European Commission

VCA4D
VALUE CHAIN ANALYSIS FOR DEVELOPMENT

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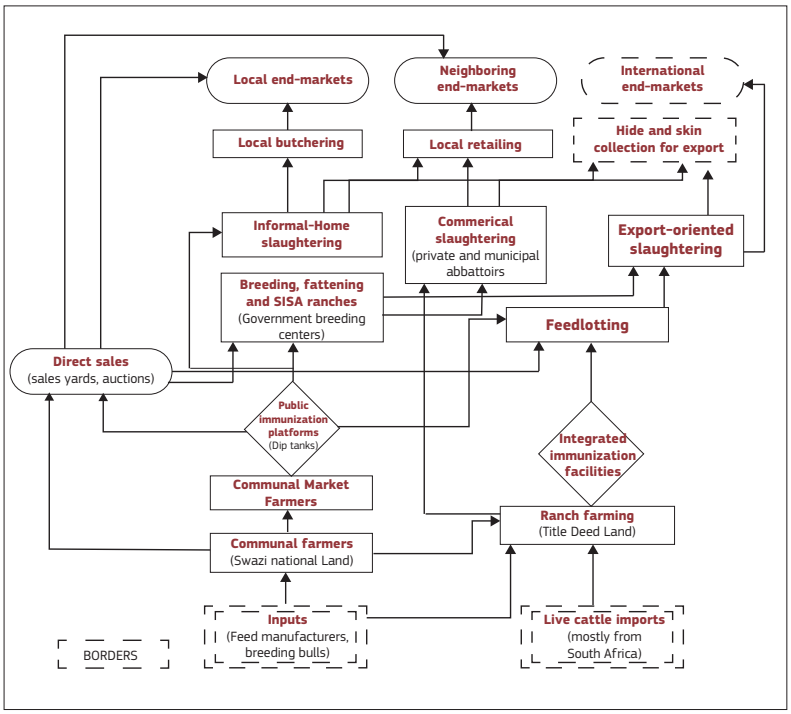
Beef value chain analysis in eSwatini

Value chain analyses assist in informing policy dialogue and investment operations. They help the understanding of how agricultural development fits within market dynamics. They permit an assessment of the value chains' impact on smallholders and businesses.

The European Commission has developed the methodological framework for analysis. It aims to understand to what extent the value chain allows for inclusive growth and whether it is both socially and environmentally sustainable.



The value chain context

As in many Sub-Saharan countries, the livestock sector in eSwatini is characterised by a two-fold dualism between "commercial" and "communal" livestock and between "modern" and "traditional" systems. The ruminant sector is dominated by cattle, which are an important source of food and cash income, for different wealth categories in various areas. The proportion of homesteads owning cattle is between 40% and 50%, with considerable regional variations. Small-scale production follows two objectives: i) food and livelihood security, ii) milk and meat production for national and international markets. The national cattle herd currently stands at around 600,000 heads, thought to be in line with the national carrying capacity. The majority of beef exported from eSwatini goes to neighbouring countries and to Norway through formal trade agreements. Nevertheless, lower-grade beef imports remain relatively high to satisfy the growing local demand.

The European Union intervention

Agriculture, with emphasis on food security, has been selected as a focal sector for the 11th EDF National Indicative Programme 2014/2020 between eSwatini and the European Union (EU). The EU has supported the sector through the EU/FAO Swaziland Agricultural Development Project, the upcoming High Value Crop and Horticulture Project (HVCHP) and the Water Harvesting and Dams Project (WHDP).

The Economic Partnership Agreement has secured eSwatini's duty and quota free market access into the EU since October 2016, providing potential to further develop exports and promote agricultural value chains.

Figure 1 : The main flows of the beef value chain in eSwatini

Functional analysis

Land tenure and production systems

The Kingdom of eSwatini is a small landlocked country with a population of just over 1 million people. A profound dualism remains perennial in the land tenure system. The **Swazi National Land (SNL)**, also called communal land, occupies 60% of the territory, while the **Title Deed Land (TDL)** occupies 39%, and **the Crown Land** 1%. Almost 89% of cows, heifers, and calves are kept in the SNL systems, while 11% are on TDL systems (Table 1). The communal systems are characterized by open grazing, low off-take rates (probably less than 10%), and low technical efficiency (calving rates, mortality rates, etc.). Cattle for SNL smallholders are kept for multiple purposes (tradition, manure, food, milk, security, draught, etc.), of which cash for sales into the beef VC is merely one.

