Department of **PRIMARY INDUSTRY AND RESOURCES** 

## Beyond the dry times Old Man Plains Field Day 2019



### PROGRAM

8:30am	Field day commences			
8:45am	Welcome Sarah Cook, Master of Ceremonies (MC)			
8:50am	Activity introduction Meg Humphrys, Pastoral Extension Officer			
9:00am	Introduction to the Department of Primary Industry and Resources Stuart Smith, Regional Director (Southern)			
9:10am	<b>Weathering the dry times</b> Alison Kain, Northern Australia Climate Program			
9:40am	<b>Planning for beyond the dry times</b> Ian McLean, Bush Agribusiness			
10:10am	<b>Panel discussion - talking business in dry times</b> Alison Kain, Ross Stanes, Ian McLean, Kieren McCosker and Chris Nott			
10:40am	Introduction to industry representatives			
10:50am	Morning tea			
11:20am	<b>The story of Old Man Plains in dry times</b> Chris Materne, Pastoral Production Officer			
11:40am	Mapping your natural resources Jason Hill, Director Land Assessment Branch			
11:45am	<b>Panel discussion - ask the researchers</b> Chris Materne, Jason Hill, Stuart Smith, Jocelyn Coventry and Kieren McCosker			
12:15pm	The wild dog project: the results for Central Australia Will Dobbie			
12:30pm	<b>Recent research on calf loss</b> Kieren McCosker, Senior Livestock Scientist			
12:45pm	Animal welfare in a changing world Christine Purdy, Meat and Livestock Australia			
1:15pm	Lunch			
2:15pm	<b>Panel discussion - animal welfare</b> Will Dobbie, Kieren McCosker, Christine Purdy and Peter Moloney			
2:45pm	Reflection and feedback session			
3:35pm	<b>Summary of the day</b> Chris Nott, Northern Territory Cattlemen's Association			
3:45pm	Afternoon nibbles and donated refreshments * option to accompany staff to view cattle at North Stuart Yards			
6:00pm	Field day concludes			

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### Introduction to Old Man Plains Research Station Pieter Conradie, Director Research Farms

In 2003, the Northern Territory Government approved the establishment of a research facility on part of the resumed Owen Springs Station. A naming competition was called and Bryan Gill came up with the name 'Old Man Plains' after a poem about Owen Springs from 1898. The establishment of a pastoral research, training and extension facility based in Central Australia had strong support from industry at the local and national level.

The area allocated to the Old Man Plains Research Station (OMP) is 522 square kilometres plus grazing rights to the 12 Mile Paddock giving a total area of 550 square kilometres. The approval was unfunded with an expectation that the facility would generate sufficient funds to cover operating costs, a target which has since been surpassed.

Over the past 15 years, OMP has been successfully developed to enable grazing systems and cattle production research projects to be undertaken. In 2003 much of the property was in land condition C or D due to a history of heavy utilisation compounded by insufficient infrastructure development such as water points and fencing.

Through active monitoring of pastures and the introduction of a sustainable stocking rate and more appropriate utilisation of pastures through strategic infrastructure development, the land condition has improved significantly with the majority of the land now in B condition although scars from the past still remain. The property sustains a breeding herd of 450 with 160 steers of approximately 30 months being turned off annually. Quality bulls are also bred on the property.

The Droughtmaster-based breeding herd on OMP is used for:

- demonstrating performance recording techniques
- the benefits of objective selection for genetic progress
- and best-practice cattle management for the pastoral industry in the arid region of Central Australia.

High priority breeding objectives for this herd include production of cattle that are adapted to the arid region and production of cattle that have the versatility to meet requirements for northern live export markets, interstate store markets, and trade-weight cattle in southern abattoirs. Reliable production norms for cattle production in the region were established over time and are being used extensively in reference material, economic, pasture utilisation and other modelling.

From 2011 a range of long term grazing strategies were implemented on OMP to demonstrate and evaluate the effect of various stocking rate management and spelling strategies on land condition and cattle production. A major challenge faced by producers in Central Australia is to improve land condition in a climate that is extremely variable and unpredictable, while maintaining production and maximising long term profitability. To date the department has been successfully testing this at OMP with the most noteworthy results showing that land condition has improved significantly over time enabling a production system where over a period of five years, steers have consistently achieved Meat Standards Australia targets irrespective of season.

OMP is extensively used for research, development, training and extension purposes. The extension value of OMP was proven during the Steer Challenge, a producer demonstration trial, which actively involved 25 per cent of producers in the region with over 300 visitors during the two years the trial was conducted. The testing and application of the latest precision pastoral technology was also a key part of this demonstration.

The importance of this research facility was first recognised by industry leaders, as well as the research fraternity, at the Northern Beef Research Update Conference (NBRUC) held in Darwin during August 2011. Since then the National Beef Research and Development Strategy Development Committee also identified OMP as a research station of national importance due to its locality in a unique environment and representative of a large part of Central Australia.

The OMP research facility is well positioned to assist producers from Central Australia to remain competitive at a time when there are many challenges as well as opportunities in a constantly changing economic, climatic and social environment.

## Old Man Plains Research Station Supporting pastoralists in Australia's arid region

Training	<ul> <li>This unique venue offers a neutral and relaxed learning environment to increase knowledge of the pastoral industry, including:</li> <li>Grazing Land Management (GLM) – using GLM grazing principles to improve land and cattle management.</li> </ul>
Demonstration	<ul> <li>Demonstrating to the pastoral industry a variety of management options, including:</li> <li>breeder herd efficiency - modelling herds for high fertility and weight gain</li> <li>remote management technologies - highlighting the practicality and cost effectiveness of emerging technologies</li> <li>soil conservation - sustainable development of road and fences showcasing cost-effective maintenance of infrastructure.</li> </ul>
Research	<ul> <li>Providing opportunities to investigate solutions to real challenges of pasture management and cattle production, including:</li> <li>carrying capacity – using the right number of cattle per square kilometre for quality pasture use</li> </ul>

- grazing systems trial alternate methods of grazing for cattle production to allow land recovery
- cattle production studies finding factors related to improved cattle fertility and weight gain.



