Junior Fellowship for Isaiah Etemo Muchilwa: Empowering Jua Kali to combat mycotoxins in Kenya's maize supplies: A participatory design approach with transdisciplinary knowledge integration

Initiative: Wissen für morgen – Kooperative Forschungsvorhaben im subsaharischen Afrika (beendet)

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Kenya is overburdened by the high prevalence of mycotoxins that contaminate foods. With a tropical climate favourable for fungal growth, these toxins compound health problems and erode progress to eradicate poverty and hunger. Mismanagement of harvests coupled with technological deficiencies on small farms account for losses of up to 30% in annual crop yields, threatening the livelihoods of already impoverished communities. Despite global efforts to address the crisis, many solutions introduced rely on technological imports to the detriment of local microenterprises, specifically to those involved in manufacturing - such as the Jua Kali in Kenya. As sustainable livelihood management requires the integration of indigenous competencies and resources into proposed interventions, this proposed project focuses on a participatory approach to mycotoxin reduction by involving Jua Kali. Mitigating mycotoxins can offer an opportunity to develop local capacity to upgrade technologies on small farms, strengthening livelihoods and improving health of the broader population, and hence the focus of this project to analyse approaches for design optimization to combat the menace with technologies that can be used on smallholder farms and produced by the Kenyan Jua Kali sector. Using a participatory design approach to technology innovation, societal stakeholders will be brought into a knowledge creation process together with engineers, microbiologists and social scientists, that will seek to: expose and contextualise existing barriers to innovation and entrepreneurship; appraise local (on-farm) postharvest technologies with regards to potential to mitigate mycotoxins; co-design and prototype selected on-farm technologies for mitigating mycotoxins and evaluate strategic linkages to accelerate their adoption and commercialisation through the Jua kali sector. The success of this approach could inform other technological research initiatives in Africa, beyond just mycotoxin reduction as envisaged in this project.

Projektbeteiligte

Prof. Dr. Eva Schlecht
Universität Göttingen
Fakultät für Agrarwissenschaften
Department für Nutztierwissenschaften
Abteilung Tierhaltung in den Tropen und Subtropen
Göttingen

Dr. Isaiah Etemo Muchilwa
Moi University
School of Engineering
Eldoret
Kenia

Prof. Dr. Nikolaus Schareika
Universität Göttingen
Sozialwissenschaftliche Fakultät
Institut für Ethnologie
Göttingen

Prof. Dr. Andreas Bürkert
Universität Kassel
FB 11: Ökologische Agrarwissenschaften
Fachgebiet Ökologischer Pflanzenbau und Agrarökosystemforschung in den Tropen und Subtropen
Witzenhausen

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