

Adapting dryland livestock production to meet climate change challenges in Kenya

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What is the issue?

Kenya's arid and semi-arid lands cover 82% of the country's total land area, and host close to 70% of its livestock and 25% of its human population. In Ijara, a sub-county of Garissa, persistent drought and high temperatures repeatedly devastate livestock herds, which has lowered dependence on livestock as a source of livelihood by 21% over the last 10 years. This has left local pastoralists poorer and more vulnerable. Garissa county's poverty index was recently calculated at 70%, compared with the national average of 48% (Government of Kenya, 2013).

The local economy of Garissa revolves around livestock productivity, which has been hampered by factors including poor management, breed choice, and a lack of strategies to conserve feed. Looking to the future, climate predictions in Garissa indicate that mean temperatures will increase 3–4°C by 2100, which will lead to even less water being available for livestock and pasture production.

In response, the Agricultural Productivity and Climate Change in Arid and Semi-Arid Kenya project sought to improve livestock productivity through capacity building, by supporting pastoralists to adopt more productive, climate-resilient livestock species and breeds, and by promoting fodder production and storage for times of feed shortage.

What did we do?

In consultation with pastoralists, five project intervention areas were selected within Ijara.

Key messages

- In Ijara sub-county, dependence on livestock as a source of livelihood has declined by 21% in the last 10 years. Farmers' vulnerability and poverty have consequently increased to over 70%, compared with the national average of 48%.
- With improved pasture production, farmers can produce enough feed for their home-based cows to maintain milk production throughout the year.
- Site visits strongly encourage pastoralists to adopt recommended agricultural technologies such as appropriate breed choice and feed conservation among others.
- County governments in arid and semi-arid areas can support enhanced livestock productivity by strengthening their extension work in pasture production, organized grazing, and controlled breeding management.
- Strategic county feed reserves should be established to buy fodder grass from farmers and redistribute it during periods of drought, thereby reducing livestock mortality.

Intervention activities included livestock management, and pasture and honey production. Farmer groups completed training on climate-resilient livestock species and breeds, including Sahiwal and improved Boran cattle, Dorper and Red Masaai sheep, and camels. Through

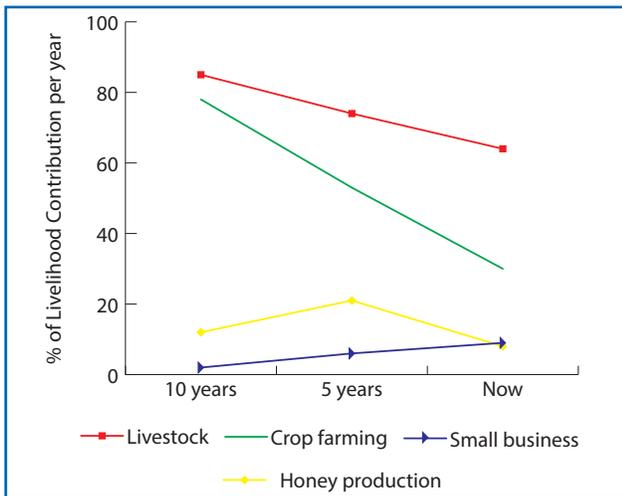


Figure 1: Relative contribution of key livelihood sources to community welfare over a 10 year period

theory and practical field sessions they learned how to manage selection and breeding, how to determine live weight and drug dosage, and other management practices. Participants used demonstration farms to learn about improved pasture production, specifically Sudan grass (*Sorghum sudanense*) and African fox tail grass (*Cenchrus ciliaris*). Study visits allowed farmers in the program to see how farmers in other areas

had profited from improved livestock and pasture production technologies. Kenya Agricultural and Livestock Research Organization (KALRO) representatives monitored and evaluated the program and collected data about the impact of the training. In implementing the project activities, the project team worked closely with field extension personnel to ensure sustainability of the efforts beyond the project duration. Most importantly, the project team has shared results with the Garissa county government to gather support and to inform county livestock development policies.

What did we learn?

- With one acre of Sudan grass and improved pasture production, farmers can produce 3.6 tons of feed in a year. This can sustain milk production by three cattle (the average number kept at home) during the annual four-month feed deficit period, and the milk can sustain a family of four. Alternatively, if the feed is sold, the pasture can generate US\$1,160 (KES. 100,000) in a year.



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Farmers have begun to plant and store fodder grasses for use in times of shortage

- With a strengthened extension service and support for farmers in acquiring adapted livestock breeds, specifically camels, Sahiwal and improved Boran cattle, livestock productivity can be increased by 50% and herd sizes reduced, which decreases overgrazing and environmental degradation.

Stories of change

During a recent monitoring activity, farmers were enthusiastic about the new practices they had been adopting and were expecting those practices to have a positive impact on livestock productivity. Six percent (6%) of the trained farmers had already acquired camels within a year.

“I have separated all the male goats from females and they are now herded separately for breeding control. I do not mix different drugs anymore when treating my livestock and am happy the drugs are working. As a group, we have written a proposal to Constituency Development Fund seeking support to buy five improved Boran bulls for use by our group members and other Kotile farmers. Following the trip to Trans Mara where the Masaai land had been sub-divided, I mobilized Kotile farmers for a meeting to discuss the need to sub-divide land, especially around town centres, so that each farmer can use the plot to manage breeding and grazing of his livestock. People bought our idea, and we want to pursue the same with the county government of Garissa.”

Ismael Muhumed from the community of Kotile



In Kenya, sales of Sudan grass can generate over US\$1000 per acre per year

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High quality pasture grasses, such as African fox tail grass, have been introduced

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The issue of individual land ownership has since been discussed by farmers with the officials of Garissa county government during a project feedback workshop.

Farmers from experimental groups, as well as some from non-experimental groups, have begun growing pasture and storing the grass for use in times of feed deficit. About 44% of group members and 6 other farmers had planted plots of up to 1/8th acre, and they were clearing five more plots of up to one acre for new pasture. One farmer had saved 15 small ruminants and 3 cows from starvation using grass harvested from his plot. Group members had also started harvesting and selling grass to community members for \$3.5 (KES 300) per donkey cart; one member bought a goat worth \$29 (KES. 2,500) using his share of the proceeds.

What are the policy implications?

Garissa county government should consider the following priorities:

- Promoting pasture production by providing seeds, training farmers and buying the harvested grass from farmers for storage in strategic feed reserves.
- Reorganizing grazing management so that certain areas are preserved for use in times of extreme shortage. This will ensure enhanced availability and optimal use of pasture land, while controlling environmental degradation.

- Promoting improved breeding management, using breeds that match expected future climate scenarios. Strategies are also needed to ensure the availability of breeding bulls, bucks and rams for use by farmers.

What next?

During a site visit to Trans Mara, Ijara farmers were convinced that the individual land ownership they witnessed was facilitating improved livestock and pasture management practices. They have since started lobbying for the same to be introduced in their area. The research team would like to investigate the difference in productivity and income levels between farmers rearing livestock on communally owned land and on privately owned plots. The data can help the county and national governments make informed decisions regarding the farmers' demand.



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One acre of improved grass can produce 3.6 tons of feed per year



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Farmers were trained to use a single breeding male at any one time in order to assess their performance

Need more information?

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