## Old Man Plains activity and development timeline Chris Materne, Pastoral Production Officer

#### 2002:

Northern Territory Government (NTG) purchases Owen Springs, destocked.

**2003:** Management taken over by NTG.

#### 2004:

- Development begins with the fencing of Mulga Dam and Pine Gap paddocks and erosion control works along all roads and fences.
- Stocking commenced with Brahman X (134 cows) and Droughtmaster (46 cows and three bulls) cattle transferred from Douglas Daly Research Station to Pine Gap Paddock.
- 'GRASP pasture growth model' development project begins with site erection on OMP (2004-19).



#### 2005:

- Safe long-term carrying capacity (LTCC) calculated using grazing land management (GLM) principles.
- Droughtmaster becomes the dominant breed (97 cows) transferred to OMP from Victoria River Research Station.

#### 2006:

Development of 'Four paddock rotation' strategy based on 'Grazing for Profit' principles and funded by Natural Heritage Trust program (NHT). Droughtmaster cattle added - 80 cows in rotation and 30 cows in continuously grazed paddock (2006-10).

#### 2008:

Destocked due to dry year (excluding 130 cows in the four paddock rotation strategy).

#### 2010:

- Core paddock and watering point development completed.
- Safe long-term carrying capacity (LTCC) recalculated using GRASP pasture modelling and GLM principles.
- 'Quality Graze' grazing strategies implemented to test/demonstrate latest research recommendations into stocking rate, annual stocking rate variability and spelling (2011-19); Herd structure modified to cater for the adopted production system.

#### 2009:

- Post 'dry' re-stocking with Brahmans X cattle (141 cows) from Katherine Research Station.
- 'Breeding herd benchmarking' project commenced (2009-15) – Herd improvements based on objective data.
- First OMP Field Day 'Being in the grass business'; 'Environment Management Understanding (EMU)' run on OMP.
- Observant telemetry system installed across OMP; first remotely monitored Walk-over-weighing (WoW) system purchased.

#### 2018:

• 2018 steer pre-trucking feeding trial.

#### 2019:

- 2019 steer pre-trucking feeding trial.
- Fourth OMP Field Day 'Beyond the dry times'.

### Northern Australia Climate Program

### Alison Kain, Climate Mate for the Barkly Tableland

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The Climate Mate for East Kimberley and Victoria River District is Anne Marie Huey, who can be reached via annemarie.huey@usq.edu.au or by phone on (08) 9191 7069.

### **October - December climate summary for Central Australia**

- Chance of exceeding median rainfall is ~35-45 per cent. The new Bureau of Meteorology (BOM) forecasting model suggests a 53 per cent chance that rainfall will be in the lowest tercile (that's the lowest third of records) for Alice Springs.
- Historically, the forecast at this point of the year has been right 55-75 per cent of the time for the southern Alice Springs district but less in the northern ASP areas due to the influence of the tropical monsoon/wet season.
- Maximum and minimum temperatures are very likely to be above average.
- El Niño Southern Oscillation (ENSO) is currently neutral although there is talk of an El Niño Modoki or Central Pacific El Niño forming and that can reduce the likelihood of summer rainfall. Get in touch for a newsletter to read more about this.
- The Indian Ocean Dipole (IOD) exceeded positive thresholds at the end of May. A positive IOD means reduced likelihood of rain through central and southern Australia right through to November/December.

### What are the major climate drivers affecting Central Australia?

### ENSO (El Niño Southern Oscillation)

**El Niño** and **La Niña** are two phases of a natural cycle known as ENSO. They are measured by sea surface temperature (SST) and air pressure variations (SOI) across the tropical Pacific Ocean. The cycle can be between 2 and 7 years.

**El Niño** is defined by warmer sea temperatures in the eastern Pacific Ocean, cool oceans near Australia, and a negative SOI. Cool oceans don't generate as much convection as warm oceans and that's why El Niño often means less rainfall during winter and spring across northern and eastern Australia. Other effects include warmer temperatures, later wet season onset and less cyclones.

**La Niña** conditions occur when the warm oceans are pushed towards Australia's north and the SOI is positive, creating atmospheric conditions that can draw the moisture from the warm ocean and lead to an increased chance of rainfall. It has most impact between winter and early summer.



**Figure 1:** Sea surface temperatures and atmospheric condition typical of El Niño

**Figure 2:** Sea surface temperatures and atmospheric condition typical of La Niña

### Indian Ocean Dipole (IOD)

Temperatures in the Indian Ocean are indicators of another significant climate driver, the Indian Ocean Dipole (IOD). When the SST are warmer than average in the western Indian Ocean and cooler than average near Australia, that is a positive IOD. This is driving the dry conditions we are experiencing during winter/spring 2019.

When temperatures are cooler in the west and warmer in the east this is indicative of a negative IOD. A negative IOD can mean more rain in the lead up to the wet season (September to November). The IOD decays around December and doesn't affect summer rainfall.

**HOT TIP:** Check out this page for the current status and more info on ENSO and the IOD http://www.bom.gov.au/climate/enso/



Indian Ocean Dipole (IOD): Positive phase

@ Commonwealth of Australia 2013.

**Figure 3:** Sea surface temperatures and atmospheric conditions typical of a positive IOD. This is the main driver influencing Australia winter/spring 2019.



eastward across the equatorial regions of the globe during the summer months. It has most impact on Australia between October to April and can influence monsoon breaks and bursts.

Figure 4 shows an MJO forecast for February 2019. When looking at the MJO plot, the triangular type sections represent the eight different phases. The phases are geographical areas. Phases 4 and 5, the Maritime Continent, refer to the area immediately adjacent and north of Australia. Between October and December, central Australia is mostly affected by the MJO when it is active in phases 4 and 6. (This varies a bit through the year but it is generally 4, 5 or 6 and you can look it up on the BOM website). The green line is the previous month, the blue line is the current month. Each day is marked with a dot and the date. When the line is outside the inner circle, the signal is strong and there is a greater likelihood of rainfall. The yellow lines show all the modeled forecasts – what they think might happen in the next two weeks.



