

# Enabling genetic improvement of reproduction in tropical beef breeds

## ....*Repronomics* project update

MLA Project B.NBP.0759

*Project leader: David Johnston*



# Project aims



*Increase numbers of animals with  
accurate reproduction EBVs in northern  
Australia enabling improvement in  
female reproductive performance via  
genetic improvement*

# Project brief



- 5 year MLA funded project (started Oct 2013)
- collaborative research (AGBU, DAFFQ, NTDPI&F, QAAFI, UQ,)

## How ?

- intensive recording female reproduction
- full genomics testing
- drive new genomic selection in BREEDPLAN

## What ?

- 3 tropical breeds (**Brahman**, Droughtmaster, Santa Gertrudis)

## Where ?

- research station herds (QLD & NT)
- cooperator industry seedstock herds

# Locations and breeds



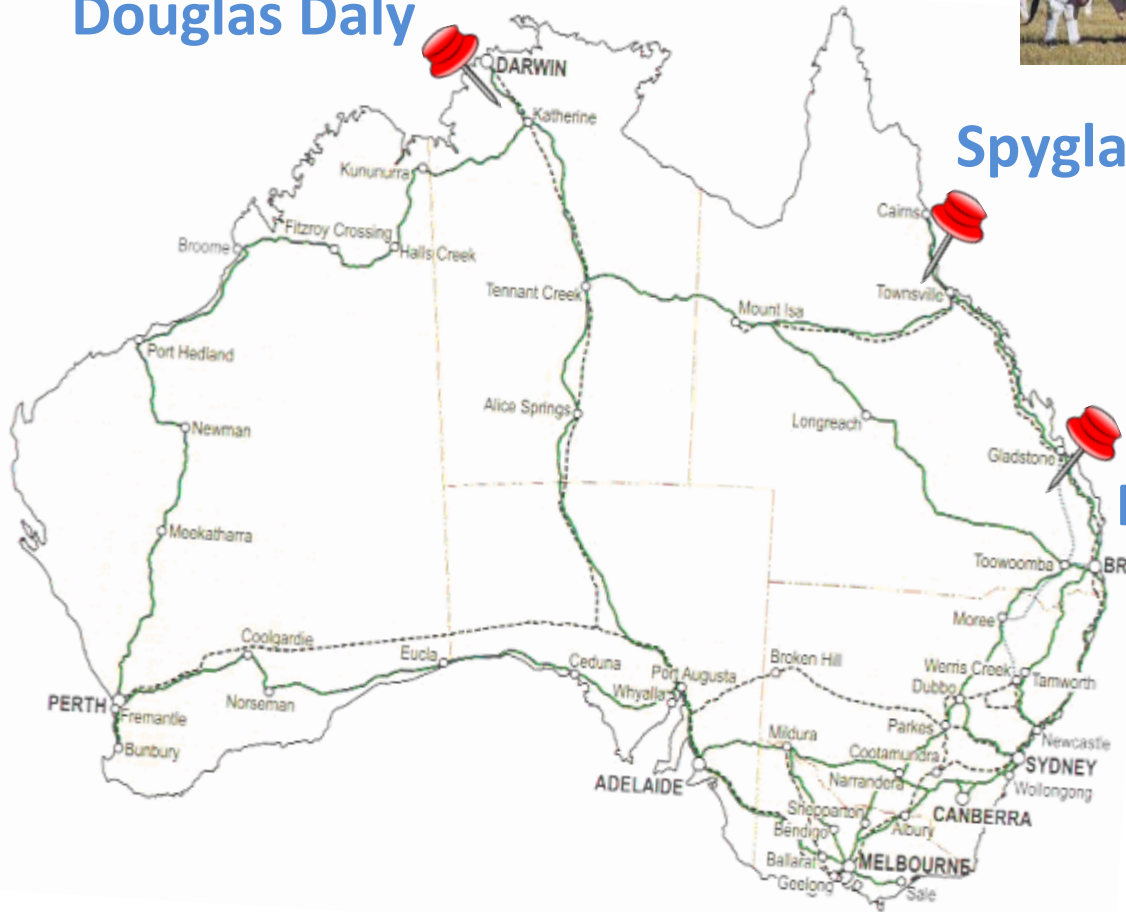
**Douglas Daly**



**Spyglass**



**Brian  
Pastures**





# Brian Pastures research facility

- QDAFF run (AgForce owned)
- Gayndah QLD
- 5000 acres (+2000 lease)
- 400 adult cows
- 220 replacement heifers