	SNL	TDL
Beef cows	194,019	23,595
Beef heifers	63,113	7,277
Dairy cows	2,153	1,495
Dairy heifers	779	408
Calves	59,952	8,387
Total	320,016 (89%)	41,162 (11%)

Table 1 : Estimation of the mature bovine population in 2016

Main stages of the VC

The value chain (VC) could be divided into four stages: a primary stage for cattle production, characterised by non-market and market-oriented small producers and ranches on SNL and TDL; a secondary one for fattening operations by feedlots, and state-owned or private ranches; a tertiary one for the slaughtering and processing operations (abattoirs, butchers); and a forth dealing with distribution operations (retailers, supermarkets, butchers, meat shops, etc). Some integrated ranches operate at various stages and each group differs as to expectations, norms and daily practices.

Cattle production and fattening

In **non-market-oriented small-scale farming** most cattle are managed in extensive systems on common grazing land. Farmers lack secure land tenure. Grazing prevails when pasture is available, with supplementation of crop residues, fodder, and feed during the dry season.

In **the market-oriented small-scale farming**, cattle are raised for beef production and do not produce milk. Production systems are medium- to high-input with use of improved genetics and careful attention to improved health and nutrition. Commercial producers also rely heavily on grazing on natural pasture and crop residues to fatten their animals, but they supplement this with manufactured feed concentrates, especially in winter. Most of them have their own support services, including private veterinarians for vaccination against diseases and treatment for parasites. Stocking rates are optimised to ensure that animals reach slaughter weight rapidly and cost-effectively.

Feedlots and ranches are larger holdings where food-producing animals are kept for fattening for a specified period, usually 90 days. They have the potential to address the feed shortages caused by overgrazing and add considerable value to cattle for sale. Feedlots are used by smallholders operating on SNL and by commercial farmers operating on TDL.

Slaughtering and processing

Home slaughtering represented 57% of slaughters in 2017, meaning that, for the domestic market, cattle continue to be slaughtered in often unhygienic places. **Commercial slaughterers** (33%) process about 16 carcasses per slaughter slab per week, which are then introduced into the cold chain. However, many small butchers are not able to meet the basic requirements in terms of hygiene and processing standards for marketing beyond the national borders. The state-owned Swazi Meat Industries (SMI) is the only licenced **export slaughterer** and the price maker at the national level, this industry forces competitors to develop strategies to lower their overheads and operating costs.

Markets and policies

eSwatini has a relatively limited average number of cattle annually slaughtered for the domestic and export markets (50,000). Given the demand of niche export markets and the limited amount of available grassland, to raise this number would require an increase in the efficiency of grass-fed beef production.

Export markets for beef products from Southern Africa are slowly opening in the EU and internationally. In their foreign trade policy, the Swazi public authorities identified market opportunities for the beef VC both in the Southern African region and the EU, promoting favourable deals for boneless beef, thus enabling the payment of premium prices to farmers. The main external destination of Swazi livestock products is currently Norway (57%), which observes the EU's import standards and offers preferential access and tariff-free quotas. The challenge for the Swazi livestock sector is to comply with the required export market standards.

In addition to the potential for export of higher quality meat, there is also a shortfall of beef to meet the strong local demand, which is now satisfied by imports of lower-grade beef. The country remains highly dependent on imports, particularly from South Africa and Mozambique.

Economic analysis

Profitability for the actors

Given that most of the inputs for livestock are free natural resources and that the production cycle is over 4-5 years, it is difficult to record some costs and sales on an annual basis. Therefore, the following profitability rates of all cattle farmers have to be considered with caution.

At the production stage, in SNL, the profit rate of a **small-scale cattle farmer** amounts to almost 100%; for a **feedlot full ration farmer** it was calculated respectively at 41% (formal markets: commercial processors) and 54% (informal markets: butcheries and small abattoirs); and for a **feedlot mixed ration farmer** respectively at 76 % (formal markets) and 82% (informal markets).