Figure 4: MJO forecast for February 2019

In the lead up to the monsoon, the MJO can enhance tropical weather and help kick off cyclones. It doesn't directly link to central Australia but it can be a source of moisture if local weather patterns can draw it down from the north.

### HOT TIP:

For more info on the MJO, check out this link, http://www.bom.gov.au/climate/mjo/#tabs=MJO-phase For an MJO forecast; https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/foregfs.shtml

### How's the season? How often? How likely? What trend?

The CliMate App provides climate analysis for decision makers and it helps answer these questions and more. It uses data from BOM and Queensland's Silo Database. Many stations provide regular data to BOM and it is used in this tool. If your station isn't there, you will probably find one close by. You can download it for free on your phone, computer and tablet https://climateapp.net.au/

### **CliMate homework**

### Australian CliMate

Climate analysis for decision makers



- 1. Download the CliMate App and select your station or one nearby.
- 2. Look at How's the Season? Change the period 'for years' from 1900 to the decade you turned 20.
- 3. Look at How Likely? Choose 'seasonal rainfall' or temperature. Select Less than Tercile 1 (lowest third of records). Choose your time period (e.g. October to December). How good are the chances?
- 4. Open the links for the El Niño Watch and the IOD update. Bookmark them. Can you describe the link between the status of these Climate Drivers and the seasonal forecast for October to November?
- 5. Open the link for the MJO forecast. Bookmark this page. Does the forecast suggest the MJO will be moving strongly into phases 4 or 6 (these phases can lead to an increased chance of rain during the months of Oct to Dec) in the next fortnight? As a decision maker for your business, when could this information be useful?
- 6. What do you need to do to get your data incorporated into the BOM database? This will make your analyses more accurate and useful. For more information, contact Alison Kain (contact details on page 8).



### **Old Man Plains Field Day**

### Planning for beyond the dry times



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If we were to try and find an upside to drought, perhaps the only one is that it can provide an opportunity to rebuild the herd and the business. Whilst there is a lot that can't be done until there is a break in the season, there is a lot of planning for drought recovery that can be done before hand.

Planning around what will make the business and environment recover as quickly as possible from this drought, and prepare for the next one. Some things to consider in your planning are:

- what will maximise the profitability of your business in the long term?
- what is the long-term carrying capacity of your station?
- what is the best herd profile for you?

There are also many other factors unique to each business to consider, but these are some general ones which will apply to most.

## What will maximise the profitability of your business in the long term?

Rain may be an obvious answer but to best answer this question, we need to look at what within management control, separates the top performing businesses in the long-term through all seasonal conditions.

When we look at long business performance, there are some consistent factors which separate the top performing beef businesses, they:

### • Have higher income (per animal unit) through being more productive (per animal unit)

Operating scale (number of AE run) is important for a business. However, for most businesses focussing on performance per animal rather than number of animals will do more for their long-term performance. A key driver of per animal performance is kilograms of beef produced per animal unit per year. This is effectively a measure at how efficient your herd, and your management is at converting grass into beef, which is the main income driver for a herd. Price received is secondary. Reproductive rate, sale weight and mortality rate are the key productivity drivers, and account for 80 per cent of the difference between herds.

#### • Have lower enterprise expenses (per animal unit)

The better performers spend less on their herd (supplementation, animal health, fodder, selling costs etc.) than the average, but have higher productivity. This means that their expenditure is better targeted, returning more than a dollar for every dollar spent, rather than them simply spending less.

#### • Have better labour efficiency

Labour efficiency, how many AE every full time equivalent of labour used in the business manages, is a key cost driver in pastoral business. For many businesses, improving labour efficiency is the most effective way to reduce costs. Every labour unit (inc books and cooks) should be managing between 1,500 and 2,500 AE (600-1,000 breeders), if is less than this then you will likely have an uncompetitive cost base.

#### • Have more operating scale

Scale is important, as detailed above, and the top performers often have more scale. But scale alone isn't enough, the top performers also have good operating efficiency; high herd productivity, low enterprise expenses and good labour efficiency.

I may not be able to address all of the above points right now, asking the question in your planning of how you can address each of them during the drought recovery is important, because addressing them will improve the long-term performance of your business.

## What is the long-term carrying capacity of your station?

How many cattle can you safely run in the long-term without degrading the natural resource base? This is an essential piece of information for an extensive grazing business, for long term planning and short term management.

The grazing trial data from OMP demonstrates that animal performance can be achieved in Central Australia when the stocking rate is matched to the long term carrying capacity. There is also evidence that stations who are able to maintain their numbers more consistently over time, through appropriate stocking rates, achieve better long term performance than those whose numbers fluctuate considerably.

Knowing your land condition and how effectively rainfall is converted to dry matter for that land type, is also an essential bit of information and the OMP grazing trial again shows the importance of land condition.

### What is the best herd profile for you?

This is not a simple question. The answer is the profile which lets you grow all your turnoff out to their target market weight whilst stocking within your carrying capacity. The next question is then what is your target market weight? This will be business specific, but should be as heavy as your country and market specs allow. Cattle that are growing convert grass into beef more effectively than breeding cattle, cost less to run, and provide a discretionary buffer which can be sold down to reduce grazing load in dry times. For Central Australia this, I think, equates to a choice between heavy feeders or bullocks for slaughter. Your long-term strategy should not be to sell lighter than this, as it is not conducive to long term profitability.

Another important consideration is what your core breeder numbers are, that is what number of breeders should you aim to retain through a drought to shorten the length of drought recovery. The answer to this will be unique to every station, and depend on its long-term carrying capacity, herd fertility, herd mortality, turnoff weights and turnoff ages.

To explore this more I have done some simple modelling of a Central Australian Station. I've assumed a long term carrying capacity of 5,000AE and modelled two herds:

- a low productivity herd with just over 60 per cent reproductive rate and selling steers as heavy feeders and,
- a high productivity herd, with a 70 per cent reproductive rate and selling bullocks to slaughter.

