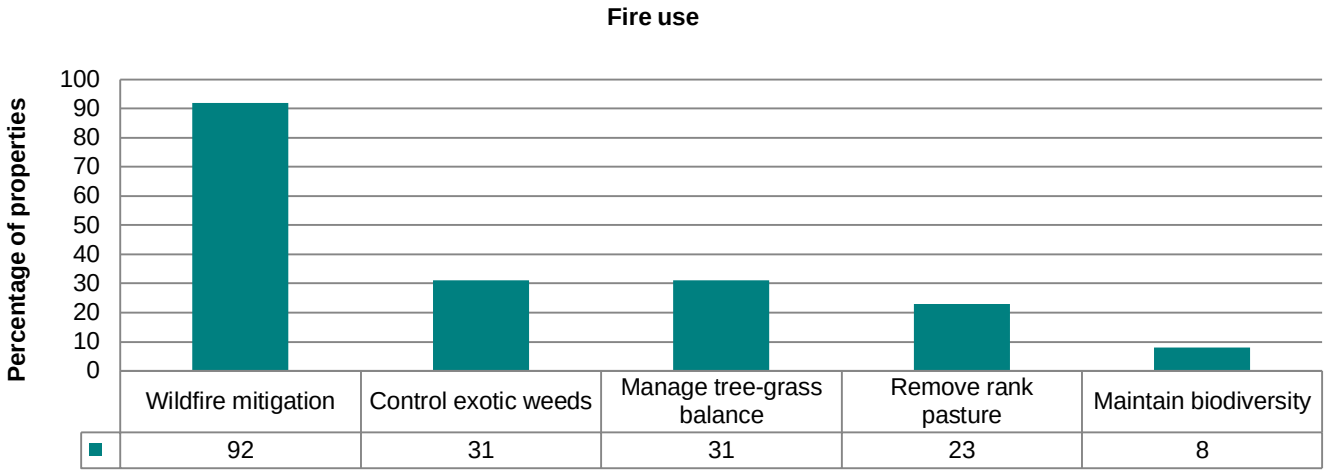


Figure 27. Reasons for the use of fire to manage properties

Producers were asked how they used fire to manage their properties. They were asked when they burnt for specific uses, as well as the intensity of the burn used, the frequency at which country was burnt and the proportion of the lease which was burnt. The information provided is presented in Tables 48 to 51.

Table 48. Time of season of burn for specific purposes (% of properties)

Fire use	Mid wet	Late wet	Early dry	Mid dry	Late dry	Early wet
Wildfire mitigation	0	36	64	0	0	0
Control exotic weeds	0	0	25	0	50	25
Manage tree-grass balance	0	0	25	0	50	25
Remove rank pasture	0	33	33	33	0	0
Maintain biodiversity	0	0	100	0	0	0

Table 49. Intensity of burns used for specific purposes (% of properties)

Fire use	Cool	Hot
Wildfire mitigation	100	0
Control exotic weeds	25	75
Manage tree-grass balance	50	50
Remove rank pasture	67	33
Maintain biodiversity	100	0

Table 50. Frequency of burns used for specific purposes (years)

Fire use	Average	Range	Median
Wildfire mitigation	1	-	1
Control exotic weeds	2	1 - 3	2
Manage tree-grass balance	2	1 - 3	3
Remove rank pasture	1	-	1
Maintain biodiversity	1	-	1

Table 51. Percentage of lease area burnt by producers for specific purposes

Fire use	Average	Range	Median
Wildfire mitigation	28	1 - 55	20
Control exotic weeds	35	1 - 100	5
Manage tree-grass balance	38	5 - 100	23
Remove rank pasture	30	10 - 50	30
Maintain biodiversity	50	-	50

Improved pasture

The majority of producers (95%) had some improved pastures on their properties. The total area of improved pastures comprised only 4.8% of the area of the surveyed properties.

There were approximately the same amounts of high-input and low-input improved pasture on the properties (Table 52). Low-input improved pastures were produced by broadcasting seed into an uncultivated seedbed. High-input pastures were produced by sowing into a prepared seedbed.

Table 52. Areas of high-input and low-input improved pastures on properties (ha)

Improved pasture type	Average	Range	Median
High input	2010	80 – 6000	2000
Low input	2000	50 – 8000	150

The types of improved pastures on properties are presented in Table 53. The majority of improved pastures on the majority of properties were grown under rain-fed conditions (not irrigated).

Table 53. Type of improved pasture on properties (ha)

Pasture type	Properties	Average	Range	Median
Rain fed	18	2579	50 - 8200	2000
Hay crop	3	300	100 - 600	200
Irrigated	1	200	n/a	n/a

The largest areas of improved pastures were grass only pastures (Table 54)

Table 54. Composition of improved pastures (ha)

Pasture composition	Properties	Average	Range	Median
Grass	16	2468	300 – 8,200	2,000
Legume	7	570	100 – 2,799	200
Mixed grass and legume	8	495	50 – 1,010	350

The improved pastures were mainly used to improve diet quality, for hay production and for special purpose paddocks, such as a horse paddock, holding paddock or weaner paddock (Figure 28). Most properties had more than one use for improved pastures.