For the TDL, the profit rate for a **cattle farmer** and a **feedlot farmer** ranged respectively between -13% and 12%. In the context of successive drought episodes and challenging feed sourcing, actors with heavy fix costs face real difficulties to have reasonable profitability rates that could thus sometimes result negative.

At the **slaughtering and processing stage**, the profit rate is 6% for the **large-scale slaughtering industry** (beef export), 7% for a **small abattoir** and 35% for a **butchery business**.

At the retailing stage, the **local sourcing retailer** has the lowest profit rate (2%). The rates for the **importing retailer** and the **retailer from mixed sourcing** are 23% and 25%, respectively.

Growth generation and competitiveness

The **total value added** created by the beef VC is around **€85 million (M)** (€51M of direct and €34 M of indirect). Operating profits and wages are the two main components of the value added (Figure 2).

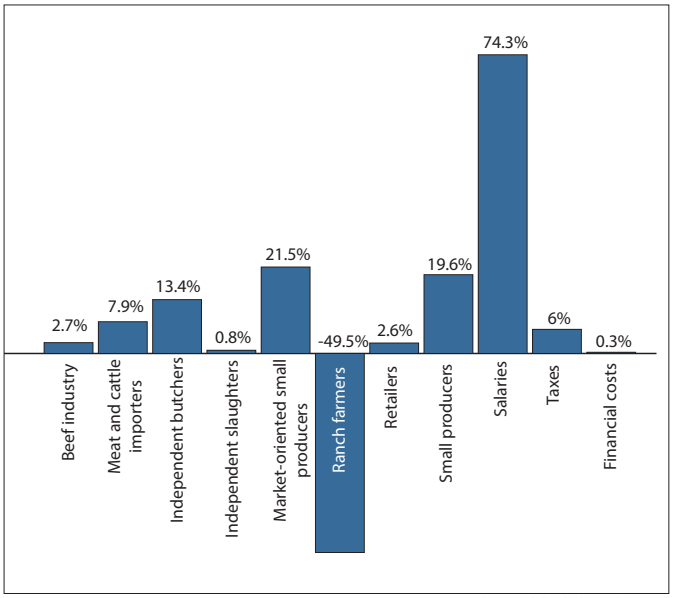


Figure 2 : Direct value added distribution

Through the taxes, and once State subsidies are considered (mainly veterinary medicines provided to smallholders in the SNL), **the beef VC positively impacts the public finances with a net contribution of €4M**.

Despite the exports of high value beef mainly to Norway, **the beef VC contributes negatively to the balance of trade with a deficit of €23M**, given the imports from South Africa and Mozambique to meet with a growing local demand.

The VC is not considered viable within the global economy, the Domestic Resource Cost ratio (being 1.7) indicating an inefficient use of domestic resources.

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WHAT IS THE CONTRIBUTION OF THE VALUE CHAIN TO ECONOMIC GROWTH?

80% of rural households in eSwatini own livestock and nearly half of homesteads own cattle. The profitability for the actors ranges from negative to very positive according to the objectives of the stakeholders, the land tenure systems, the feed systems, the stages of the value chain, and the markets (formal/informal).

As for many countries in Sub-Saharan Africa, the contribution of the beef value chain in the overall national wealth generated in eSwatini, is thought to be underestimated. Nevertheless, the beef value chain contributes to 2% to the national GDP and 32% to the agricultural GDP. It impacts positively the public finances and negatively the balance of trade. It has mixed performances at the level of international competitiveness. Given the small dimensions of the country, its economy is characterized by an outward-looking path largely dependent on external trade.

