



Lessons learned from piloting mechanised forage production in Narok, Kajiado and Taita Taveta counties

Through the Innovation Fund, the ICSIAPL project supported five ranches and one individual farmer (Grantees) with piloting mechanised forage production at scale in Narok, Kajiado and Taita Taveta Counties. These are: Olosetu Ranch in Narok, Motanya Ranch and Suyianka Farm in Kajiado County and Lualenyi, Mgeno and Kasigau Ranches in Taita Taveta County.

The Grantees piloted novel forages and technologies for on-farm forage production and feeding, in combination with improved management of pastures and natural rangelands. All – except for Olosetu – are located in areas receiving on average 500-600 mm of rain annually. Lualenyi ranch though practised some irrigation. The business cases served as proof of concepts for piloting novel forages at scale (15– 100 acres), for more resilient and competitive livestock keeping systems. The six business cases received from ICSIAPL in total Kenya shillings (KES) 22 million co-funding of their investment plans and leveraged through their own contribution KES 43 million (rounded figures).

The six projects kicked-off in August 2022 but until December 2023 the weather conditions were very dry as Kenya and the greater Horn of Africa was reeling from the worst drought in modern history. Establishing cultivated forages in the semi-arid lands was by and large not possible, unless supported by irrigation. However, from November 2023 rain became more favourable which spilled over into 2024. As a result, forage establishment and production in 2024 showed encouraging results, although detailed cost-benefit analysis were not made for all forage crops piloted.

The learnings suggest that cost-effective forage production and utilisation for dry-season feeding and fattening - there by reducing margins above feed costs and making the livestock business economically and environmentally more sustainable - is possible in ICSIAPL's project area. Both in the lower and higher rainfall areas in the 3 project counties and without irrigation.



Lessons learned

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The forage piloted varied from location to location, but for the lower rainfall areas these were: African Foxtail grass cv Baringo, Rhodes grass cv Boma, Katambora and ex-Tozi, Bush Rye grass (*Enteropogon macro-stachyus*), Horsetail grass (*Chloris Roxburghiana*), Masai Love grass (*Eragrostis Superba*), Guinea grass cv Siambasa, Brachiaria grass hybrid Camello, Napier grass hybrid Pakchong, Forage Sorghum cv Sugargraze, Dolichos lablab and Cow Pea M66. The key learning was that success largely depends on good planning and timing of agricultural activities and the use of suitable forage varieties, appropriate mechanisation, good agronomic practices for land and seed-bed preparation, soil management, crop production and protection, right time of harvesting, and proper conservation, storage and feeding (utilisation).

Practicing conservation agriculture, i.e. deep chisel and contour ploughing, applying abundant manure to the soil, etc., appeared to be crucial in enhancing the capacity of the soil to store the little rainwater that is received in these low rainfall areas. Applying organic manure in combination with chemical fertilisers annually - as per the fertilisation advice of the soil analysis that were done - assures that yields are not only good and allowing for several cuts per season under fair rainfall conditions but can also be maintained in subsequent years.

Mechanisation does not mean no-manual work at all. Weeding is for example a typical activity where sufficient labour force needs to be mobilised to get the job done in a few days only. Seeding and spraying may also need to be done manually. ICSIAPL realised that in livestock keeping systems and environments where cattle are predominantly grazed, the level of the required knowledge and skills for successful "crop" farming - in this case forage crops - is low.

The Innovation Fund's co-funding was therefore complemented with a technical support component - partly to be provided by KALRO and the County governments, but especially through ProDairy EA Ltd that was contracted to visit the Grantees on average once every quarter for advisory, training and coaching. The knowledge and skills gap were however underestimated - both by ICSIAPL and the grantees. Although this varied case-by-case and all grantees made progress in implementing the forage-based feeding strategy, this impacted on progress and performance. Good agricultural practices include forward planning and timely preparation and implementation of activities in the agricultural (forage crop) calendar. Planning and decision making was significantly better in the farms or ranches that are operated by the owners themselves (Motanya, Suyianka, Olosentu). Decision-making processes and timing of operations in the livestock businesses with more formal structures (i.e. the 3 ranches in Taita Taveta) were usually more problematic, having several layers of decision-making, i.e. shareholders, elected Boards and hired Management.

Growing forages cost-effectively and in sufficient quantity to be feed-secure during the dry seasons (i.e. to prevent or reduce mortality or weight loss) and also to utilise forages for steer fattening in a ration that can replace part of the concentrates used for supplementation to lower feeding costs (without compromising targeted growth rates), requires a set of knowledge and skills on agronomy, ruminant nutrition, price of feeds in the market and the effects of the feeding strategy on quality of the meat, that is rare to find in the livestock enterprises in ICSIAPL's project area - if not in Kenya.

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To support these enterprises effectively, a long-term and intensive coaching trajectory needs to be in place with weekly or bi-monthly farm visits, training and field demonstrations throughout the agricultural calendar, by guiding the staff on the ground in regard to good agricultural practices and customising advice towards local conditions and skills gaps. As for larger livestock operations such as the ranches supported by the project, they should employ personnel with knowledge of forage production and ruminant nutrition to head the forage section and someone who knows the market for feeds and meat and keeps him/herself updated on prices and standards. In spite of the fact that coaching by ICSIAPL could have been more intensive, the investments made resulted in tangible and significant progress as this led to increased resilience and economic performance of the enterprises concerned, combined with adoption of environmentally more sustainable practices. In addition, many learnings and other positive spillover in form of exposure for - and business linkages with - livestock keepers from the localities where the project are situated, were realised.