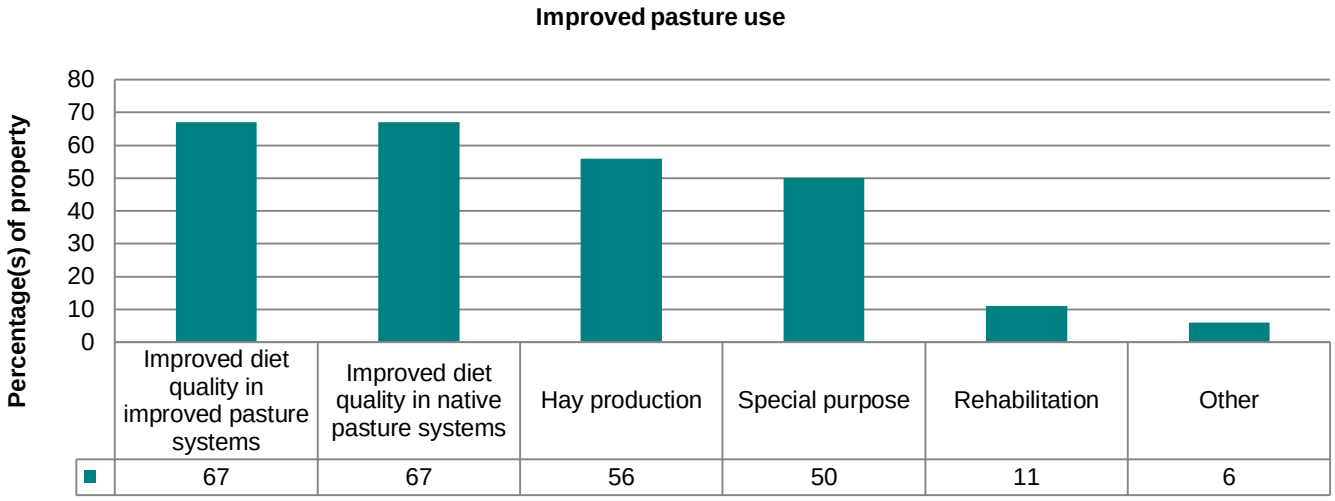


Figure 28. Uses of improved pastures

Twelve grass cultivars were used (Table 55). The three most popular grasses were Tully, Jarra finger grass and Nixon sabi grass.

Table 55. Pasture grasses used

Grass cultivar	Number of properties
Tully	10
Jarra finger grass	9
Nixon sabi grass	6
Kent Gamba grass	5
Para grass	5
Buffel grass	4
Amity Aleman grass	3
Olive hymenachne	3
Arnhem finger grass	2
Silk sorghum	2
Kazungula setaria	1
Strickland finger grass	1

Seven legume cultivars were used (Table 56). The most popular legumes were Seca stylo and Wynn cassia, followed by Cavalcade and Verano stylo.

Table 56. Pasture legumes used

Grass cultivar	Number of properties
Seca stylo	6
Wynn cassia	6
Cavalcade	5
Verano stylo	4
Glenn joint-vetch	1
Leucaena	1
Stylhay stylo	1

Sixteen producers (80%) planned to increase their areas of improved pastures and crops in the next three years (Table 58). The high-input improved pastures will predominantly be Tully or Jarra, the low-input pastures will include Seca and Verano. The crop will be rice and the irrigated pasture was intended to be leucaena.

Table 57. Type of improved pasture or crop intended (ha)

Pasture type	Properties	Average area
Low input improved	3	1067
High input improved	15	542
Crop	3	117
Irrigated	1	80

Most producers used a mixed NPK fertiliser or superphosphate on their improved pastures, which is consistent with fertilising pure grass with NPK, or pastures with legumes (super-phosphate) (Table 59). Thirteen per cent of producers did not use fertilisers on their improved pastures.

Table 58. Fertiliser types used on improved pastures

Type of fertiliser	Percentage of producers
NPK	67
Superphosphate	38
Urea	25
Muriate of potash	6

The properties which did apply fertiliser, used on average 77 kg/ha (range 24 kg/ha – 150 kg/ha) every two years (range 1 – 10 years). Most producers applied fertiliser every one or two years.

Natural resource management

Eighty per cent of producers did not have any form of documented land monitoring apart from legal requirements. Two properties had a company program, and another two producers had another program.

Native tree and shrub build-up

Producers were asked if they had noticed a build-up in native shrubs or trees in their native pastures. Sixteen producers responded to this question, with 15 (94%) having noticed such a build-up (Table 59). Most producers had noticed a build up on more than one class of country.

Table 59. Percentage of respondents who noticed a build-up of native shrubs or trees on different classes of country

Class of country	Producers (%)
Previously cleared areas	75
Black soil	38
River flats	38
Red soil	31
Floodplains	6
Sandy soil	6
Other areas	12

Weeds

The weeds which impacted on properties are listed in Table 60. The weeds with a high impact on most properties were Hyptis, Mimosa, Senna and Sida. There were two main Senna species and two main Sida species which were problem weeds. All properties in the Top End region controlled a majority of their weeds. The lowest priorities for weed control were Crotalaria and Mission grasses.

Table 60. Weeds, their impact on Top End properties, percentage of properties with weeds and percentage of properties which controlled them

Weed	Impact			Properties with the weed (%)	Properties which control weed (%)
	High	Medium	Low		
Bellyache bush			5	5	100
Berrimah weed		5		5	100
Chinee apple			5	5	100
Crotalaria		20	10	30	50
Devil's claw			5	5	100
Grader grass	10	15	20	50	70
Hyptis	35	40	10	85	71
Khaki weed		15	5	20	75
Mimosa	30	20	30	80	100
Mission grasses		10	60	70	50
Mossman River grass			5	5	100
Noogoora burr			15	15	67
Parkinsonia	5	5	5	15	67
Rats tail	5			5	100
Prickly acacia			10	10	100
Rubber bush	5	5	10	20	75
Senna	40	25	25	90	94
Sida	45	20	25	85	82

The average percentage of individual properties affected by the weeds was 26% (range 1% to 100%). On average, properties spent in excess of $50 000 per year on weed control (median $30 000) (Table 61.). The higher spending per square kilometre was on the smaller, more intensively-managed properties.

Table 61. Approximate spending on weed control each year ($)

Spending on weed control	Average	Median	Range
Per property	52 947	30 000	1000 - 150 000
Per km²	106.53	45.50	3.00 - 2272.00

The annual cost of lost production due to weeds was estimated by nine producers to be $247 228 (range $5000 to $1 800 000, median $50 000).

Forty five per cent of producers took measures to prevent the introduction of weeds onto their properties. The specific measures are presented in Figure 29.