Social Analysis

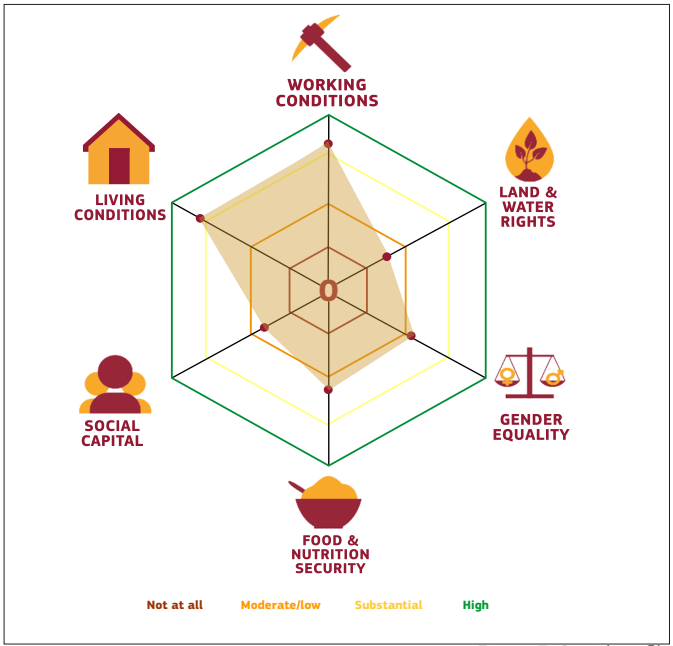

Figure 3: Social profile

	Major issues
Working Conditions	• No major risks were identified. • A strong legislative framework, applies to formal sector enterprises, with regulations on minimum wages and occupational safety and health generally respected or exceeded.
Land and Water Rights	• While a large-scale shift in use of SNL areas to commercial ranching is unlikely under current economic conditions, there is a lack of transparency on acquisition of use rights for commercial investment on the SNL (and compensation for it). This presents some risk of effective expropriation, damage to livelihoods and knock-on increases in grazing pressure elsewhere in the system. • For the SNL, many observers assert that the communal nature of grazing access per se presents a risk, but the bigger risk highlighted is that of encroachment on communal grazing lands by homesteads and cropping.
Gender Equality	• There are significant risks of exclusion of women from VC roles other than cattle production on the SNL, and exclusion from opportunities for improved cattle production (including reduced drudgery), and from participation in household and public decision-making.
Food and Nutrition Security	• Cattle-ownership is associated through various mechanisms with better food and nutrition. Well-managed initiatives to increase off-take from the SNL through improved calf survival and faster growth of male animals to a marketable weight might increase the food security of cattle-owning households, and possibly increase the proportion of such households in the rural population.
Social Capital	• Low levels of farmer organization exist in either cattle production or primary marketing (despite successful examples of collective action in other spheres). • The level of trust in the VC is low, highlighting associated risks of missed opportunities for improved cattle productivity, improved efficiency and equity of the beef VC.
Living Conditions	• Access of rural people in the VC to health services, housing, water supply, sanitation and education is either neutral or positive (especially in the case of education). No major risks are found for development of the VC.

IS THE VALUE CHAIN SOCIALLY SUSTAINABLE?

40-50% of the rural population, dispersed over the entire SNL, practice cattle production and at least intermittently sell into the beef market. The social and cultural importance of this activity is very high. Social aspects of the rural economy in general heavily influence the value chain.

Working conditions and living conditions are positive for the very substantial proportion of the rural population that the beef value chain reaches, although it is unlikely to reach the poorest in the rural areas. Further development will have to be supported, including social safety-nets and more targeted support such as small ruminant development.

Social sustainability is linked to the recognition of the multi-functional nature of cattle in livelihoods (including the importance of draught power, manure as fertilizer, family consumption of milk, and cash income to meet urgent household needs); of the strong seasonality of the SNL cattle supply (in large part used to pay education fees); and of both the potential of communal management of grazing and the current threats to it, including encroachments by homesteads and cropping.

IS THIS ECONOMIC GROWTH INCLUSIVE?

Despite its valuable contribution to the GDP, the beef value chain does not escape the country's overall situation characterized by a markedly uneven income distribution. The Gini index for the beef value chain reaches 80%. The lack of inclusiveness of the value chain could be explained by the strong dualism in the whole system between communal/traditional and commercial systems. The organization of the beef value chain has an obvious effect on the diversity of prices along the chain and thus on income distribution. The market-oriented component of the chain develops formal contractual arrangements for which the non-market-oriented component is not well prepared.

The beef chain in eSwatini has a great potential to create jobs in the country as it provides direct waged employment to 62,000 people, almost 13.5% of the total labour force of the country. Among them, 59% are part-time jobs while 41% have full-time jobs.

Environmental analysis

Human health

Cattle-ownership contributes to human health through its positive impact on nutrition in a country where protein intakes are scarce. At the same time, because of the indirect use of agrochemicals for fattening, the VC also produces negative impacts on human health, although negligible. Compared to other agricultural productions in eSwatini, the beef VC does not use intensively agrochemicals nor agricultural machineries but rather naturally grown grassland.

