



Breeding for resistance to buffalo flies?

Breeding more resistant cattle would provide a sustainable non-chemical method of reducing losses from buffalo flies.

I am investigating easy to use, practical methods to identify buffalo fly resistant cattle for breeding using:

- visual assessments
- different camera and image analysis techniques
- measuring buffalo fly avoidance behaviours
- using accelerometer ear tags
- exploring differences in immune responses of high and low buffalo fly carrier cattle through serum proteomics analysis and immune assays.

Background

Buffalo flies are a big problem to the cattle industry, costing the industry close to \$100m per year. They irritate cattle, cause buffalo fly lesions and can reduce weight gains by up to 30 kg per head over the course of a buffalo fly season. Control is primarily based on chemical usage but chemical resistance and high public demand for chemical free products highlights the need for other methods of control such as breeding for resistance. The starting point would be to define resistant cattle by selecting resistant and highly susceptible cattle to define the breeding parameters.

Research to date

- Correlations are high between visual buffalo fly counts and photographic techniques but counting processes are time consuming.

- Cattle with high fly numbers show more avoidance behaviours such as head tosses, ear movements, leg stomping and tail flicks.
- Algorithms are being developed for accelerometer ear tags to measure cattle behaviours associated with buffalo fly infestations.
- Accelerometer tags may provide a means to identify high fly carrier cattle and potentially assist selection for buffalo fly resistance in cattle and measurement of treatment thresholds.
- Differences in factors such as immune response and proteomic factors are also being investigated to identify biomarkers for more resistant cattle.

Queensland Alliance for Agriculture and Food Innovation (QAAFI)

qaafi.uq.edu.au

CRICOS Provider Number 00025B

Contact

Muhammad Kamran

Centre for Animal Science
E: k.muhammad@uq.edu.au
T: +61 431 600 214

Dr Peter James – Supervisor
T: +61 408 148 511



Queensland
Government

QAAFI is a research institute at The University of Queensland supported by the Queensland Government via the Queensland Department of Agriculture and Fisheries.



Research in the field



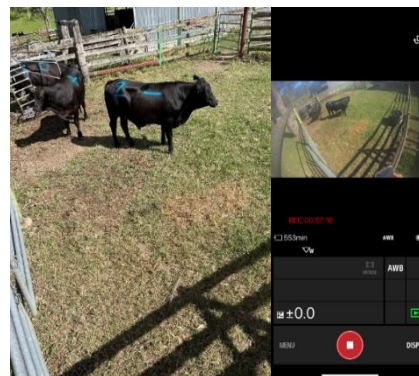
Visual assessments of cattle carrying high and low buffalo fly burden,



Visual assessments of buffalo fly avoidance behaviour (head toss).



Buffalo fly burden counted from photographs using Image analysis software.



Accelerometer tags on cattle and video cameras recording buffalo fly avoidance behaviours.

Researcher Profile

Muhammad Kamran

Muhammad Kamran is a PhD student at Centre for Animal Science, Queensland Alliance for Agriculture and Food Innovation, the University of Queensland, Australia. He is a veterinarian and has a M.Phil. degree in microbiology. He is also serving in QAAFI student association as representative of Centre for Animal Science and as young science ambassador in the wonder of science program of the University of Queensland. He has recently won the Innovation for the Red Meat Industry Award, supported by Meat & Livestock Australia at the 6th Animal Science Poster Olympics 2021.



Contact

Muhammad Kamran

Centre for Animal Science
E: k.muhammad@uq.edu.au
T: +61 431 600 214

Dr Peter James – Supervisor
T: +61 408 148 511

