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Genetic Improvement of Reproductive Performance in Australian Meat Goats

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Australia is the world's largest exporter of goat meat but there has been no significant improvement of the genetic merit in the largest contributing breed. The majority of production is achieved by harvesting from the Rangeland breed. Rangeland goats are managed extensively, making performance recording impractical and thereby limiting opportunities for selection. Releasing South African Boer bucks into rangeland herds has been reported to improve the growth rate and carcass quality of Rangeland goats, but also reduce reproduction rate which has limited adoption of this strategy (MLA, 2012). The main aim of the project is to retain genetic improvement of growth and carcass traits without decreasing reproductive efficiency. Ball *et al.* (2001) reported genetic parameter estimates of growth and carcass traits and recommended similar efforts be made for reproductive traits. This project will estimate direct and maternal heritabilities and genetic correlations for reproductive traits of does and kid survival traits in Boer goats to make them more suitable for improving production of rangeland goats.

Data collection is currently in progress. The project is adding to two key sources. The first is the national performance recording scheme for goats 'KIDPLAN'. Since KIDPLAN was established, 16,336 animals have been added and in 2013, 1075 animals were added. Of the reproductive traits: a total of 12,394 submissions for number of kids born have been made and 12,344 for number of kids weaned. In 2013 KIDPLAN received a total of 1084 submissions for both reproductive traits (Aldridge *et al*. 2014). The second data source is a producer demonstration site, consisting of 400 does and 11 bucks from across the nation to link herds. Additional producers are currently being approached to increase the number of animals used.

Producers that are becoming involved in the project are being asked to record some novel survival traits. At the moment these include: 1. a maternal behaviour score determined by the distance the doe travels from the kid during tagging, and 2. a kid vigour score measured by how much the kid struggles when picked up. These two traits have been linked to the lamb-ewe bond in sheep and are likely to have similar heritabilities and correlations to survival in goats (Brien *et al*. 2014). The current hypothesis is that kid vigour will have the greatest correlated response to survival.

The analysis will be completed using the computer software package ASREML. The fixed effects include herd, year of birth, type of birth, parity/age of dam and sex. The random effects include pedigree of the animal and the maternal pedigree. This project will provide a basis for selecting more reproductively efficient Boer goats to be released into the Rangeland population, and thereby increase Australia's goat production.

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