Farming operations provoke more impacts than all the other life cycle phases together (within the country borders). This is due mainly to the ammonia and nitrogen oxides emissions during the outdoor grazing and the dung decomposition.

TDL production systems still have lower impacts than the SNL ones on human health because of a higher feed efficiency (more meat for the same quantity of feed).

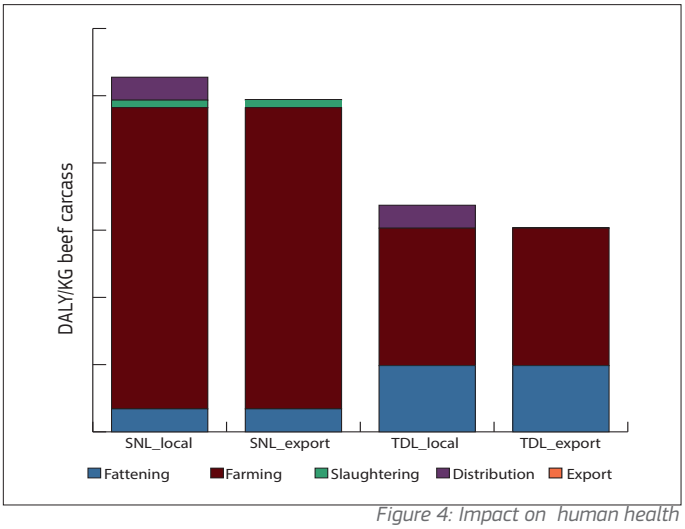

Figure 4: Impact on human health

Ecosystem quality

The TDL production systems, especially commercial ranches, use on average three times more land per animal than the SNL ones. This means that they use more natural resources for the same quantity of beef within a country with limited carrying capacity. However, this result should be interpreted with caution. As the ecosystem quality indicator should be complemented by additional rangeland tools to assess the sustainability of rangeland management (not only according to the land occupation rate).

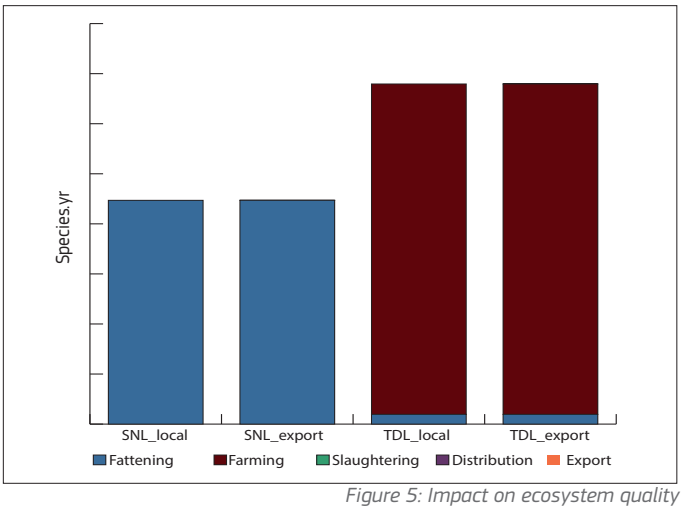

Figure 5: Impact on ecosystem quality

Resource depletion

The fattening operations are the main contributor to resources depletion, the TDL production systems having higher impacts than the SNL ones. This result should be interpreted with caution as more detailed primary data have been used in this study for the TDL system while a more optimistic scenario was used for the SNL.

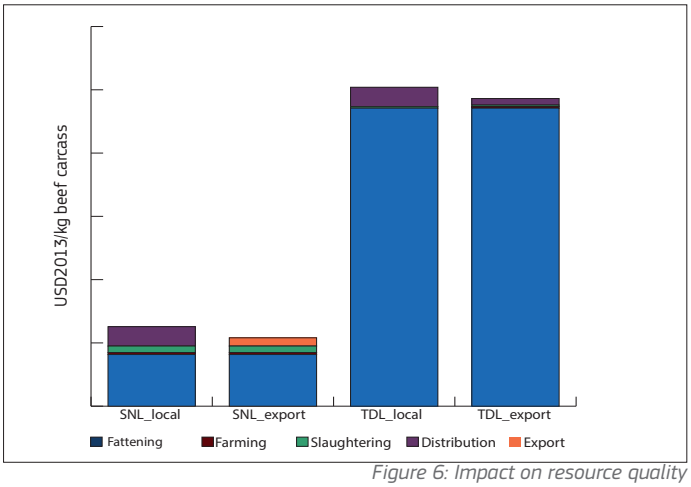

Figure 6: Impact on resource quality

IS THE VALUE CHAIN ENVIRONMENTALLY SUSTAINABLE?