# Spyglass research facility

- QDAFF owned and operated
- 120km NW Charters Towers
- 38,000 ha
- ~1000 project females
- 300+ replacement heifers





# Douglas Daly research farm

- NTDPI&F
- Douglas Daly (220km S<sup>th</sup> Darwin)
- 3,100ha
- 360 project females
- yearling mating
- heifer phase of selected Brahmans



# Brahman involvement

## A) Intensive recording

- **Daughters on influential Brahman sires**
  - high influence, few daughters recorded
  - current (high) usage
  - 15-20 daughters recorded
- **Intensively recorded daughters**
  - regular ovarian ultrasound scanning
    - age at puberty & wet cow recycle interval
  - maiden heifer & first cow rebreed mating outcomes
    - calving and weaning rates, days to calving



# Brahman involvement

## B) DNA genotypes

- **Genotype key Brahman sires**
  - high EBV accuracy sires
  - sires in Smart Futures Fund project herds
  - sires with daughters measured (RS & ABBA BIN)
- **Add to existing Brahman recording**
  - all fully recorded BREEDPLAN herds (adds linkage)
  - birth weight, GL, growth, scans, flight time etc





# New AI sires 2015/16



**NCC Diplomat (Elmo son)**



**FBC Garth (Mr Arnie son)**



**Fern Hills Kingston**



**NCC Springbok (S. Afr.)**



**Raglan Victory (Beef 2015)**



**Sha Ann Wise'n'Up**

- 300 Brahman cows AI
- 60+ % first round (semen quality critical)



# Natural mate genetics

Roxborough



**RBS2787 (CBV Alto Ruxton son)**



**RBS2877 (2096 gson)**

Glengarry, Wandilla,  
Narrandra, CBV,  
Elrose, Lancefield



- ~300 Brahman maidens and 1<sup>st</sup> calvers
- progeny valuable for future work

# ...also new Santa and Droughtmaster genetics



**Young Eidsvold Station**



**Top selling sire Rosevale 2015**



**Canowindra Jag**



**Glenlands genetics**



**Young Rondel bull**



**Rockdale bulls**



# New #16 drop



## Key Sires

CBV Aristavivo

JDH Lincoln De Manso

DRF15431

Lancefield Elgin

Mr V8 the Butler

Lancefield Buster

CRC & Bin links

- GL, BWT, CE, calf vigour & mothering scores, Cow BCS, teat & udder
- WWT, FT, horns, coat score

# #15 heifers (& steers)

## Key Sires

CBV Poll Position

JDH Mr Elmo Manso

Lancefield D Robinson

DRF15431

Lancefield Elgin

Elrose Petrie

Lancefield Buster

HK Magnetic

ABBA BIN sires

- Lancefield Ambition
- Mogul Yalumba
- FBC Becker
- Elrose Significantly



## Puberty scanning

- BP 3<sup>rd</sup> scan (10%)
- Start SG next week



# #13 and #14 females



- currently in mating
- ultrasound body composition
- repeat ovarian scanning

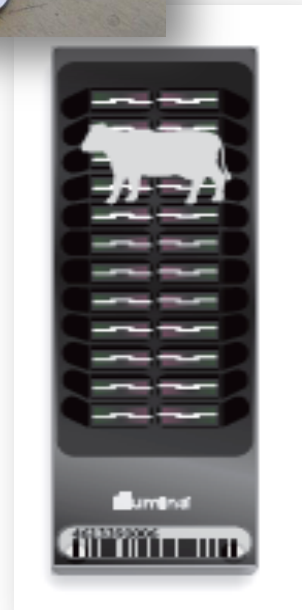
## 13's wet first calvers

- cyclicity, foetal ageing
    - start, mid, out of mating
    - weaning (+ non beyond)
- 
- BP ~ 50% cycling by mid-mating
  - SG ~10%