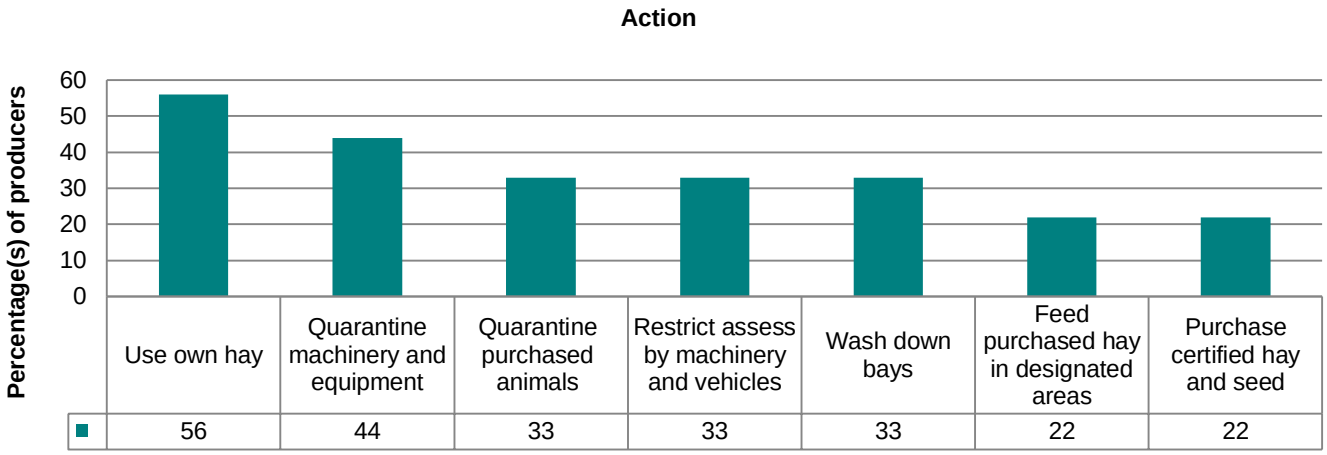


Figure 29. Actions taken by producers to prevent the introduction of weeds

Pest animals

Pest animals that were considered to impact on Top End properties are listed in Table 62. The pest animals with the highest impact were pigs and wallabies. More properties controlled pigs and buffalo than wallabies. Six properties had buffalo herds and did not regard them as pests. One property, which did not control any of these pest animals, used fencing to exclude them.

Table 62. Pest animals, their impact on Top End properties, the percentage of properties with pest animals and the percentage of properties which controlled them

Pest animal	Impact			Not applicable	Properties with pests (%)	Properties which controlled pests (%)
	High	Medium	Low			
Buffalo	10	35	20	30	70	68
Crocodile	5	0	0	95	5	5
Donkey	5	20	0	75	25	11
Horses	0	10	40	50	50	32
Pigs	60	20	20	0	100	95
Wallabies	65	10	25	0	100	42
Wild dogs	25	35	30	10	90	79

The amount of money spent on pest animal control each year is generally much lower than that spent on weed control (Table 63), which reflects the lower annual cost of lost production due to pest animals estimated by nine producers to be $69 778 (range $2000 to $250 000, median $40 000) compared with that caused by weeds.

Table 63. Approximate spending on pest animal control each year ($)

Spending on pest animal control	Average	Median	Range
Per property	3516	2000	100 – 20 000
Per km²	21	4.76	0 – 114

Erosion

The annual cost of lost production from erosion was estimated by four producers to be $1750 (range $0 to $5000, median $1000). This loss was difficult to estimate.

Climate change

Only two producers (10%) have had the carbon footprint of their operation measured. Of the 18 who did not, only three wanted to have it measured.

Producers were evenly split on whether climate change would affect their business (Figure 30).

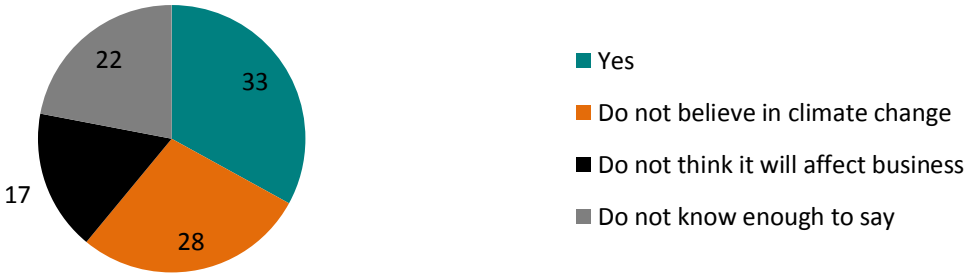


Figure 30. Thoughts on climate change affecting business

The producers who said yes did so because they thought government regulation and a carbon tax would increase the cost of production and that sea level rises would lead to saltwater intrusion.

Business management

Staff

A majority of producers relied on word of mouth to source labour (Table 64).

Table 64. Sources of labour for Top End producers

Labour source	Properties (%)
Word of mouth	85
Newspaper advertisements	25
Online advertising	15
Rural college	15
Other	15
Internal recruitment	5
Recruitment agencies	5

Where properties provided training (86%), it was mostly on the job training (Figure 31)

