

**THE ROLE OF VARIETAL ATTRIBUTES ON ADOPTION AND
COMMERCIALIZATION OF IMPROVED SORGHUM IN MBEERE
DISTRICT, KENYA**

Anne Gesare Timu

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Department of Agriculture Economics: University of Nairobi, Kenya.**

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ABSTRACT

Approximately 82% of Kenya's landmass is categorized as arid and semi-arid. These areas are characterized by low agricultural productivity leading to food insecurity. Majority of the people in these areas depend on food aid and famine relief from the government and NGOs as a livelihood option. Increasing agricultural production and productivity through growing of drought tolerant crops provides an opportunity that can assist the communities adapt to climate change. The Kenya Agricultural Research Institute (KARI) in collaboration with International Crops Research Institute for the Semi-Arid Tropics, have, over the years, developed and released more than eight improved sorghum varieties to smallholder farmers in the arid and semi arid regions of the country. Studies suggest that the uptake of these new varieties has been rapid. While past studies have assessed the factors influencing adoption of improved sorghum varieties, the effect of varietal attributes on adoption remains unknown. There is also lack of information on the role of crop varietal attributes on farmer participation in output markets.

This study examined effect of sorghum variety attributes on adoption and the decision of farm households to participate in output markets in Mbeere South District. A multivariate probit, a truncated regression and a censored Tobit models were used to analyze the effect of variety attributes on the farmers' adoption decision, intensity of adoption and influence on market participation respectively using data collected from 140 farmers.

The results show that out of the five improved varieties of sorghum released to farmers in the study area, only two varieties were widely adopted (Gadam and Serena). The results on the perception of farmers variety attributes show that improved varieties had desirable production and marketing attributes while the local varieties were perceived to have the best consumption

attributes. The results also indicate farmers supply different sorghum varieties to the market because of the differences in the varietal traits contained in each variety.

The results of the multivariate probit regression model shows that the major sorghum attributes driving rapid adoption are taste, drought tolerance, yield, ease of cooking and the variety's ability to fetch a price premium. Early maturity, a major focus of research has no effect on adoption. Among the control variables, extension visits, total household assets, off-farm income and household size significantly affected the adoption of improved sorghum varieties. The results of a joint hypothesis test shows that indeed variety attributes affect the likelihood of adopting improved sorghum varieties. Result of truncated regression model shows that farmers consider *inter alia* the variety attributes of the improved varieties before deciding on the proportion of land area to allocate under the varieties. The attributes majorly considered by farmers in allocating land to improved seeds include; variety yields, ability to fetch a price premium, taste and pest resistance. Among the socio economic attributes, only land size affects the intensity of adoption. Similarly, the results of the Tobit model shows that taste, farm gate price and brewing qualities do affect the likelihood and the extent of market participation.

The findings of the study imply that, while developing improved seed varieties, breeders should also focus on non yield attributes like taste and ease of cooking. Secondly, it is also important that both producers and consumers of sorghum be involved in the seed evaluation process.