# DNA SNP genotyping

- Latest DNA SNP chip
  - all project 13, 14, 15 females
  - all project sires
  - high accuracy industry bulls
  - high accuracy cows
  - all ABBA BIN sires





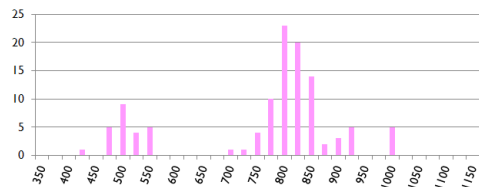


## Very preliminary results

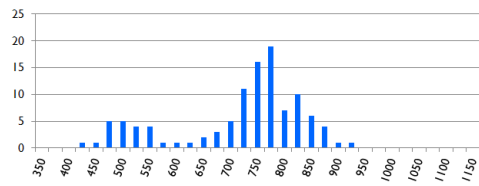
Trait	Group	N	P value	b
AGECL	<b>Brahman 12&amp;13</b>	158	<0.01	0.69
	<b>NT12s</b>	107	<0.01	1.87
	<b>NT13s</b>	108	0.20	0.67
	<b>NT14s (incom)</b>	105	0.11	0.68
	<b>Droughtmaster 12,13</b>	164	<0.05	0.55
	<b>Santa 12,13</b>	84	<0.01	1.42
LAI	<b>Brahman SG11</b>	49	<0.10	27.0
	<b>Brahman Belmont #11</b>	53	<0.01	22.5
	<b>Droughtmaster SG11</b>	97	P = 0.55	-

