



Feed the Future Country Fact Sheet

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Genetic Research Aims to Build Climate Resilience in African Goats



Max Rothschild / USAID

Groundbreaking genetic research indicates it may be possible to breed for select traits that make goats more resilient in hot, dry climates.

For many smallholder farmers in developing countries, livestock play a critical role in their children and family's health and nutrition.

Not only are animal-sourced foods important during the first 1,000 days from a woman's pregnancy through her child's second birthday, but small ruminants in particular (i.e. sheep and goats) are often important income-generating assets for women, who are likely to use that money to ensure good health and education for their families.

Having livestock can also make smallholder farmers more resilient to pests and weather events that threaten their crops, giving them another source of food or income to fall back on.

The African Goat Improvement Network (AGIN), which is supported in part by the U.S. Department of Agriculture (USDA) under Feed the Future, is using genetic research to help breed healthier, more robust goats that can thrive in challenging climates often faced by smallholder farmers in Africa. Ultimately, the network aims to develop local and regional breeding programs in Africa that will make these improved animals more widely available to smallholders and their families.

Last month, the Association for Strengthening Agricultural Research in East and Central Africa hosted 25 researchers from AGIN representing ten different countries for a workshop to discuss some exciting new research findings on goat traits related to climate resilience. First, USDA researchers announced that they have developed standardized procedures to measure important traits in African goats and protocols to collect goat genetic samples.

By standardizing how goats are assessed, researchers are better able to ensure the accuracy of the data they are aggregating on things like the breed, size and health of goats. Proper protocol for collecting blood samples will also ensure the samples can be used in genomic sequencing that determines which genes are responsible for improving goats' climate resilience.

Second, researchers from Egypt, the International Center for Agricultural Research in the Dry Areas, and Iowa State University discussed initial findings suggesting that the natural selection of goats in very dry and hot environments has resulted in goats with a unique genetic profile that is especially well-suited to harsh climates. While researchers are still in the early stages of identifying and isolating the genes that help goats survive in stressful conditions, it is significant that they

have found evidence indicating that goats in these hot, dry climates have developed specific genetic characteristics not found in goats from more temperate regions.

Finally, participants at the meeting agreed to share data with goat researchers worldwide through a new project called ADAPTmap, a collaborative effort by universities and research laboratories to create a central database for trait and genetic information on goats.

This “open data” resource will make it easier for scientific institutions in developing countries and around the world to use the most up to date information for research on the goat genome, in order to accelerate progress on breeding goats for increased climate resilience.