Herd Productivity	Low	High
Annual average (AE)	5,000	5,000
Breeding females	2,220	1,760
Kg beef/AE	99	103
Gross profit (income)/AE	\$208	\$220
Average sale weight (kg LW)	450	507

The summary 'steady state' data for these herds are;

Unsurprisingly, the more productive herd requires less breeders and generates more income, it would also cost less to run, which isn't accounted for here.

Another benefit of the higher productivity herd is that, in dry times breeder numbers will not need to be cut into as soon as the lower productivity herd as there are more growing animals to sell. The more productive herd will also rebuild quicker following the drought.

To do this I've modelled both herds getting sold down to 1,000 or 1,500 breeders and their recovery over a 10-year period. From 1,000 breeders, the low productivity herd does not have its breeder numbers and herd profile re-established by year 10, by which time it is likely to be in the next drought. The high productivity herd has recovered its breeder numbers and herd profile by year 8, which also puts it into the next drought.

From 1,500 breeders the higher productivity herd has recovered its breeder numbers and herd profile in five years, and the low productivity in eight. It is not just the herd recovery time, it is the cashflow during the period which is critical also. It is inevitable that cashflow will be constrained during herd rebuild, this is where ensuring proceeds from the herd sell down are quarantined for recovery is important. Over the 10year period the high productivity scenario generated \$900,000 more revenue than the low productivity under the 1,000-breeder scenario and \$1,400,000 more under the 1,500-breeder scenario.

Like all modelling exercises, this is theoretical and doesn't directly apply to anyone's station. However, it highlights the importance of herd productivity, and what impact female numbers at the end of the drought has on herd recovery.

### **Summary**

In summary planning for drought recovery can occur before the season breaks and will help you hit the ground running when it does.

Looking at what factors separate the top performers from the rest of the pack provides valuable insights into what you can focus on to maximise the performance of your business.

A focus on maximising herd productivity, and having a herd profile which makes best use of your carrying capacity in the good times and gives you options during drought times and in drought recovery will maximise your long-term performance. Also ensuring every discretionary dollar spent on the herd generates more than a dollar in revenue and that labour is efficiently used.

## Old Man Plains Research Station - 2002 to 2019 Chris Materne, Pastoral Production Officer

The Old Man Plains Research Station (OMP) has experienced considerable change since its purchase by the Northern Territory Government in 2002. The property came with minimal infrastructure and fair to poor land condition, features that are typical of many properties in Central Australia. However it also came with no cattle or budget.

Through the adoption, trialling, adaptation and demonstration of research recommendations, OMP has developed into a unique industry asset ready for research extension and training, showing a high degree of resilience to climate variability by consistently producing premium beef. These outcomes have largely been made possible through improved land condition and the refining of a production system that works with Central Australia's extremely variable environment.

### Steps taken to get OMP where it is today

Every property is different and there is a no 'one solution fits all'. This paper outlines the steps taken to make OMP more resilient to climate variability.

- 1. Goal setting.
- 2. Safe long-term carrying capacity (LTCC) and land type productive capability understanding.
- 3. Water and paddock development to improve reliable watered area and control grazing.
- 4. Herd improvement Old Man I.
- 5. Grazing strategy implementation to facilitate improved land condition and optimise beef production.
- 6. Production system adopted: breeding and finishing steers for premium beef.



Above: The images above demonstrate the infrastructure development at Old Man Plains from 2002 (left) to 2015. (right).



Above: These images, from similar locations on OMP, show the land condition improvement on the calcareous shrubby grasslands in (left) 1987 and (right) 2015 following similar seasons.

### Step 1: Goal setting

- Develop a facility to enable beef production research, demonstration and training.
- Demonstrate the consistent production of sustainable beef through variable seasons.
- Increase the resilience to climate variability through improved land condition.

## Step 2: Determining safe LTCC and annual stocking rates

Successfully matching animal numbers to feed availability both in the short and long-term has the greatest influence on land condition and animal productivity. Land condition directly impacts on productivity by affecting how much pasture grows by encouraging the establishment of the preferred palatable perennial grasses and small shrubs (e.g. saltbush). The increased cover protects the soil from water and wind erosion. The result is less water lost down creeks and more water kept on station to grow pasture. Annual stocking rate management is the biggest way pastoralists can influence nutrition in any given year.

On OMP land type LTCC estimates were calculated prior to development to identify the areas of greatest returns if developed. Once a paddock was developed and its watered area known, the paddocks LTCC were recalculated to ensure stock numbers would match feed availability.

The safe LTCC for OMP was determined using recommended grazing land management (GLM) principles and the development of localised pasture growth models that use local climate data derived from the Bureau of Meteorology (BoM). For variable stocking strategies, annual stocking rates that matched seasonal conditions were determined through forage budgeting and AussieGRASS modelled outputs.

### Step 3: Infrastructure development to increase watered area (area within 5km of water) and to control grazing

Fencing is an option to control where grazing occurs and at what time of the year. OMP has generally been fenced to land type to protect the highly productive, but fragile, calcareous shrubby grasslands at the base of the ranges in the north that were in poor condition. The development of reliable watering points on OMP was essential for research purposes. By increasing the watered area (area within 5km of a water point) we directly increased the number of stock that could be safely carried.

All development included the implementation of soil erosion control measures as part of any new infrastructure construction and along all existing infrastructure to reduce run-off and maintenance requirements.

On OMP the implementation of a four paddock rotation system through NHT funding in 2004-05 provided a significant development opportunity for the research station to develop four paddocks around Number One dam and the piping of water from Crow's Nest bore. The incorporation of rest into the system has aided in land condition improvement. The separation of the predominantly oatgrass pastures from the predominantly mulga pastures enabled production to be gained from the preferably grazed calcareous country while resting it over the summer growing period to allow for the pasture to regenerate and establish.

### Step 4: Herd improvement

Record keeping has enabled the Droughtmaster herd to be improved through better selection for fertility, temperament and horn status. The adoption of a controlled mating system has reduced the variability in calves produced for use in research, and inadvertently provided opportunities to rest bulls, while allowing for the turn-off of unproductive breeders in better body condition score (BCS) without the need to spay.