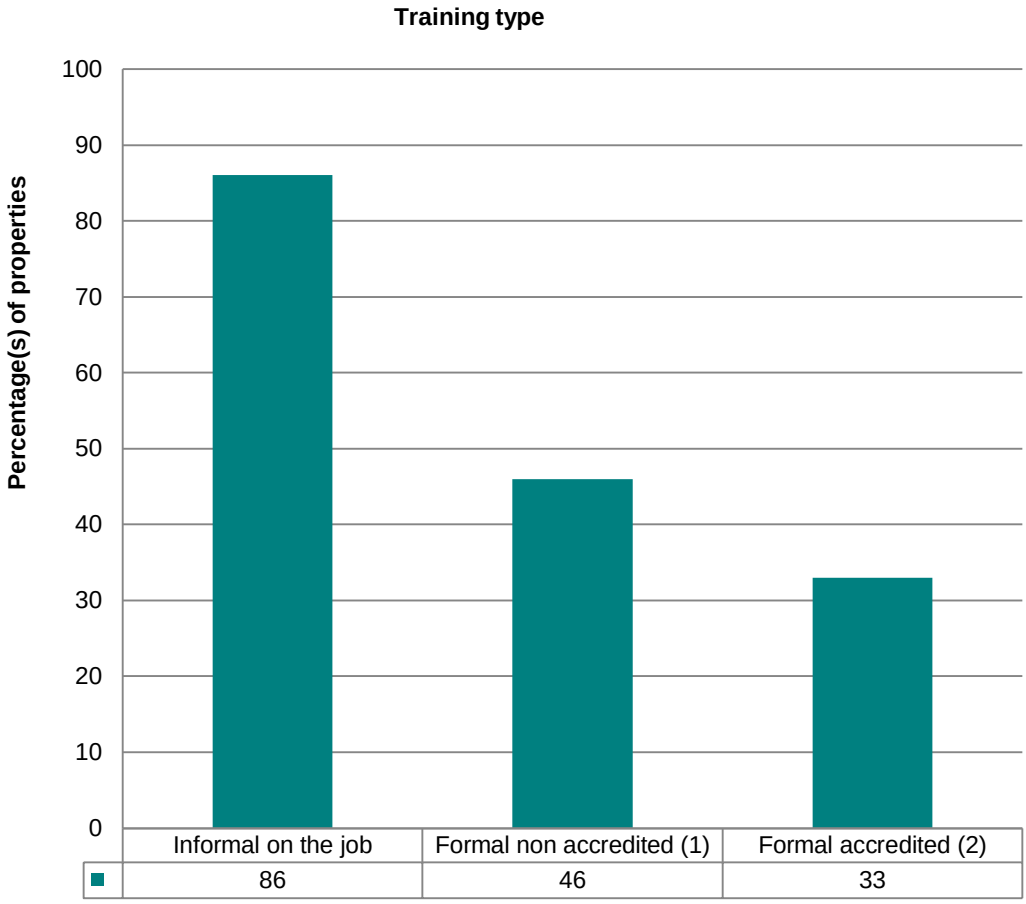


Figure 31. Type of training for staff (1) DPIF, EDGE network. (2) Certificate

The proportion of staff who received formal accredited and informal training was high, while the proportion of those receiving formal non-accredited training was much lower (Table 65). Some properties provided a range of training to all of their staff.

Table 65. Percentage of staff receiving training

Training type	Staff (%)
Informal on the job	40
Formal non accredited (DPIF, EDGE network)	12
Formal accredited (Certificate)	25

The training was mainly in livestock handling, grazing management and pregnancy testing (Table 66).

Table 66. Training topics for staff

Training topic	Properties (%)
Livestock handling	45
Grazing land management	30
Pregnancy testing	30
Business management	20
Breeding EDGE	10
Certificate in Agriculture	10
Horsemanship	10
Monitoring	10
Rangeland management	10
Working dogs	10
Bull selection	5
Bushfires	5
Marketing	5
1080 baiting	5

Succession planning

Almost half of the producers surveyed had a succession plan in place or were in the process of preparing such a plan (Figure 32). This question was not applicable to the managers of company properties.

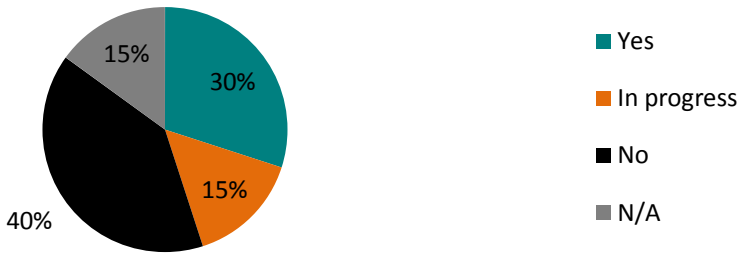


Figure 32. Percentage of producers with a succession plan

Reasons for not having a succession plan included family members not being interested in running the property, the age of children and the uncertainty about the future of the industry.

Benchmarking and planning

Sixty five per cent of producers had some form of documented plans for their property, mainly financial and OH&S plans (Figure 33).

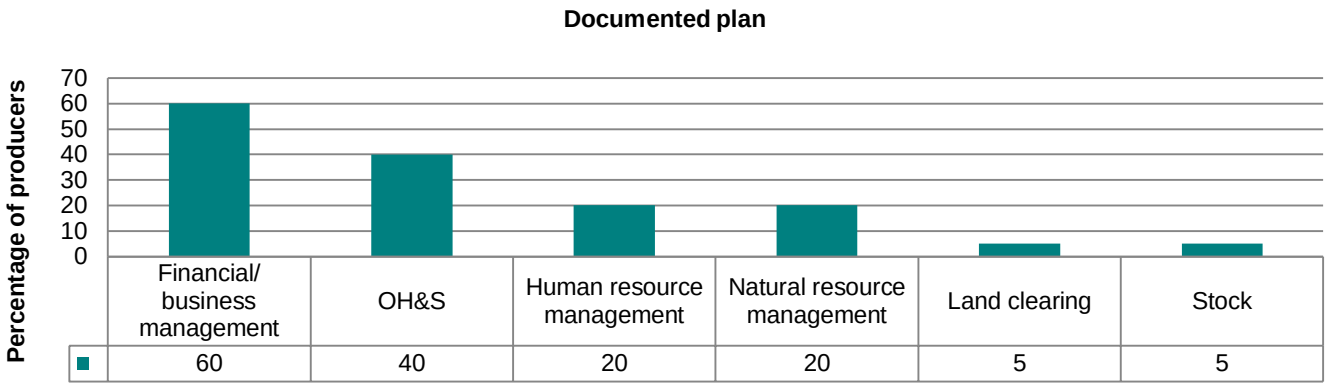


Figure 33. Percentage of producers with documented plans

Eighty per cent of producers used financial benchmarks to help with management (Table 67). These benchmarks were not applicable to one producer. The main benchmarks used by producers were weaning percentage, cost of production/kg and return on assets.

Table 67. Production and financial benchmarks used by producers

Production benchmark	Producers (%)
Weaning	60
Kilograms of beef turned off/AE	40
Kilograms of beef turned off/ha	25
Financial benchmark	
Cost of production/kg	50
Return on assets	45
Gross margin/AE	30

One producer who did not use production and financial benchmarks thought benchmarks would be useful.

Eighty per cent of producers used natural resources benchmarks to assist with management (Figure 34). The most used benchmarks were rainfall records, grazing records and weed maps.

