

Sub-Saharan Africa Links to Langhill Dairy Research



The Challenge

Improving innovation in cropping and dairy farming systems in sub-Saharan Africa using data and techniques acquired during the Langhill herd research at the SRUC Crichton Royal Farm. Strengthening the value chain with training of trainer's, increasing soil carbon, improved animal welfare, breeding and fertility.

The Research

The Research (~100 words) This has been aimed at the smallholder supply chain with the use of long-term breeding data from the Langhill database, along with soils and forage interactions, to improve crop sustainability and yields, milk production and quality applied to cropping and dairy systems in sub-Saharan Africa. Knowledge gained on a practical level from the Langhill work has been used to enhance the output of African smallholder's crop yields, forage use, animal production and herd fertility. This has been in conjunction with the training of PhD students.



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The Results

Developed a national dairy diploma programme in Malawi focusing on the needs of smallholder dairy production. This has allowed new entrants and the existing workforce to be equipped with the skills needed to improve the biological and economic efficiency of smallholder dairying. PhD theses covering the use of technologies to enhance oestrus detection and including variations in dairy cow nutrient intake to balance with breeding strategies. The sustainability of cropping through plant residues has helped provide more resilient conditions for crop growth in Zambia and enhanced smallholder food production.

The Impact

This has enhanced the breeding, feeding and welfare strategies of sub-Saharan African smallholder dairy production. The training has helped create networks of smallholder dairy farmers who have used the training from the practical aspects of the Langhill systems. Assessed the contamination potential of areas around an intensive lead mining area and the levels of soil organic carbon to add resilience to crop growth and yields.

The Future

It is hoped that the connections that have been established, especially, in Malawi, Tanzania and Zambia, will continue with the hosting of students, both undergraduate and postgraduate using the long-term data sets from Langhill in conjunction with the techniques used in the monitoring and assessing of the health, production and welfare of the dairy herd and forage crops.

Additional Information:

Publications:

Banda, L.J., Kamwanja, L.A., Chagunda, M.G.G., Ashworth, C.J. and Roberts, D.J. 2012. Status of dairy cow management and fertility in smallholder farms in Malawi. *Tropical Animal Health Production*, 44, 715-727.

Chawala, A.R., Banos, G., Peters, A. and Chagunda, M.G.G. 2019. Farmer-preferred traits in smallholder dairy farming systems in Tanzania. *Tropical Animal Health and Production*, 51, 1337-1344.

Chindime, S., Kibwika, P. and Chagunda, M. 2016. Positioning smallholder farmers in the dairy innovation system in Malawi: A perspective of actors and their roles. *Outlook on Agriculture*, 45, 143-150.

Muasa, B.S. 2020. Monitoring the reproductive status of dairy cows using cow-side oestrus detection technologies [PhD Thesis]. University of Edinburgh.

Other:

PhD Studentships

Bridgit Muasa – The use of cow-side progesterone tests in the management of dairy cow fertility.

Aluna Chawala – Investigation of farmer-led breeding goals and strategies in smallholder dairy systems to cope with variations in feed sources and quality.