### Step 5: Grazing strategy implementation to optimise beef production to allow for improved land condition.

To test and demonstrate the effect of the latest research recommendations for grazing land management on optimising animal production and improving land condition, different combinations of grazing strategies were applied to a further seven paddocks on OMP in 2010. In 2015 an additional paddock (North Stuart) was stocked 25 per cent heavier than recommended to further test the GLM and LTCC methodology. These strategies were applied over the majority of OMP following clear herd and stocking rate rules. Step 6: Adoption of production system, setting/refining a production goal and herd profile adjustment to cater for the system within the restrictions of the facilities

## Goal: Breeding and steer finishing production system for premium beef markets

Trucking of cattle is a major expense to any cattle enterprise. Reducing the need to truck cattle reduces costs. Adopting a production system designed to maximise kilograms of beef from fewer animals maximises a businesses' profitability. To test and measure the effect of the different grazing strategies on animal production, steers were placed and monitored in each system. This provided the opportunity to adopt a steer breeding and finishing production system for premium beef markets, a system the Central Australian environment is well position for. Discussion with the local industry assisted in a production target to be set for these steers to reach 550kg of at 30 months of age, before being trucked directly to an abattoir and meat standards Australia (MSA) grading that provided objective carcase measurements.

To include the finishing of steers on OMP breeder numbers were adjusted to ensure the desired number of steers were bred and room was available to carry them through to desired market specifications.

### Results

Alice Springs rainfall occasionally has very large rainfall events. Less than three out of 10 years had rainfall higher than average.



Above: Alice Springs financial year rainfall courtesy of the Bureau of Meteorology (Alice Springs Airport). Darker shading indicates the period OMP was under NTG management and illustrates the extremely variable environment in Central Australia.

### Land condition change

Land condition improvement is the big story behind OMP and was the catalyst behind the improved climate resilience, and reduced management stress. Land condition change over the initial seven years under new management was slow. The exceptional 2010-11 season, in which eight years of pasture growth occurred in one season, resulted in a major shift in land condition, especially in the highly productive calcareous shrubby grasslands in the north, from C/D to B/C. An increase in Buffel grass has occurred at the same time.



Left: Crow's Nest Paddock in 2010 (top) pre-major land condition change and 2018 (bottom) post major land condition change.



Above: Number 1 paddock at OMP, in 2009 (left) pre major land condition change and 2018 (right) post major land condition change.

## Pasture growth before and after land condition recovery on Old Man Plains

Following the 2010-11 season, land condition across OMP saw major improvements. The comparison of pasture growth at a site in the productive but highly fragile calcareous shrubby grasslands on OMP between similar seasons either side of this major shift in land conditions highlights its importance to business productivity and profitability. Before land condition improved, the average measured pasture growth between 2006 and 2009 was 346kg per hectare. The average pasture growth for similar seasons post land condition change in 2010-11 (2014-16 and 2019) was 925kg per hectare.



Above: Alice Springs financial year rainfall represented as percentile rainfall. Grey and brown bars indicate similar average seasons while the red bars indicate similar well below average seasons either side of the major land condition shift in 2010-11.



Measured available forage on the calcareous shrubby grasslands. Grey and brown bars indicate similar average seasons while the red bars indicate similar well below average seasons either side of the major land condition shift in 2010-11.



### Herd performance

Data recording has enabled herd performance benchmarking that has informed decision making such as the age of steer turn-off to better hit abattoir grids to maximise price per kilogram of beef, and identifying areas for genetic improvement. Steers produced for a premium beef market indicate that the adopted production systems on OMP performed well in the variable and unpredictable climate in central Australia. They capitalised on the high quality Central Australian pastures (even when cured), enabling consistent growth year to year despite variable seasons. The steers also put on the required fat from single growth events to achieve Meat Standards Australia grading.

### Table 1: Breeder Performance (2010-2015)

	2009	2010	2011	2012	2013	2014	2015	Ave.
Ave. cow weight at weaning (kg)		529	545	465	518	545	567	528
Ave. calf weaning weight (kg)		248	181	176	176	180	198	193
Kg calf weaned per cow mated		172	124	109	137	154	150	141
Pregnancy % of cow mated	80%	75%	65%	94%	94%	85%		82%
Branding % of cows mated		69%	70%	62%	81%	88%	76%	74%
Weaning % of cows mated		69%	69%	62%	78%	85%	76%	73%
Calf loss % (pregnancy to weaning)		13%	9%	5%	18%	10%	11%	11%
Calf loss % (branding to weaning)		0%	2%	0%	3%	3%	0%	1%

#### Table 2: Steers Performance (2010-2019), brackets indicates production targets.

	2012	2013	2014	2015	2016	2017	2018	2019	Ave.
Ave. Live Weight at 28-30	522	571	594	596	585	594	565	563	574
months of age (kg) [550kg]									
Ave. daily growth rate post	0.40	0.53	0.55	0.57	0.53	0.58	0.49	0.47	0.52
weaning [0.5kg/day]									
Ave. p8 fat depth (mm)	12.7	11.0	9.2	11.1	10.6	11.1	9.3	9.7	10.6
[>4mm]									
MSA compliance (%)	53.6	20.8	21.7	33.0	84	61	83	84	55.1
Ave. MSA index	50.0	50.56	55.62	56.30	55.3	56.82	56.03	56.03	54.59
	2				5				
Reason for high non-		Meat	Meat	Meat					
compliance for MSA		pH &	pH &	Colour					
THE WEAR THAT PRESENT AND PROVIDED AND ADDRESS OF THE ADDRESS ADDR		Meat	Meat						
		Colour	Colour						

## Land resource mapping in the southern region

### An understanding of our natural resources is critical to economic development in the Northern Territory (NT)

Jason Hill, Land Assessment Branch, Department of Environment and Natural Resources (DENR)

### Phone: (08) 8999 4443

Email: jasonv.hill@nt.gov.au

### Pastoral land resources mapping

- The NT has some of the best land resource information in Australia across the arid zone.
- Excellent baseline information for land management including calculating areas of pastoral land types.
- First point of call for potential development opportunities.
- A range of new and consistent mapping products has been developed across the southern region over the past five years.