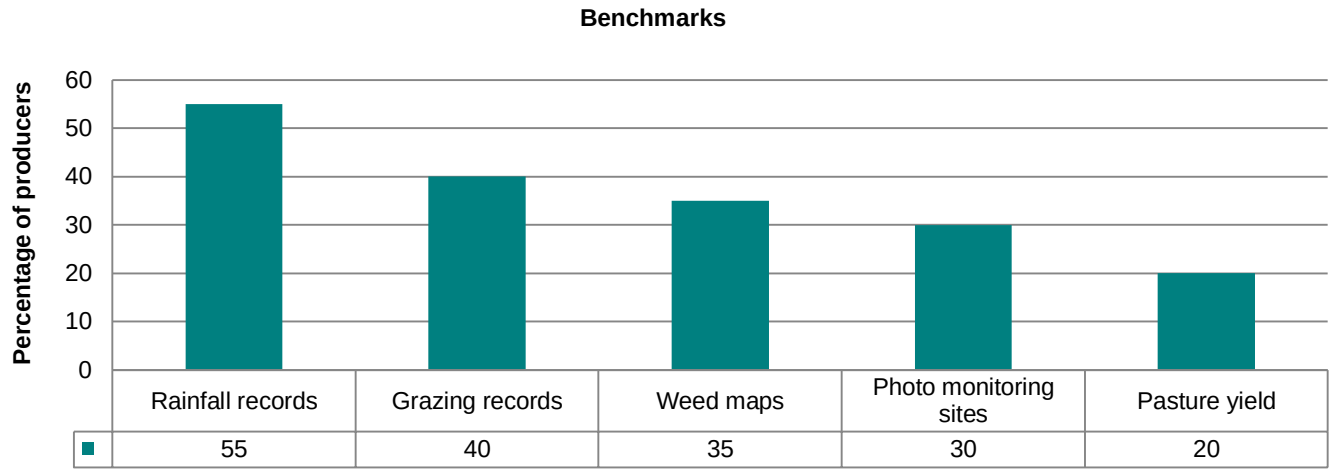


Figure 34. Natural resources benchmarks used by producers (%)

Financial

Half of the surveyed properties were financed by the major trading banks (Figure 35). A small number of properties were self-funded or company funded.

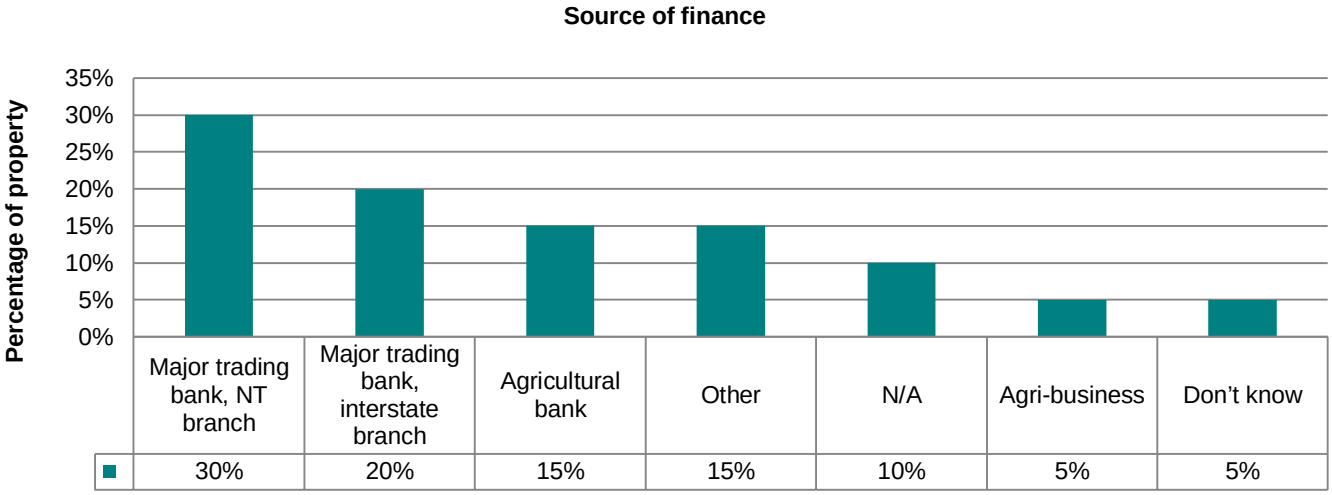


Figure 35. Sources of finance for Top End properties

Information delivery and management

A high percentage of producers used a range of electronic programs to assist with day-to-day operations (Figure 36).

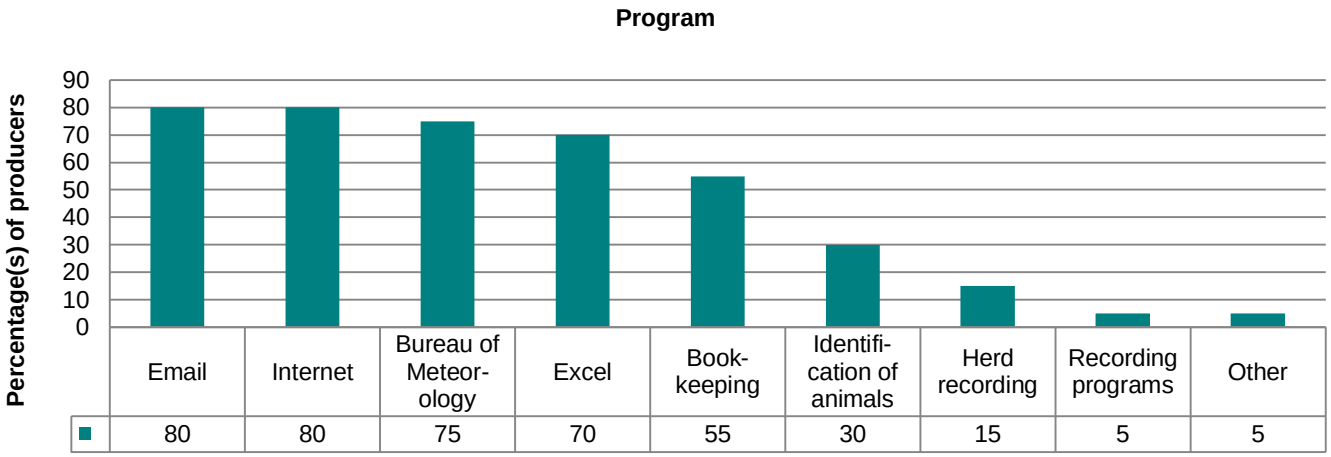


Figure 36. Electronic programs used by producers to assist with operations (%)

Producers were asked where they sourced information about the pastoral industry (Table 68). Of the 19 respondents to the question, 18 said they used publications, followed by field days (16), departmental extension officers (15) and the internet (13).

