Expression of Interest: Terms of Reference

MLA Resource Flock: Satellite flocks for eating quality and carcase traits – Round 2
Date: 26 October 2020
MLA Program: Livestock Genetics
Livestock Genetics Program Manager: Hamish Chandler – hchandler@mla.com.au

1. **Purpose:**

   Meat & Livestock Australia (MLA) are seeking breeders to collaborate and co-invest with the MLA Resource Flock project and contribute to the industry's reference population by collecting additional measures of carcase and eating quality traits from industry animals as a satellite flock to the MLA Resource Flock.

2. **Relevant and necessary background:**

   The MLA Resource Flock collects reference data (phenotypes and genotypes) for use in genomic testing, as well as providing a resource for additional R&D projects. The data collected is used for the purpose of generating Australian Sheep Breeding Values (ASBV's) and other genetic and genomic tools, for delivery to sheep breeders through Sheep Genetics.

   Collecting data on industry relevant animals will improve the accuracy of selection for traits that are either too expensive to measure routinely, are hard-to measure or can only be measured late-in-life. These traits include lean meat yield, eating quality, disease resistance, animal welfare, fertility, methane production and net feed intake.

   The University of New England (UNE) is contracted by MLA to manage the MLA Resource Flock project.

   A key component of the Resource Flock project is to seek additional co-investment from industry into the collection of genotypes matched to hard-to measure phenotypes on progeny from commercial (non-research) flocks known as satellite flocks. These satellite flocks will need to demonstrate an ability to meet selection criteria for items such as additional co-investment through in-kind resources and the ability to meet data quality standards. The MLA Resource Flock has capacity to measure 12,000 lambs for carcase traits by June 2022.

   The sequence of events for successful Expressions of Interest will be:

   1. Collect all on farm data including genotypes
   2. Contact project coordinator 60 days prior to kill date to assign an appropriate meat science team.
   3. Negotiation with meat science team about which processor is appropriate.
   4. Consign lambs to the chosen processor on the chosen date/week.
   5. Meat science team will co-ordinate the kill from there.

3. Objective

Increase the number of animals in the reference population for eating quality carcase phenotypes by measuring satellite flocks. Focused on, but not limited to, breeds that currently have an insufficient reference population size.

The eating quality and carcase phenotypes recorded will include;
- On-farm pre-slaughter live weight (FPSWT); Pre-slaughter live weight before going to abattoir with an overnight fast
- Hot carcase weight (HCWT); weight of hot carcase immediately following slaughter
- Carcase fat depth measured at the GR (GRFAT) and C-Site (mm) (CFAT)
- Carcase eye muscle depth (mm, CEMD) and width (mm, CEMW) between 12th and 13th ribs

- pH decline (PHD), left hand portion of the m. Longissimus thoracis et lumborum (LL) LL pH decline (when temperature reaches 18)
- Intramuscular fat (IMF), intramuscular fat measured on frozen sample caudal end of LL
- Shear force (SF5), shear force on loin muscle – day 5
- Where possible additional traits or devices may be used for research and development purposes such as DEXA or hyperspectral imaging.

4. Terms of Reference: Scope

The project is seeking co-investment partners with lambs to contribute satellite flocks and collect both phenotypes and DNA samples by slaughtered **prior to June 2022**.

Individual breeders and/or breeder groups are invited to submit an Expression of Interest (EOI) to become a satellite flock if they meet the following requirements and information recorded on-farm. To participate, partners will need to commit to effectively manage and co-ordinate all the on-farm components of the project and ensure all requirements are met. Lambs will be consigned to an appropriate processor by liaising with UNE project coordinators and a meat science team. Please note that resource flock project staff will contact the processor after successful applicants have been notified.

Satellite flock Requirements:
Animals must be:
- Slaughtered before June 2022 with an estimated carcase weight between 18kg and 26kg, and fitting the current lamb dentition definition
- Lambs from a structured progeny test where all lambs from the test will be slaughtered. It does not include surplus or cull animals.
- From large contemporary group cohorts where;
    - A minimum of 2 sires represented within each cohort and at least 5 progeny per sire. Preference will be given to cohorts with more animals and sires represented.
    - A minimum of 100 project lambs in the consignment.