### Land and Water Program 2014-2018

- Land resource mapping with an overlapping sustainable water resource is the key to identifying irrigated agricultural opportunities.
- With the injection of significant NT Government funding in 2014, DENR embarked on an accelerated regional land and water assessment program to identify opportunities for irrigated agriculture.
- Studies in the southern region included the Western Davenports, Orange Creek and soil studies in the Ti-Tree area.

### Mapping the Future 2018-2022

- An accelerated integrated natural resource assessment program expanding and building on existing information.
- Potential further investigations in the southern region.



Above: (left) Soil coring at Orange Creek and (right) water resource drilling operations at Ali Curung.



## Wild dog management study - preliminary results

A joint project by Department of Primary Industry and Resources (DPIR), and the Department of Environment and Natural Resources (DENR) June 2016-June 2019.

### Information collated by Will Dobbie.

We all want to mitigate the negative impacts of wild dogs upon cattle. Although most producers rely on 1080 baiting to help protect young cattle, there are a range of different strategies used. Is there a clear approach for effective management?

A joint-project between DENR and DPIR collected all available information including vital input from Northern Territory (NT) producers on current practice. Producers contributed to:

- landholder survey various `management strategies' and `estimated calf-loss', and
- dog-bite records `prevalence' of cleanskin cattle recorded at muster with `dog damage'.

Results were variable. We found no clear relationship between estimated calf loss and any of the following:

- 1080 baiting levels
- expenditure on wild dog control
- time spent on wild dog control
- or co-ordinated baiting with neighbours.

Some properties apply similar management of wild dogs but get very different results. That is, neither low intensity nor high intensity baiting guaranteed a good result. This suggests that localised issues were at play. The variable effectiveness of baiting has previously been reported from experimental studies in northern Australia. Herd characteristics and management, plus environmental factors are broad factors thought to influence baiting success. More specific issues include:

- seasonal conditions (very dry or very wet)
- weak cows
- age-class of cows (and their anti-predatory behaviour)
- and recolonisation of wild dogs from surrounding areas after baiting.

In comparing past and present practices (i.e. bait-injection by NTG officers versus baiting by landholders), there has been a sizeable increase in the number of 1080 baits used NT-wide, and more properties baiting each year, but no overall change in producer-estimated calf loss.

We intend to present detailed findings to pastoral industry representative groups, and use feedback to help finalise any recommendations that can be made. In future we would encourage all 1080-users to send in their baiting records when requested so that all 1080 use can be accounted for.



## Wild dog management study

### Summary of landholder survey

Question	Top three answers from producers				
Extent of the wild dog problem	47%	34%	18%		
	Major	Minor	Serious		
Source of the wild dog problem	51% Neighbouring unbaited lands	49% On-station	38% Nearby communities		
Dingoes or crossbreds	64%	27%	5%		
	Mostly dingoes	Mostly crossbreds	Both		
Trend towards more crossbred dogs	43%	21%	13%		
	No noticeable trend	Moderate trend	Major trend		
Seasonal influence on impacts	47%	15%	14%		
	All seasons	Good and bad	Average and bad		
Critical times of the year	45% When calves are dropping	34% When trapping cattle in yards	25% When mustering		
Herd management to curb impacts	57%	26%	9% Coacher cows		
	No	Supplement feed	with weaners		
Wild dog control methods used	94%	81%	29%		
	Shooting	1080 baiting	Trapping		
Reasoning of those who don't use 1080	40%	33%	33%		
	Use other methods	Avoid poisons	Not necessary		
Coordinated baiting with neighbours	42%	38% with	20%		
	No	some neighbours	with all neighbours		
Whole-property or targeted baiting	50%	48%	8% Whole then		
	Whole property	Targeted	targeted		
Baiting done by a commercial operator	89% No	<b>11%</b> Yes			
Bait-type used	55%	35%	10%		
	Wet baits only	Both wet and dry	Dry baits only		
Estimated bait loss by non-target animals	58%	38%	5%		
	Few baits lost	Don't know	Half baits lost		
Effectiveness of manufactured dry baits	24%	16%	16%		
	Effective	No effect	Ineffective		
Effectiveness of wild dog baiting programs	35%	29%	28%		
	Effective	Highly effective	No apparent effect		
How does present practice compare with past practice (when NTG did the bait injection)?	43% Said `Fewer killed & injured calves'	38% Said `Far fewer killed & injured calves'	7% Said `Don't know'		
Overall estimated calf loss to wild dogs		3.8%			
Regional estimates of calf loss to wild	6%	4.1%	3%		
dogs	In `North'	On `Downs'	In `South'		
Annual expenditure on wild dog control	Approx. \$4,100				
per property	Ranging from \$0 to >\$15,000				
Time spent of wild dog control each year	33%	33%	15%		
per property (Ranged from 0 - >30 days)	0-5 days	6-10 days	11-15 days		
Had to increase effort to control `roos	83%	<b>17%</b>			
and pigs in past 10 years	No	Yes			

## Calf loss

### Kieren McCosker, Senior Livestock Scientist

### What is calf loss/wastage?

- Failure of a cow to wean a calf following confirmed pregnancy.
- Most loss is of the foetus or calf only, however some loss occurs when both the cow and foetus/ calf die.

### How much calf wastage is happening?

The achievable level for calf loss in the Northern Downs country type is about 5 per cent (11 per cent in first lactation cows).



## When does abortion and calf mortality occur?

- The first days around calving are where most losses occur.
- Ensuring cow condition is at least score three of five at calving will limit losses.
- Good nutrition is the key.