Table 68. Sources of information for the pastoral industry used by producers

Source of information	Number of producers
Publications	18
Field days	16
Departmental extension officers	15
Internet	14
Producer groups	13
Other producers	11
Radio	8
Training courses	8
ABARE	1
Beef Central	1

The 20 surveyed producers also ranked the usefulness of a number of publications available to them (Table 69). The publications most used by a majority of producers were *Queensland Country Life* and DPIF publications.

Table 69. The publications ranked most useful by producers (1= most useful to 12= least useful)

Publication	Average Ranking	Number of producers
Queensland Country Life	1.4	17
MLA publications	2.2	9
DPIF publications	2.3	16
The Land	2.3	3
DPIF newsletters	3.2	11
NTCA newsletter	3.5	2
North Queensland Register	3.8	4
Stock Journal	5.0	1
Countryman	6.0	1
Farm Weekly	6.5	2
Farm Journal	7.0	2

Priorities

What were the hurdles faced by the pastoral industry?

The biggest hurdles faced by producers in managing their enterprises were market issues and roads/access followed by staff availability (Table 70).

Table 70. Biggest hurdles faced in managing enterprises

Hurdle	Number of producers	Producers (%)
Market issues	7	35
Roads/wet season access	7	35
Staff availability	4	20
Government regulations	3	15
Cost of production	2	10
Fertility of herd	2	10
Live export uncertainty	2	10
Time	2	10
Weeds	2	10
Communication and education	1	5
Dingoes	1	5
Distance	1	5
Freight	1	5
Managing in a tropical environment	1	5
Money	1	5
Pest animals	1	5
Seasons	1	5
Topography	1	5

All 18 producers who responded thought that marketing was the main issue affecting the profitability of their enterprise. Government policy issues were next most important, followed by cost of production and animal performance (Table 71).

Table 71. Main issues affecting enterprise profitability

Issue	Number of producers
Market access/market instability, live export ban (5), cattle prices (2)	18
Government regulation/policy, government policy on live exports (1), clearing legislation (1), lack of consultation on NRM issues (1)	7
Cost of production, transport costs (1)	5
Reproductive performance, live-weight gain (1)	4
Roads	2
Cash flow/profitability	1
Inherent productivity of the land	1
Location	1
Weeds	1
World economy	1

Fourteen producers considered that the main issues affecting the environmental sustainability of their enterprises were weeds, feral animals, government policies and wildfire (Table 72).

Table 72. Main issues affecting enterprise environmental sustainability

Issue	Number of producers
Weeds	7
Feral animals	3
Government	3
Wildfire	3
People coming on the property	2
Poor country	2
Erosion	1
Land clearing legislation	1
Mining	1
Saltwater intrusion	1
Seasonal conditions	1
Use of chemicals	1

What were the risks to long-term sustainability?

When asked to rank a number of risks to their long-term sustainability, most producers were concerned about markets and market access (Table 73). Data is presented only for the top three priorities.

The next most important risks were production issues and government regulation.

Table 73. Rank of risk to long-term sustainability (% of properties)

Risk	Priority 1	Priority 2	Priority 3	Total of 3
Markets	63	16	5	84
Cattle prices	11	11	26	48
Government regulation	11	21	16	18
Cost of production	5	21	21	47
NRM issues	5	11	5	21
Seasonal variability	0	5	11	16
Staff	0	5	0	5
Climate change	0	0	0	0
Energy availability	0	0	0	0

What are the plans for infrastructure development?

The main priorities for infrastructure development were water point development and paddock subdivision. One producer did not have second or third priorities (Table 74).

Table 74. Priorities for infrastructure development (% of properties)

Priority	Priority 1	Priority 2	Priority 3
Paddock subdivision	25	42	11
Boundary fencing	10	5	16
Water point development	40	16	16
Trap yards	0	0	5
Laneways	10	16	32
Accommodation	0	5	21
Roads	5	11	0
Sheds	0	0	0
Other	10	5	0

What motivated people to be part of the pastoral industry?

Fifteen producers responded to the question asking why they chose to be part of the pastoral industry. Ten responded that it was a lifestyle choice. Other responses were that it was an ambition (two producers), a career choice, they liked to breed cattle, they liked to work with stock and to develop Indigenous land.

How the Pastoral Industry had changed between 2004 and 2010

Care needs to be taken when comparing the results of the two surveys. In the 2010 survey we reported on 20 properties compared with 24 in the 2004 survey and the largest pastoral property in the Top End did not participate in the 2010 survey. The areas where significant changes have occurred since 2004 are presented in Appendix 2 and are commented on here.

The two highest infrastructure priorities in 2004 were water point development and paddock subdivision. In 2010, average paddock numbers and watering points had increased and average paddock size had decreased.

Of other enterprises carried out on properties, tourism had increased slightly, and crocodile egg collection had increased to 15% of properties compared with nil in 2004.

While all properties employed permanent staff in 2004, only 80% did so in 2010. The number of permanent staff decreased and the number of seasonal staff increased in 2010.

Turnoff was still focused on the live-export market, but average cattle weights were lower in 2010, which is to be expected with the strict enforcement of weight restrictions by the Indonesian Government.

The predominant breed of cattle was still Brahman, but it increased by 18% to 84%. The component of Brahman cross shorthorn cattle had fallen from 28% to 0%. Producers were crossbreeding more for performance and there was less selection for traits within breeds in 2010.

