



## **Potential for sorghum in food security and economic development among communities in arid and semi-arid lands in Africa**

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The role of agriculture in shaping the present and (perhaps, more strategically) the future of Africa and its people is and will remain important. A plethora of initiatives aiming at unlocking the full potential in agriculture have been initiated on the continent, including the New Partnership for Africa's Development's (NEPAD) Comprehensive Africa Agriculture Development Programme (CAADP)<sup>1</sup>. The goal is for African countries to achieve economic growth through agriculture-led development. There are, of course, various other bilateral, national and even regional initiatives all seeking to bridge the productivity gap in agricultural value chains.

The role played by the CGIAR Consortium of International Agricultural Research Centers, advanced research institutes, universities and national agricultural research organisations (NAROs) among others, has ensured the availability of a pipeline of high-quality technologies. Improved crops and breeds are available for testing and enhancing the basket of choice through adaptive research and new product developments.

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<sup>1</sup> <http://www.nepad-caadp.net/about-caadp.php#Aim>

With climate change, the arid and semi-arid lands (ASALs) of Africa are in focus. Population growth and diminishing productivity in high-potential agricultural areas has pushed drought-tolerant crop technologies to the fore. In a continent where 65% of land is ASAL and home to 400 million people<sup>2</sup> (approx. 40% of Africa's over 1 billion people), interventions aimed at raising the profile of these areas and exploiting the potential of selected value chains (VCs) for crops as well as livestock, are critical.

Sorghum stands out as one crop that should be harnessed to unlock the potential of Africa's ASALs. Drought- and heat-tolerant, sorghum varieties exist that are able to withstand flooding (Bonfim-Silva *et al.*, 2011). As a staple for over 300 million people in Africa<sup>3</sup>, sorghum can contribute to food and nutrition security, job creation and sustainable economic development, particularly for communities in ASALs. Sorghum is rich in carbohydrates, iron, magnesium, potassium, calcium and phosphorus<sup>4</sup> but low in protein and other essential minerals such as Vitamin A and zinc. Biofortifying the crop with essential minerals, vitamins and other nutrients that are in limited quantity could be a cost-effective tool in the battle against malnutrition in communities that depend on a single crop, all year round (Taylor and Taylor, 2011, Lipkie *et al.*, 2013). In addition to being important for human consumption, sorghum has potential for use in animal feed and beverage industries.

With its pan-African mandate, Africa Harvest views sorghum as a crop for the future in Africa; with a vision of it being a lead contributor in making Africa free of hunger, poverty and malnutrition, it is impossible to leave out sorghum out of its portfolio of focus crops. Africa Harvest has a twin approach to sorghum: firstly, help sorghum reclaim its important position by eliminating the “poor-man’s-crop” tag and secondly, ensure Africa’s smallholder farmers have access to high-level improved sorghum varieties from research, through partnership with CGIAR Centres such as the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and national agricultural research institutions (NARIs) to unlock current and future value from the crop.

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<sup>2</sup> <http://www.csdkenya.org/documents/working%20paper%20dmi.pdf>

<sup>3</sup> [http://www.sciencemuseum.org.uk/antenna/futurefoods/pro/progm\\_feedmore.asp](http://www.sciencemuseum.org.uk/antenna/futurefoods/pro/progm_feedmore.asp)

<sup>4</sup> <http://www.sorghumsa.co.za/nutritional-value.htm>

For over a decade, Africa Harvest has been involved in various aspects of the sorghum value chain. For example, initiatives to shift from subsistence to commercial sorghum farming have spawned a groundswell of activities and interest in the crop. Production and productivity as well as awareness of the commercial viability of the crop are on the rise.

Africa Harvest partnered with the United Nations Development Program (UNDP) Africa Facility for Inclusive Markets (AFIM) initiative to implement a project designed to jump-start market development and regional trade in sorghum, targeting ASALs in Kenya and Tanzania. Using the aggregator model, this project brought together 2,500 smallholder farmers (those farming at least 1 ha of sorghum). Through improved access to high-quality certified seed technology, intensification of production, transfer of good agronomic skills and use of inputs, these farmers increased productivity from 450 kg/acre to 1,000 kg/acre on average, an increase of over 200%. Through stronger market links, the volume traded between the two countries rose by 45% within one season. The total value of quality sorghum grain traded was valued at more than US\$1 million during a half-year period ending April 2013. Another 1,000 MT of high-quality sorghum grain was traded between the two countries by the end of September 2013.

The project has demonstrated the efficacy of inclusive business models in increasing productivity in agricultural VCs, laying a fertile ground for improved commercialisation. Improving VC ecologies can catalyse trade, employment and wealth creation among rural ASAL-based communities in Africa. The approach leverages participation of private sector players in the provision of services and products including seeds, inputs and financial services. The public sector is also looped into the system through the provision of extension services while gender mainstreaming is enhanced through participation of youth and women as producers, employees and even owners.

In agro-ecologies that can support production of other drought-tolerant crops, an integrated approach to food security, ecosystem management and livelihoods should be considered. Africa Harvest has used this approach in implementing a project in Kitui and Makueni counties of Kenya through a grant from the International Fund for Agricultural Development (IFAD), sourced from the Italian Development Cooperation. The 2010-2013 project targeted resource-

challenged households living in the ASAL areas. Building on the mixed farming practices that agro-pastoralists are well adapted to, the integrated approach leveraged indigenous and local knowledge while adding value through improved technologies and approaches. The project helped to; improve production of food crops, diets and nutrition (dual-purpose cowpeas), enhance incomes through horticultural crops, improve soil fertility and water access and management as well as diversify productive activities through rearing of improved breeds of chicken and goats. The target farmers improved their overall livelihoods while sustainably managing the natural resource base. Gender mainstreaming was critical to the implementation of this project with 73% of the target beneficiaries being women.

## Conclusion

The potential of sorghum to address food security, incomes, job creation, trade, malnutrition and overall economic development for communities living in ASALs of Africa has barely been tapped. More research, especially with regard to improving cultivars and enhancing nutritional value is still needed. Sorghum can also play an important role in mitigating the effects of climate change, especially among vulnerable communities. It can help enhance the ecosystem and natural resource base; but the crop requires greater attention from researchers, donors, local communities and development agencies. A holistic or integrated approach is worth the investment and further scrutiny, while a market-centric approach is the only sustainable way to drive this agenda.

Bonfim-Silva, E.M., Silva, T.J.A. da, Cabral, C.E.A., Kroth, B.E. and Rezende, D. 2011. Desenvolvimento inicial de gramíneas submetidas ao estresse hídrico. *Caatinga* 24 (2), 180-186.

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