



Potential of perennial sorghum under the microscope

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It is well-documented that agriculture in Africa faces complex challenges due to diverse causes like dependence on rainfed agriculture, poor soil fertility, inadequate farming methods and small-holder farms with no or minimum economic returns.

These factors, compounded by lack of access to good-quality seed and the growing effects of climate change, have made the region vulnerable to crop failures and increases in food insecurity. African producers therefore require smart technologies to increase food production beyond the subsistence level. However, seed-based production of annual crops is highly vulnerable to the many stresses encountered on the continent.

Research is beginning to focus on development of perennial crop systems that are more resilient to extreme environmental conditions. Sorghum is a key staple crop

across much of Africa and perennial grain sorghum, once developed, could provide such resilience while helping curb or even reverse soil degradation.

In addition to ecological benefits, perennial sorghum in Sub-Saharan Africa could reduce the costs, efforts, and risks of seed sowing, solve the widespread problem of poor plant stand establishment and emerge and grow more quickly than a seed-sown crop, thus taking full advantage of available water and nutrients. Perennial sorghum provides multiple harvests, which could help restore the livelihoods of resource-constrained producers.

Since 2014, the Agricultural Research Council (ARC) have been participating in an international project aiming towards the development of perennial sorghum. To produce seed for field trials, parental germplasm with perenniality traits were test-crossed with locally adapted lines.

Perenniality in temperate regions with cold winters, like in South Africa, requires rhizome formation and winter-hardiness. A detailed genotypic and phenotypic evaluation is being carried out by a team of scientists to understand the morphological and agronomic traits, rhizome development, and winter survival of these lines at Potchefstroom and other selected regions.

The outcome from this research will help to evaluate possibilities of reaping multiple crops from single plantings, and increasing the extent and duration of soil cover by plant roots to mitigate disadvantages of conventional annual crops including soil erosion and nutrient leaching.

Spreading seed and soil preparation/sowing costs over multiple cropping cycles may also permit smallholders to afford hybrid seed, and benefit from hybrid vigour. ■