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Sorghum Lager and Stout Beer: A Boost to the African Economy



The sorghum component of Eagle Lager is clearly evident on the bottle label

“Sorghum lager and stout beer brewing is a great African success story that has benefited everyone in the value chain from farmers, through brewers to the consumer”

For millennia, sorghum has been the basis of traditional African beers such as the clear beers of West Africa (dolo and pito) and the opaque beers of southern Africa. These beers are part of the African tradition and remain very popular but today Africans also enjoy lager and stout beers. These beers, of European origin, use barley as their major ingredient. This presents a major problem as barley is a temperate cereal and the African climate is unsuitable for cultivation. Thus, barley grain or barley malt must be imported which requires the use of valuable foreign exchange and increases the price of the beer beyond the reach of most Africans. Importation also disadvantages local farmers as it denies them potential markets.

In the late 1980s, the Nigerian government briefly banned the importation of cereal grains like barley and wheat with the aims of saving foreign exchange and forcing brewers and bakers to use locally grown grains. With much ingenuity, the brewing companies in Nigeria, were able to use sorghum to successfully brew their lager and stout beers. Despite the cereal importation ban having been rescinded for many years, sorghum



A technician in a brewery demonstrating the Simple Bleach Test. As can be seen on the middle and right filter papers, the tannin sorghums stain black.

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has continued to be the cereal ingredient of choice for brewing because of its cost advantage. This development has had major economic benefits. Sorghum varieties with good brewing properties are grown under contract bringing guaranteed income to farmers. In addition, a large-scale sorghum malting industry has been developed. Not only is the sorghum malt used for brewing beer, it is also used as a major ingredient in hot and cold non-alcoholic malt based beverages, which are very popular across Africa.

The SABMiller company has developed a novel process to brew a lager-type beer (Eagle Lager) using unmalted sorghum grain and food-grade enzymes and Eagle Lager is now being brewed in Tanzania, Uganda, Zambia and Zimbabwe. The Eagle Lager project benefits local small-scale farmers through contract growing of sorghum and provides an affordable lager beer to consumers for whom this type of beer was previously unaffordable.

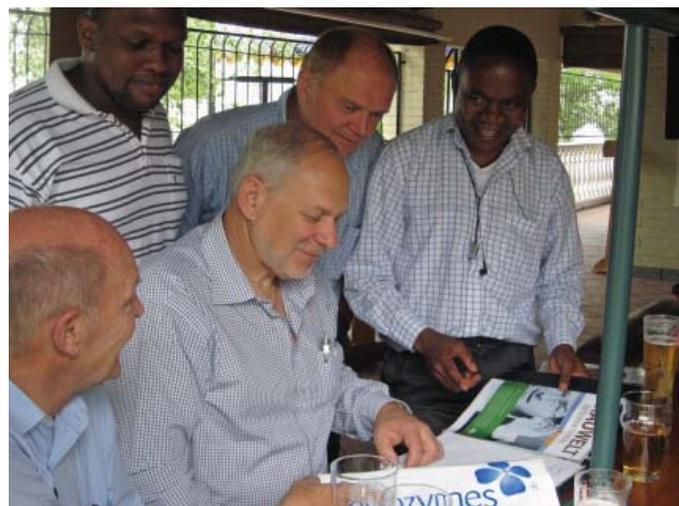
INTSORMIL, via its Southern Africa Regional Project, is playing a key role in sorghum lager and stout beer brewing development in Africa through education and training activities that have promoted the use of sorghum by the brewing industry. White sorghum grains are preferred for lager and stout brewing because of their generally lower levels of phenolics. In 2004, INTSORMIL together with the South African Sorghum Forum held a White Sorghum Workshop in Pretoria to educate southern Africa sorghum industry stakeholders about the different types of sorghums and in particular about the Tan Plant White Sorghums. These are tannin-free and very low in other types of polyphenolics and hence are ideal for lager brewing.



John Taylor (front left), Clement Djameh of UNIDO (front center) and Gregory Komlaga of the Ghana Food Research Institute (back left) with personnel from Guinness Ghana, one of the partners in the West African sorghum value chain project, at the UNIDO pilot sorghum lager beer brewery.

INTSORMIL collaborator, John Taylor and his colleagues at Pretoria University, South Africa have run basic training courses in sorghum malting and brewing technology in a number of African countries. The Simple Bleach Test, developed at Pretoria University with the support of INTSORMIL, is one component of the training. This test enables rapid identification of sorghums that are tannin free and suitable for lager brewing.

Training African food scientists with high level skills in sorghum malting and brewing science and technology is equally important. With the support of INTSORMIL funding and via partnerships with industry, Lloyd Rooney, INTSORMIL PI located at Texas A&M University and John Taylor have been jointly supervising student research programs for the past decade.



Pretoria University Food Science students from Zambia explaining their research to representatives of Novozymes SA, a company that partially sponsored their research.

Breeding and cultivation of sorghum varieties with good agronomic and brewing qualities are essential to the success of brewing sorghum lager beer. Medson Chisi and his team at Golden Valley Agricultural Research Trust in Zambia have developed a number of sorghum varieties which are highly suitable for brewing. He is now working closely with farmers, various NGOs and brewing companies in southern Africa to implement the adoption of these varieties. In Zambia he is working with Care International and CLUSA (Cooperative League of the USA) on a scaled sorghum commercialization project. About 3,000 small scale farmers have been identified and arrangements made for sorghum production on contract. The small scale farmers have the opportunity to profitably produce sorghum for a specific end-use market where the Sorghum Research program and the NGOs facilitate the grain production and the end-user (SABMiller) guarantees the market. This project will be replicated in other Zambian provinces as the demand for sorghum keeps growing.

Sorghum lager and stout beer brewing is a great African success story that has benefited everyone in the value-chain from farmers through brewers to the consumer and has created new enterprises in the West African sorghum malting industry. Ian Mackintosh, technical director at Uganda's Nile Breweries in BBC News, 4 February 2004 stated that "the marketing of Eagle Lager beer was immediately a massive success and within a couple of months after release it had become the largest brand in Uganda. Eagle Lager is still one of the top brands in Uganda, and has succeeded as a bridge between conventional and traditional beer. A number of SAB subsidiaries in Africa and the Americas are now replicating this idea in their local markets."

Technologies developed in Africa have helped countries like the USA and Australia to produce sorghum lager beers, especially for people with celiac disease who are gluten intolerant.

In spite of the significant progress, challenges still remain to improving the effectiveness and efficiency of sorghum brewing. To further develop the sorghum brewing industry in Africa and elsewhere, it is essential that the competitive edge of sorghum is both maintained and extended. To this end, focused research and development work is required involving a partnership between INTSORMIL, government organizations and private companies.

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