Mowanjum Irrigation Trial

Financial management of stand and graze

To support the commercial investment in irrigated pasture and 'Stand and Graze' in the Kimberley and Pilbara it is important to understand and quantify the operational inputs and resulting outputs, capital infrastructure requirements, environmental variables and management assumptions.

The economic returns can be marginal and operational management needs to focus on optimisation rather than maximisation. Experience and expertise can have a dramatic impact on the return profile and ultimately the validity of investment.

Business profitability evaluation criteria

Capital allocation

- Site selection and 'fit for purpose' infrastructure is essential to investment returns.
- Ensure the system design is integrated into the business operations.
- Simple to install, maintain and operate are the key components to minimising cost.

Water delivery and quality

- Lifting and pumping water is the most significant recurring cost of an irrigation operation.
- Water quality will have an impact on the initial capital, future maintenance and the nutrient balance cost.

Cost per hectare and kg of protein efficiency

- Onsite management expertise and capacity in agronomy and cattle management is critical to optimise the system.
- Plant health and nutrition is the key to maximising the energy and protein available leading to feed conversion.
- Adapting to changes in seasonal soil profile and moisture stability is needed to match plant requirements.

Property/Business integration

- Ability to increase and decrease cattle numbers as productivity requires.
- Ability to produce hay and silage provides added flexibility to pastoral operations and an alternative cash flow.
- Matching scale to your business is critical to investment return
- Productivity increases associated with irrigated pasture result from;
  - Early weaning
  - The ability to accumulate and hold cattle
  - Meeting market specification
  - Establishing a high value niche product
- New technologies and innovation will continue to improve system productivity.

Key Financial Objectives:

- Early weaning confidence
- Increase carrying capacity by kg
- Increase yield production (MT/ha)
- Decrease in turn off days
- Plant quality and weight conversion
- Animal body condition
- Water usage efficiency
- Input conversion to quality
- Cost per megalitre of water
- Breakeven cost per
  - kg of protein
  - MT of fodder

Operational Drivers

- Understand plant productivity and recovery time.
- Access to cattle to match plant productivity, “no point growing feed if you cannot eat it”.
- Use rangeland grass when available and produce hay/silage, “why eat expensive grass when you do not need to?”.
- Background cattle to achieve condition on a rising plain, improving weight gain.
- Genetics is a key factor to feed conversion and weaning rates, environment adaptability and weight gain.
- Health and well being management through veterinary specifics and mineral supplements will improve the production system.

Weight conversion/Revenue potential

Kg weight gain/day/Hd		0.40	0.50	0.60	0.70	0.80	0.90	1.00
Kg weight gain per annum		81,027	101,284	121,541	141,798	162,055	182,312	202,569
	$1.50	$ 121,541	$ 151,926	$ 182,312	$212,697	$ 243,082	$273,468	$ 303,853
$/kg of beef	**$2.00**	$ 162,055	$ 202,569	$ 243,082	$283,596	$ 324,110	$364,624	$ 405,137
	$2.50	$ 202,569	$ 253,211	$ 303,853	$354,495	$ 405,137	$455,779	$ 506,422
	$3.00	$ 243,082	$ 303,853	$ 364,624	$425,394	$ 486,165	$546,935	$ 607,706

Production costs of 38ha pivot (year in, year out)

	Per ha	Per annum
Depn (excluding remote monitoring)	739	28,080
Fuel and electricity	1,773	67,392
Oils and lubricants	113	4,300
Electricity	32	1,200
Repairs and maintenance	421	16,000
Herbicides and insecticides	105	4,000
Fertiliser	2,026	76,991
Veterinary stock health	218	8,300
Contractors	1,158	44,000
Labour	1,135	43,125
Insurance	237	9,000
	7,958	**302,388**
Breakeven $/kg of beef		$2.13
Breakeven $/MT of fodder		$229.38

Mowanjum Pastoral Station improvements

	Past	Present
Personnel resources	3	5
Station breeding units	500	1,920
Beef turnoff (gross kg per annum)*	37,908	70,438
Water usage efficiency (ML per annum)**	698	493
Fodder production/Ha	16	35
Plant protein	8.90	15.30
Plant metabolised energy (estim.)	7.90	9.20

* No. of head, weight and condition improvements

** seasonally impacted

Optimisation data

Avg kg fodder/ha produced/wk	667	kg
Pivot kg carrying capacity	120,720	kg
Kg of fodder production per week for pivot	25,351	kg
Kg of fodder production per annum for pivot	1,318,268	kg
Fodder MT/ha/annum	34.69	MT
Weight gain per day	0.702	kg
Weight conversion (kg of fodder/kg of beef)	9.27	kg

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