The limited water resources in eSwatini is a small landlocked country with limited available land, water resources and animal feed. Most of the available water resources are used for crop irrigation.

The TDL production systems are more environmentally friendly when dealing with climate change and human health. However, these production systems have probably higher environmental impacts on ecosystems quality and resources depletion than the SNL ones.

Compared to the values in the scientific literature, the climate change impacts of the TDL systems are comparable to the results of beef value chains in other countries. The impacts of the SNL systems on climate change seem to be slightly higher than the literature values. This is mainly due to the Swazi low technical performances and the low off-take rates.

Both the TDL and SNL systems could become more environmentally sustainable with improved technical performance (higher birth rate, lower mortality rate, improved feed efficiency…) and good herd management practices (higher off-take rate, enhanced grassland management, development of sustainable alternative feeding options…)

Main findings

Risks

Many risks can constrain the sustainable growth of the eSwatini beef VC, mainly at the upstream stages.

Risk related with	Inputs	Production	Aggregation and processing	Marketing
Climate change (drought, floods)	Significant	Significant	Medium	Low
Animal diseases	Significant	Significant	Low	Low
Bushfires	Low	Significant	Low	Low
Market prices	Significant	Medium	Medium	Significant
Conflicts	Low	Significant	Medium	Medium
Enabling environment	Medium	Medium	Significant	Significant

Figure 7: Assessment of the main risks at the different steps of the VC

Main findings and recommendations

The beef VC in eSwatini makes a valuable contribution to the agricultural GDP. However, it does not elude the country's overall situation characterised by a markedly uneven income distribution. The strong dualism in the whole system can be considered as one of the causes for this lack of inclusiveness. The social issues of the VC are the typical ones of rural economies. Given the above quoted risks, especially those linked to climatic and market conditions, the following recommendations for the sustainable development of the beef VC can be made to policy makers:

- **Enhanced baseline studies** on the cattle production in the SNL would serve both to inform policy-making and to monitor an impact assessment of programmes on poverty reduction.
- Studies should be carried out on the **seasonality in current cattle sales from the SNL**, its economic impacts, and on the ways in which programmes could work along with the seasonal glut in sales, rather than ignoring or reforming it.
- **Coordination of the existing data collection** on livestock is needed. The current situation is unsatisfactory as the Annual Livestock Census Summary only collects data on homesteads owning livestock but not on the household; whereas the Agricultural Censuses gather information on households but present major problems of distinction of households owning livestock.
- To overcome problems due to lack of trust within the VC, it is recommended that a **beef forum** be established where representatives of all the VC actors from the formal and informal sectors can meet and hold discussions of mutual interest.
- An inclusive approach should be set out to develop an **information system dedicated to livestock** allowing knowledge-sharing, and development of sustainable livestock policies. This could allow for better identification opportunities for economic transformation and diversification in the livestock sector and for its integration into the national economy given the undercoming risks such as climate change. VC analyses could test possible pathways for a climate-resilient economic development by improving market access and trade relations while protecting the most vulnerable people.

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Agrinatura (http://agrinatura-eu.eu) is the European Alliance of Universities and Research Centers involved in agricultural research and capacity building for development.

The information and knowledge produced through the value chain studies are intended to support **the Delegations of the European Union** and their partners in improving policy dialogue, investing in value chains and better understanding the changes linked to their actions. VCA4D uses a systematic methodological framework for analysing value chains in agriculture, livestock, fishery, aquaculture and agroforestry. More information including reports and communication material can be found at: https://europa.eu/capacity4dev/value-chain-analysis-for-development-vca4d-

This document is based on the report "Beef Value Chain Analysis in eSwatini" 2018, by Abdrahmane Wane (CIRAD), John Morton (NRI), Fayçal Boureima and Fumani Ndlovu. Only the original report binds the authors.