▪ Lambs have been born within an 8 week period of each other
▪ Lambs have been managed in the same mob until slaughter

On-farm information captured on the animals is required to be submitted by the partner to MLA for the Sheep Genetics evaluation and for further research and development. The data must adhere to the <u>Sheep Genetics Breeders Quality Assurance Manual</u> and include:

• Information on sire and dam breeds
• Accurate management groups
• Base Traits: Birth weight (optional), weaning weight and ultrasound scan for eye muscle depth (EMD) and fat depth (FAT) with live weight at scanning.
• Satellite flock data stored and submitted through one of the Sheep Genetics accepted software programs
• Collection of DNA using tissue sample units (TSUs) (resource flock project to provide TSU's and further information)

Preference will be given to expressions of interest (EOI) that can provide information on minor breeds or sire lines within a breed with low representation in the resource flock. As well as for the greatest number of the following fixed effects: date of birth, birth type, rear type, age of dam, flock of birth.

Desirable criteria

Applications will be preferred from proposed satellite flock(s) with:
• Crossbred animals (in particular Merino or Maternal cross).
• Cohorts with progeny from more sires.
• Representation of genes within industry that are not been previously represented in the MLA Resource Flock and will be of value to the future of the sheep industry.

Outputs and Outcomes

Successful EOI applicants will meet agreed milestones, which will identify progress in achieving the objectives and outcomes identified in this Terms of Reference (ToR) to result in the impact of improved annual rates of genetic gain in the Australian sheep industry.

Outputs specific to the enhanced carcase phenotypes EOI will include;
• Records, data and information that will contribute to industry through 'Breeding Value Services' and any 'National Genetics Data Platform'

Outcomes specific to the enhanced carcase phenotypes EOI will include:
• Increased accuracy for lean meat yield, eating quality and carcase ASBV's for industry flocks directly contributing genes into the satellite flock(s).
• Reference populations for eating quality traits for a wider population of the Australian sheep industry.
• Increased accessibility of genomic tools and technologies in the Australian sheep industry.
• Improved productivity and profitability of sheepmeat breeding enterprises that contribute to industry targets.

5. Confidentiality and Intellectual property

Successful EOI's will be funded with sheepmeat levies and required to enter into a standard agreement with the University of New England (UNE) as a sub-contractor to the MLA Resource Flock project. Project funding from UNE and MLA will include:

- genotyping of satellite flock animals (this includes TSU and the type of test will be dependent on representation of genes in the current reference population), and
- half the cost of the collection of carcase and meat science traits which has an approximate cost of $150 per animal so the funding will equate to $75 per animal.

While the satellite flock(s) costs will include:

- the animals for slaughter sold to a collaborating processor on a commercial basis.
- management and travel costs associated with collecting DNA samples, on-farm pre-slaughter traits and preparing the satellite flock for slaughter.
- information captured on-farm including pedigree, fixed effects and base traits.
- half the cost of the collection of the carcase and meat science traits (approximately $75 per animal).
- satellite flocks will receive payment from the processor for the carcases less the cost of the loins taken for collection.

Failure to meet requirements and timelines set by the resource flock staff including but not limited to TSU return deadlines, number requirements and data submission may result in additional costs for the applicant or exclusion from the project.

All data and cited references will be acknowledged in the MLA Resource Flock milestone(s) and final report. Any data/information collected under the satellite flock will be managed by MLA and may be used for research and development by MLA, as well as being incorporated and used in the 'Breeding Values Services' and any 'National Genetics Data Platforms', defined as below.

Breeding Values Services means any service which involves estimation of genetic or genomic breeding values for cattle, goat and sheep, including without limitation the service offered which uses the analytical software currently known as BREEDPLAN and OVIS software;

National Genetics Data Platform means database or network of databases and analytics infrastructure established to store, process and enable access to, in accordance with defined IP rights, data, IP, products and tools relevant to livestock genetics;

Submissions

Breeders and/or breeder groups should submit the Expression of Interest template to livestockgenetics@mla.com.au by COB on **Wednesday 11 November 2020**

Meat & Livestock Australia will acknowledge receipt of each application. Applicants will be advised in writing of the outcome of their expression of interest.

Further information

Please read this Terms of Reference and the Guidelines for assistance when completing Expressions of Interest. For further details on the EOI, email Peta Bradley pbradley@mla.com.au