

Oestrus Synchronization: A Tool For Sustainable Breeding and Conservation Program in Smallholder Sheep Farming

Marble Nkadimeng¹ ; Fhulufhelo V. Ramukhithi¹

¹ Agricultural Research Council, Department of Germplasm Conservation and Reproductive Biotechnologies, South Africa

Indigenous sheep breeds play a vital role in rural communities of South Africa's livestock agriculture. Breeds such as Namaqua Afrikaner, Bapedi sheep, Zulu and Damara are recognized as landrace breeds according to the South African Animal Improvement Act (Act 62 of 1998). They possess traits of low maintenance and adaptation, crucial for withstanding common challenges encountered by smallholder farmers such as diseases, heat stress and limited feed resources. These breeds also demonstrate high fertility rates, optimizing reproductive success in their native environments. Despite their significance, indigenous breeds encounter various threats including genetic dilution and low productivity in smallholder farms. Amongst key factors contributing to their population decline and genetic erosion are inbreeding, uncontrolled mating, resource limitations and limited farm information. Of all assisted reproductive biotechnologies, oestrus synchronization has been studied as a tool for conservation programs and assist in preventing genetic erosion. However, most oestrus synchronization research has been conducted in controlled research environments (in situ/ in-vivo). Thus, integrating oestrus synchronization into community conservation programs may facilitate knowledge exchange and capacity building among farmers, leading to tangible socio-economic benefits. This includes, controlled mating for increased lambing rates and uniform lamb crops which elevates incomes and food security. Moreover, synchronized breeding enables farmers to strategically time lamb sales, therefore maximizing economic returns from their livestock enterprises. Ultimately, this aids in preserving genetic integrity and mitigating the risk of genetic erosion in rural communities. Oestrus synchronization protocols are relatively simple to implement and require minimal infrastructure and financial investment, making them accessible to resource-constrained farmers. By integrating synchronization techniques into conservation strategies, local communities can take ownership of their genetic resources, enhancing resilience and sustainability for both farming communities and indigenous sheep populations.