### What causes calf loss?

#### What causes calf loss?



### Why is undernutrition such a problem?

- A typical newborn needs at least two and a half litres per day to survive. At 40 degrees celcius, they will need as much as five litres per day.
- Poorly-fed cows will have trouble producing this and may produce calves that struggle to suckle.
- Newborns survive one to three days with little or no milk
- Little colostrum on day one leaves a calf highly susceptible to infections
- Undernutrition also affects the incidence of dystocia in two-year-old calvers

### How can the problem be managed?

Manage the feed base	Feed and water quality, quantity and access for cows, especially leading into calving is critical
Manage lactation	Good mating, calving and weaning management keeps condition on cows
Manage health and stress	Control the major diseases, especially pesti and vibrio
Manage breeding	Cull cows with defects causing calf loss

- Reducing calf wastage to achievable levels may be complex, require professional advice and take several years.
- A multi-faceted approach is usually required as there is rarely one cause.

### Future research

Virtually no controlled research has been conducted to test management targeted at calf wastage, other than for disease.

Industry consultation has concluded that intervention research is of highest priority, especially:

- enhancing mothering
- phosphorus supplements
- reduced paddock size
- improved calf husbandry
- above-maintenance pregnant yearling nutrition
- predator control
- infectious disease control

### Conclusions

- Calf wastage is a huge industry problem causing substantial loss of production and net business income.
- Achievable calf wastage is five per cent in the

Northern Downs, but 25 per cent of situations experience 15 per cent or more; 19 per cent in first lactation cows).

- The biggest cause of loss is undernutrition that may affect colostrum delivery to newborns.
- Managing calf loss usually requires a multifaceted approach as rarely is there just one cause
- Median cow mortality in the Northern Downs is 6.8 per cent, achievable is 3.5 per cent.

### For further information

Contact Kieren McCosker on 0447 828 315 or email kieren.mccosker@nt.gov.au

For further information on the CashCow results, visit the Future Beef website: https://futurebeef.com.au/ projects/northern-australian-beef-fertility-projectcashcow/

For further information on calf wastage, visit the Future Beef webpage on 'Calf Alive symposium presentations': https://futurebeef. com.au/knowledge-centre/calf-alive-symposiumpresentations/



## **Old Man Plains Field Day**

## Animal wellbeing for the future



### Christine Purdy

Project Manager - Animal Health, Welfare and Biosecurity Meat and Livestock Australia **Email:** cpurdy@mla.com.au

### Adapting to future markets

### Traditional practices

The care and management of animals under modern production systems has evolved over hundreds of years. Most traditional animal husbandry practices were developed as a means for protecting animals whilst also improving productivity. However more and more, these traditional methods are being called into question.

### Changing community attitudes

We know that 10 per cent of people rate animal welfare as the primary reason to stop eating meat (up from 2 per cent in 2010) and that animal welfare is amongst the top three considerations for consumers when making buying decisions. We hear more and more about the negative opinions of advocacy groups and understand the potential impact that opinion leaders can have through social media.

### Why are community attitudes so important?

We also know that community opinions can impact consumer behavior and have the potential to ultimately influence how producers manage their animals. It's for this reason that we must do all we can to bridge the gap between community knowledge and attitudes, and producer practices and behaviour.

### Taking up the challenge

## Build capacity to improve standards of wellbeing

It's impossible to truly meet our responsibility to look after the animals in our care without

considering both animal health and welfare. Health determines welfare and welfare determines health and together they represent animal wellbeing. So, to build capacity to achieve improved animal wellbeing we must improve our ability to prevent, diagnose and treat disease as well as to refine and replace aversive husbandries and reduce mortality and suffering.

### Create a mechanism for assessing wellbeing

In order for producers to gauge how well they are performing in terms of the wellbeing of the animals in their care, decide what improvements need to be make and then, once positive change is achieved, determine what benefits have been derived, it must be possible to measure it. Traditionally this has only been possible to achieve indirectly but we are fast moving to a time where it will be possible to do this by collecting data directly from the animal itself.

### Tell the wellbeing story

Producers must then be able to use these assessments to tell the wellbeing story of their animals in order to maintain the support of the community. However, this is not simple and for it to be effective we need to understand how best to communicate the message. Significant investment has thus been made to identify and develop education and communication strategies for this purpose. Markets will also work to create systems and tools that will support this messaging through quality assurance systems, certification, branding and labelling which is likely to ultimately provide access to premium domestic and international markets.

### Capacity for change

### Research and development AH

Current investment in animal health R&D is targeted towards developing new and better ways to prevent disease in the form of things such as vaccines for external parasites. Newly developed digital and remote technologies will soon provide us with the capacity to detect animals at risk and then separate and contain them to allow for early intervention. Pen-side tests and decision tools will soon be available to help determine the most appropriate way to manage herd health.

### Research and development AW

Investment in animal welfare R&D is being done according to a two speed approach using short and long term strategies and as such practice change is likely to occur in this way as well. Most immediately we must focus on improving our ability to better manage the pain caused by existing husbandry practices but in the long term we must concentrate on coming up with new, more humane methods to replace older, less acceptable practices.

### **Extension** and adoption

While markets, proof of benefits and risk assessment may motivate producers to improve animal wellbeing practices and changing attitudes regarding what is acceptable reduce the barriers, the need to build awareness and capacity remains. In a world full of information it is often hard to decide what's most important to know and where to get that information. Our ultimate aim is to provide easy to access, opt in/out resources that cater for all levels of engagement. From simple awareness of new techniques/technologies, standards and guidelines, best practice and legislation to more advanced training for those wanting to undertake more significant change.

### Download 'Is it fit to load' from the Meat Livestock Australia website.





In August, leading producers and researchers from the beef industry met in Brisbane for the Northern Australian Beef Research Council (NABRC) 2019 Conference.

Meg Humphrys asked some of the producers for a hot tip they would give producers that are in dry times and coming out of it. This is what they said.

"Always use sustainable stocking rates to preserve feed for a down turn in the seasonal conditions."

### **Ross Peatling**

Past manager of Alexandria Station on the Barkly for 20 years and winner of the 2019 NABRC Producer Medal. "Profit proof your business, drought is inevitable – plan for it"

### Geoff Murrell

General Manager of Paraway Pastoral Company. Geoff managed Helen Springs Station (north of Tennant Creek) for eight years.