Mustering of cattle with helicopters and bikes had increased by 20% to 96%. Properties now did more second round musters and no third round musters.

Average bull percentages fell from 4% to 3.2%, while the use of EBVs to select bulls had risen from 38% to 46%. Where EBVs were used to select bulls, fertility EVBs were used by all producers. A third of producers selected bulls based on growth rate EVBs compared with 10% in 2004. Of the factors used to select bulls, temperament had risen to 100%, structure had also risen and polledness had jumped from 28% to 76%.

The estimated weaning percentage for breeders had fallen to 62% from 70%. More properties were culling cows on age, pregnancy status, temperament and conformation. Cows were now being segregated more on pregnancy status than on age and more properties pregnancy-tested their cows. Fewer producers (61% versus 70%) segregated their heifers from cows in 2010.

More producers weaned at different weights according to conditions and less on age. More producers fed their weaners hay and/or concentrates.

More producers provided phosphorus as the main supplement during the wet season and fewer provided nitrogen as the main supplement in the in the dry season than in 2004.

On average, properties produced more hay in 2010.

Top End producers changed from 100% use of a long-acting botulism vaccine in 2004 to 61% use of an annual vaccine in 2010. Fewer producers vaccinated against three-day sickness, red water fever and vibriosis in 2010.

Estimated carrying capacity, which had been predicted to increase to 7883 per property in the five years to 2009, reached 8155 in 2010, which is close to the prediction. In 2004, carrying capacity was expected to increase to 14 208 by 2014. Predictions for 2015 made in 2010 are more conservative and were obviously affected by

disruptions in the live cattle trade caused by weight restrictions and the temporary trade suspension in live-cattle export to Indonesia.

More producers were using rotational grazing, spelling and time-controlled grazing in 2010 compared with 2004.

The area of each property burnt by wildfire decreased from 19% to 16% between 2004 and 2010. The number of producers who have noticed a build-up on native trees and shrubs on their property increased from 36% to 94%. The pest animals with the highest impact on properties changed from pigs and wild dogs in 2004 to wallabies and pigs in 2010.

Labour in 2010 was sourced more from word of mouth and less from recruiting agencies.

More producers used financial and natural resources benchmarks in 2010 compared with 2004. The use of both benchmarks rose by up to 80%.

Most properties were financed by major trading banks and agribusiness in 2010, compared with a much lower proportion in 2004. Fewer producers were self-funded in 2010, down from 30% to 10%.

Marketing issues and government regulations increased as hurdles to managing enterprises. The importance of roads and access dropped slightly but continued to be important. Staff availability, weeds and cost of production were seen as lesser hurdles. Market access increased markedly to 100% as the main issue affecting profitability. Government regulation and policy also increased in importance as an issue. Cost of production dropped slightly as an issue, but remained important for profitability. The importance of weeds as an issue dropped in 2010.

Appendix 1 – Index of plant names

Grasses

Common or Cultivar name	Scientific name
Amity Aleman grass	*Echinochloa polystachya*
Arnhem finger grass	*Digitaria milanjiana (swynnertonii)*
Buffel grass	*Cenchrus ciliaris*
Bunch speargrass	*Heteropogon contortus*
Cockatoo grass	*Alloteropsis semialata*
Giant speargrass	*Heteropogon triticeus*
Jarra finger grass	*Digitaria milanjiana*
Kangaroo grass	*Themeda triandra*
Kazungula setaria	*Setaria sphacelata*
Kent gamba grass	*Andropogon gayanus*
Kerosene grass	*Eriachne burkitii, Eriachne obtusa*
Native hymenachne	*Hymenachne acutigluma*
Nixon sabi grass	*Urochloa mosambicensis*
Olive hymenachne	*Hymenachne amplexicaulis*
Para grass	*Urochloa (Brachiaria) mutica*
Paspalum	*Paspalum scrobiculatum, Paspalum* spp
Ribbon grass	*Chrysopogon latifolius*
Rice	*Oryza sativa*
Silk sorghum	*Sorghum* sp
Sorghum (Annual)	*Sarga (Sorghum) intrans*
Sorghum (perennial), Plume sorghum	*Sarga (Sorghum) plumosum*
Spiny mud grass	*Pseudoraphis spinescens*
Strickland finger grass	*Digitaria milanjiana*
Swamp ricegrass	*Leersia hexandra*
Tropical reed	*Phragmites karka*
Tully, humidicola	*Urochloa (Brachiara) humidicola*
White grass	*Sehima nevosum*
Wild rice (Annual)	*Oryza meridionalis, O. rufipogon*
Wild rice (Perennial)	*Oryza australiensis, O. meridionalis, O. rufipogon*

Legumes

Common or Cultivar name	Scientific name
Glenn joint-vetch	*Aeschynomene americana*
Cavalcade	*Centrosema pascuorum*
Leucaena	*Leucaena leucocephala*
Seca stylo	*Stylosanthes scabra*
Stylhay stylo	*Stylosanthes guianensis*
Verano stylo	*Stylosanthes hamata*
Wynn cassia	*Chamaechrista rotundifolia*

Other

Common name	Scientific name
Sedges	*Cyperus* spp, *Fimbristylis* spp
Rushes	*Eleocharis dulcis, Eleocharis* spp

Shrubs and trees

Common name	Scientific name
Acacia	*Acacia holosericea, Acacia* spp
Calytrix, Turkey bush	*Calytrix* spp
Eucalyptus	*Corymbia* spp, *Eucalyptus* spp
Ironwood	*Erythrphleum chlorostachyus*
Melaleuca	*Melaleuca leucadendra, M. viridiflora*