## age first CL

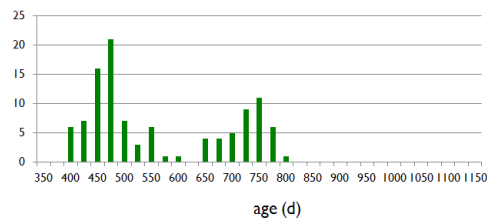
2012 drop



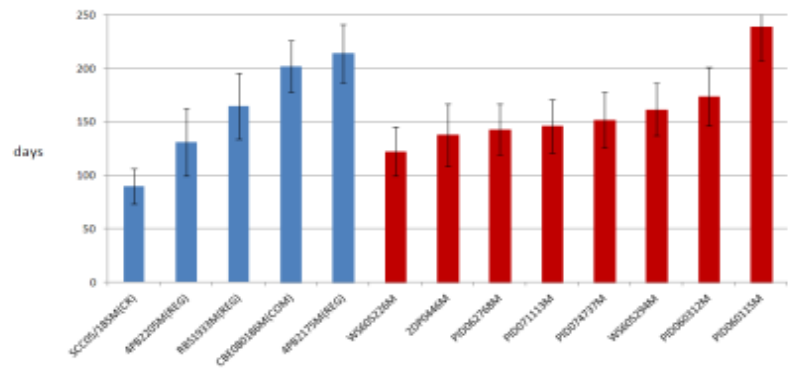
2013 drop



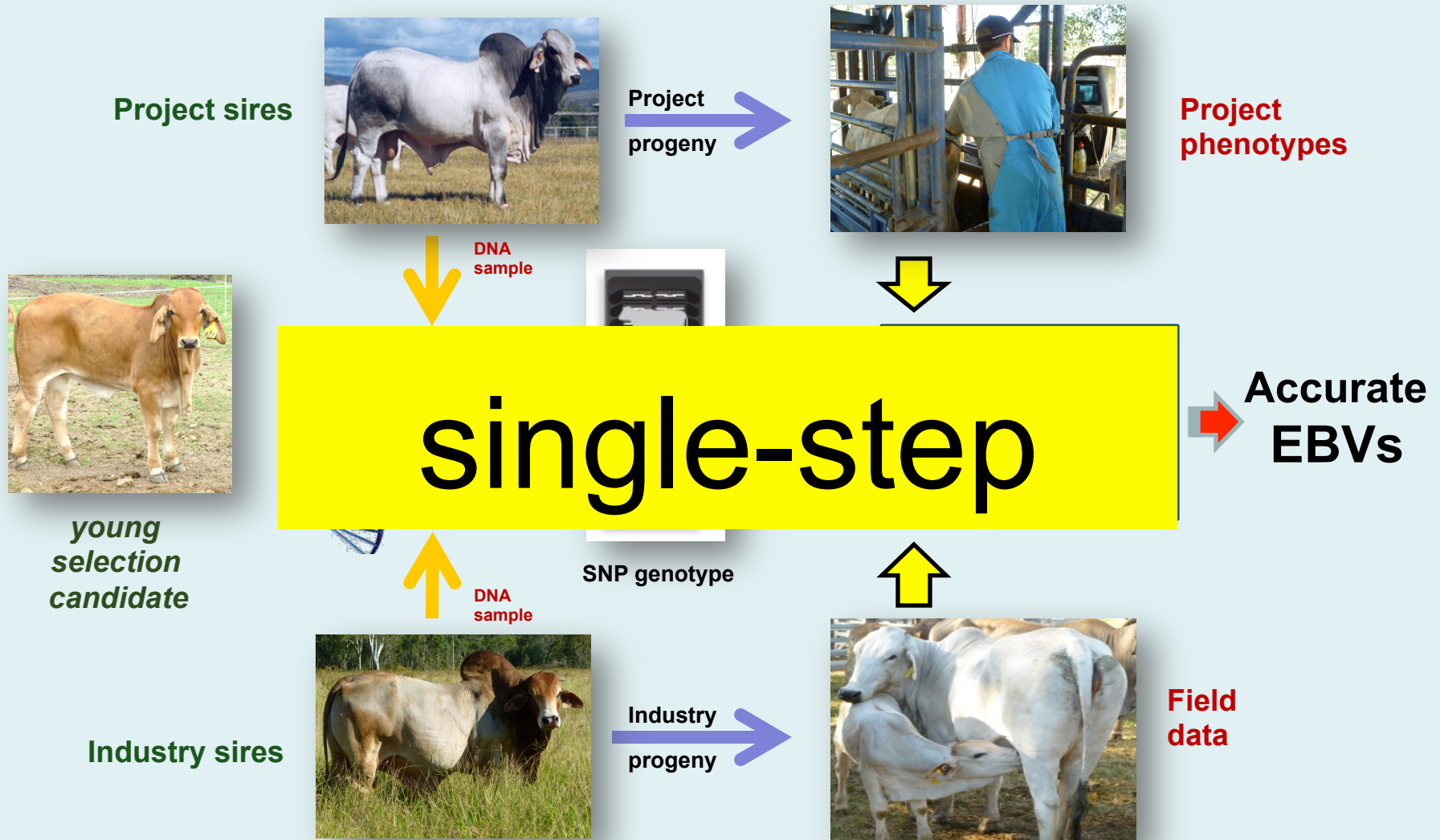
2014 drop  
(incomplete)



## Sire LSM for Lactation anoestrous interval (SG)



# Genomic genetic evaluation



# What's next?

- continuing female recording
- continue puberty scanning of 15s
- wean #16s
- plan for upcoming mating
  - AI (possible new sires....\$\$ model + DAF)
  - large numbers of natural mates ....need **5** new Brahmans
- submit all data BREEDPLAN (drive new version)
- plan future with DAF and MLA