"Have your country ready to receive the rain so you can get maximum response [when it rains]."

"Adjustment is an alternative option, an opportunity because at least you don't have to borrow money, any profit you make is yours."

### **Michael Lyons**

Owner-Manager of Wambiana Station in Queensland. His family has been on Wambiana for four generations. Michael and his wife have diversified their business and run on-farm tourism and education programs. Wambiana is also home of Northern Australia's longest grazing trail.

Details can be found at the Future Beef website: https://futurebeef.com.au/projects/wambiana-grazing-trial/

"We can only manage what we have, resilience is not about bouncing back, it's about bouncing forward. Keeping the rangelands in good condition is King to long term profitability. It's about profit proofing our business!"

### Ben McGlynn

Manager of Rocklands Station, Paraway Pastoral Company. Ben was the winner of the 2019 NABRC Young Achiever medal. He sits in the BRAC and NABRC.

## Industry representatives

### and what they can do for you!

### Samual Hill

**Department of Trade Business and Innovation** Alice Springs

Small Business Champion

I facilitate the Smarter Business Solutions program in Alice Springs and the Barkly.

The Smarter Business Solutions program is designed to help NT business owners reduce their day to day operating costs. Free advice and grants to adopt efficient, innovative technologies and best practices that will reduce their energy, water, waste and material costs.

### **Efficiency grants**

Grants up to \$20,000 for eligible efficiency improvements (Solar bores, lighting, cooling, refrigeration upgrades)

### **Renewable grants**

Grants up to \$20,000 for eligible renewable energy systems (Solar PV)

### Amy Simpson

### Department of Trade Business and Innovation

### Alice Springs

I am a Project Officer for the Department of Trade Business and Innovation – Business Innovation Unit. My role is to support the development and implementation of the Business Innovation Plan to increase the sustainability, capability and competitiveness of businesses and priority industry sectors. We have a range of different programs available to support business innovation in the Territory. Innovative ideas may be an outcome of the dry conditions to improving resilience in pastoral businesses.

### Lloyd Wright

Rural Financial Counsellor Rural Business Support Email: I.wright@ruralbusinesssupport.org.au Web: www.ruralbusinesssupport.org.au Phone: 1800 836 211 Mobile: 0428 849 950

Address: 6 Kay Ave, Berri, SA 5343

We provide a visiting service to the NT from SA – and a very strong reason why a visiting service has been chosen – rather than using a local NT person based in the NT – is to preserve confidentiality. It is very clear that NT producers value their confidentiality greatly, and would have no confidence in a NT based service. Downside is our timing of visits is generally not regular. We schedule our visits more to try and coincide with an event – like a field day – rather than to a set timetable. My upcoming Darwin/Katherine visit 8 to 12 October is based around Agribusiness Day as part of October Business month.

### Craig Turner

Business Development Manager Queensland/Northern Territory **Regional Investment Cooperation Mobile:** 0466 515 307 **Email:** Craig.turner@ric.gov.au **Web:** ric.gov.au

Craig attended a Northern Territory Cattlemen's Association meeting last month and can assist with directing people to drought loans.

### **Benjamin Quilliam**

Bush Chaplain Frontier Services and the Uniting Church Northern Synod

Mobile: 0400 562 127

Satphone: 0405 495 433

**Address:** Uniting Church Op Shop building, Todd Mall, Alice Springs

Mail: PO Box 6, Alice Springs, NT 0871

Hi. I'm Benj, the Bush Chaplain with Frontier Services. You've probably seen me around the place but we may not have spoken yet.

As a Chaplain I am here for people's spiritual, emotional, mental and even physical **Care**. That means I can get involved in things as diverse as weddings and funerals, attending traumatic incidents, running mental health awareness events, advocating for the issues of people in the bush and lending a hand with whatever job needs doing.

Sometimes it's good to just have someone safe to talk through what's on your mind. If you see a need but don't have the resources or capacity to do much about it I'd love to hear from you. I am also able to help tee up groups of skilled volunteers from around Australia to help with individual or community projects through Outback Links.

Please see the brochure or look us up online. If I haven't met you yet I hope to see you soon.

### Shane Earls

Manager Vocational Education and Training Projects -South

Industry Training Programs

### **Department of Education**

Address: 1st Floor | Alice Plaza | Todd Mall | Alice Springs

Mail: GPO Box 1420 | Alice Springs | NT 0870

Phone: (08) 8951 1691

Mobile: 0419 926 821

### Email: shane.earls@nt.gov.au

Shane helps organise VET training programs to upskill young people to work on cattle stations.

### Frank Peacocke

AAPI Certified Practising Valuer Director Herron Todd White Phone: 08 89414833 Mobile: 0439 950997 Email: frank.peacocke@htw.com.au Address: Building 1C, Suite C105, 19 Kitchener Drive, Darwin, NT, 0800 Mail: GPO Box 4247, Darwin, NT, 0801

## Northern Territory Government contacts

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Meg Humphrys Pastoral Extension Officer Phone: (08) 8951 8144 **Chris Materne** Pastoral Extension Officer Phone: (08) 8951 8135

**Greg Crawford** Regional Livestock Biosecurity Officer Phone: (08) 8951 8125 Mobile: 0401 118 125

**Peter Saville** Regional Veterinary Officer Phone: (08) 8951 8181

**Peter Bidgood** Plant Biosecurity Officer Phone: (08) 8951 8166

### **Department of Environment and Natural Resources**

### **Geraldine Lee**

Director Pastoral Lease Administration Board Phone: (08) 8999 4474

John Gaynor DENR Director, Southern Region Phone: (08) 8951 9219

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**Cameron Wallace** Senior Rangelands Monitoring Officer Phone: (08) 89519263

**Debbie Mitchell** Rangelands Monitoring Officer Phone: (08) 8951 9212

**Roojan Bista** Rangelands Monitoring Officer Phone: (08) 8951 9213

# OLD MAN PLAINS Field Day 2019



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