Popular scientific project description for project funded by Ekhagastiftelsen

Popular scientific project description is to be submitted within 2 months of project grant.

Application number:	2025-150
Project title:	Crop diversification in maize-based cropping systems to enhance crop and soil health, and improve productivity
Receiver of grant (name, address):	Esayas Mendesil College of Agriculture & Veterinary Medicine Jimma University P.O. Box 307 Jimma Ethiopia
Contact / project manager:	Esayas Mendesil
Project start (yyyy-mm-dd): *	2026-01-01
Project end (yyyy-mm-dd): *	2027-12-31
By Ekhagastiftelsen granted sum:	850 000 SEK

Project description: (200 - 300words)

As in most sub-Saharan African countries, maize is a major staple crop for millions of smallholder farmers in Ethiopia. Despite its importance, maize production in the country is largely dominated by continuous monocropping systems. Over time, this practice has contributed to declining soil fertility, increased insect pest and disease pressure, ultimately resulting in low and unsustainable productivity. Several previous studies, including our recent research conducted in southern Ethiopia where maize monocropping is widespread have documented these challenges. Our findings revealed poor soil fertility, low earthworm abundance, high incidence of plant-parasitic nematodes, severe fall armyworm infestations, and reduced grain yield and biomass. Together, these results underscore an urgent need to develop more sustainable and resilient maize production systems in the region. To address the challenges associated with continuous monocropping and heavy reliance on agrochemicals, maize–legume intercropping is proposed as a promising strategy to enhance productivity and food security while minimizing negative environmental impacts. In this project, we aim to co-design resilient cropping systems using a Living Lab approach that actively engages farmers and other key stakeholders. Specifically, we will identify the most compatible legume species for maize-based intercropping systems that maximize overall system productivity. This will be achieved by examining how different legumes contribute to improved soil health, reduced pest pressure, and increased crop yields. The study will be implemented in three major maize-growing districts in Ethiopia through a combination of on-farm and on-station experiments. The findings from this project will support the co-design of sustainable maize–legume intercropping systems that enhance crop productivity, promote beneficial soil organisms, and improve overall soil and crop health, while reducing dependence on agrochemicals.

* Dates for project start and end should be the dates for which the grant is received (Not dates for total project if longer than period for which grant is received)