Weeds

Common name	Scientific name
Bellyache bush	*Jatropha gossypifolia*
Berrimah weed	*Mitracarpus hitrus*
Chinee apple	*Ziziphus mauritiana*
Crotalaria	*Crotalaria goreensis, Crotalaria* spp
Devil's claw	*Martynia annua*
Grader grass	*Themeda quadrivalvis*
Hyptis	*Hyptis suaveolens*
Khaki weed	*Alternanthera pungens*
Mimosa	*Mimosa pigra*
Mission grass (annual)	*Cenchrus pennisetiformis (Pennisetum pedicellatum)*
Mission grass (perennial)	*Cenchrus polystachios (Pennisetum polystachion)*
Mossman River grass	*Cenchrus echinatus*
Noogoora burr	*Xanthium occidentale*
Parkinsonia	*Parkinsonia aculeata*
Rats tail	*Sporobolus* spp
Prickly acacia	*Acacia nilotica*
Rubber bush	*Calotropis procera*
Senna (Candle bush)	*Senna alata*
Senna (Sicklepod)	*Senna obtusifolia*
Senna (Coffee senna)	*Senna occidentalis*
Sida (Spinyhead sida)	*Sida acuta*
Sida (Flannel weed)	*Sida cordifolia*
Sida (Paddy's lucerne)	*Sida rhombifolia*

Appendix 2 – Pastoral Industry changes 2004 - 2010

The data presented in this Appendix represents the changes that have taken place in the industry between the two survey dates. The changes are presented only where the same questions were asked in both surveys.

Picture of the industry

Infrastructure

Element	2004	2010
Average paddock number	19	21
Average paddock size (km^2)	51	29
Average number of yards	1	2
Average number of man-made watering points	14	15

Other enterprises on properties (percentage of properties)

Element	2004	2010
Tourism	12	15
Crocodile egg collection	0	15

Properties employing permanent staff (% properties)

Element	2004	2010
Employing staff	100	80

Average number of staff employed by properties

Element	2004	2010
Permanent	5	2.6
Seasonal	3.3	4.5

Management practices

Turnoff

Location of market (% cattle)

Element	2004	2010
Asia	93	87

Average weight of cattle turned off (kg)

Element	2004	2010
Live export steers	321	303
Live export heifers	294	283

Cattle management

Predominant breed of cattle (%)

Element	2004	2010
Brahman	64	84
Brahman cross Shorthorn	28	0

Mustering method (% properties)

Element	2004	2010
Helicopter plus bike	76	96

Breeding aims (% properties)

Element	2004	2010
Crossbreed for performance	8	33
Concentrating on other areas of management	32	27
Selecting traits within breeds	28	13

Mustering rounds (% properties)

Element	2004	2010
First round	100	100
Second round	44	60
Third round	12	0

Bulls

Element	2004	2010
Average bull percentage	4	3.2

Use of EBVs to select bull (% properties sourcing bulls)

Element	2004	2010
EBV use	38	46

EBV traits used to select bulls (% properties)

Element	2004	2010
Fertility	100	100
Growth rates	100	33

Factors used for selecting bulls (% properties)

Element	2004	2010
Temperament	77	100
Structure and confirmation	67	80
Polled	28	76

Estimated weaning percentage for cows

Element	2004	2010
Cow weaning	70	62

Criteria for culling cows (% properties)

Element	2004	2010
Age	23	63
Pregnancy	29	58
Temperament	27	32
Conformation	12	21

Segregation of cows (% properties)

Element	2004	2010
Age	47	19
Pregnancy status	32	50

Cows pregnancy tested (% properties)

Element	2004	2010
All cows	38	58
Dry cows	29	58

Use of artificial insemination (AI)

Element	2004	2010
Number using AI	1	0

Producers segregating heifers (%)

Element	2004	2010
Segregating heifers	71	60

Average estimated breeder mortality (%)

Element	2004	2010
Breeders	2.7	4.2
Old cows	3.4	6.4

Weaning method (% producers)

Element	2004	2010
Different weight according to seasonal conditions	41	61
Age	50	31

Feeding weaners (% properties)

Element	2004	2010
Short-term feeding in yards with hay	67	81
Short-term feeding in yards with concentrate	20	68

Feeding mineral supplement to at least some cattle (% producers)

Element	2004	2010
Feed mineral supplements	96	80

Main nutrient fed to cattle in the wet season (% properties)

Element	2004	2010
Properties feeding phosphorus	70	75

Main nutrient fed to cattle in the dry season (% properties)

Element	2004	2010
Properties feeding nitrogen	75	65

Average hay production per property (tonnes)

Element	2004	2010
Hay produced	712	996

Animal health

Botulism vaccine used (% properties)

Element	2004	2010
Annual	0	61
Long acting	100	39

Other animal health treatments used (% properties)

Element	2004	2010
3-day vaccination	6	0
Red water vaccination	12	6
Bull vaccination against vibriosis	20	6

Grazing management

Estimated average carrying capacity of properties (AE)

Element	2004	2010
2004	5791	N/A
2009 predicted in 2004	7883	N/A
2010	N/A	8155
2014 predicted in 2004	14 208	N/A
2015 predicted in 2010	N/A	8682
2020 predicted in 2010	N/A	8929

Grazing strategies (% properties)

Element	2004	2010
Rotational grazing	52	80
Spelling	36	70
Continuous grazing	12	25
Time control grazing	4	20

Natural resource management

Estimated proportion of property burnt by wildfire (%)

Element	2004	2010
Burnt by wildfire	19	16

Producers noticing a build-up of native trees and shrubs (% properties)

Element	2004	2010
Build up noticed	36	94

Pest animals with a high impact (% properties)

Element	2004	2010
Pigs	52	60
Wild dogs	52	25
Wallabies	40	65

Business

Sources of labour (% properties)

Element	2004	2010
Word of mouth	64	85
Recruiting agencies	24	5

Use of benchmarks (% properties)

Element	2004	2010
Financial benchmarks	56	80
Natural resources benchmarks	40	80

Sources of finance (% properties)

Element	2004	2010
Major trading bank, NT branch	15	30
Major trading bank, interstate branch	5	20
Agribusiness	5	15
N/A	40	10

Issues affecting profitability (% properties)

Element	2004	2010
Market access	13	100
Cost of production	34	28
Government regulations and policies	17	38
Weeds	11	6

Priorities

Biggest hurdles in managing their enterprise (% properties)

Element	2004	2010
Marketing issues	Low	35
Roads/wet season access	40	35
Staff availability	52	20
Government regulations and policies	Low	15
Weeds	20	10
Cost of production	16	10