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Sorghum - An alternative energy crop for marginal lands and reclamation sites

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The production of biogas and the associated cultivation of energy crops are still of great importance. Considering increasing restrictions for the cultivation of standard biogas crop maize regarding an environmentally friendly production of biomass, a wider range of energy crops is needed. The cultivation of sorghum can contribute to this. As maize, sorghum is a C4-plant and offers a high biomass yield potential. Originated in the semi-arid tropics, sorghum is well adapted to warm and dry climate and particularly noted for its drought tolerance compared to maize. It also makes few demands on soil quality and shows a good capability of nutrient acquisition. Therefore, particularly on marginal areas and reclamation sites with low soil nutrient and water content sorghum can contribute to secure crop yield and income of farmers.
The applied research project aims at and reflects on the establishment of sorghum as a profitable and ecological friendly cropping alternative to maize, especially in the face of probable climate change with increasing risks for agriculture. For this purpose, site differentiated growing and cultivar trials with a standardized planting design as well as several practical on-farm field experiments were conducted. The agronomical and economic results will lead to scientifically based procedures and standards for agricultural practice with respect to cultivation methods (drilling, pest-management, fertilization), cropping sequence and technique, cropping period or position in crop rotation. Even by now there is a promising feedback from the agricultural practice linked with an increasing demand for information. Moreover, the specific cropping area is increasing continuously. Therefore, the leading signs for the establishment of sorghum as profitable alternative to maize biogas production are positive.
Sorghum cultures perform best as main crops in the warm D locations in the middle and East German dry areas. Here, the contribution margin differences between maize and sorghum were the least pronounced due to the poorer performance of maize under these site conditions. Furthermore, the comparatively lower land-lease rates in these regions allowed for positive equity capital formation also in sorghum crops.