



Tropentag, September 16-18, 2026, hybrid conference

“Towards multi-functional agro-ecosystems
promoting climate resilient futures”

Does sustainable intensification pay for small-scale producers? An analysis of earnings from sub-Saharan Africa

MARWAN BENALI¹, LUC CHRISTIAENSEN², VIVAN COELHO³, JUAN CORREA⁴, ESTHER
HEESEMANN⁵, NICHOLAS SITKO⁶, IRENE STAFFIERI⁷, EMANUELE ZUCCHINI⁸

¹*Food and Agriculture Organisation of the United Nations,*

²*World Bank,*

³*Food and Agriculture Organisation of the United Nations,*

⁴*FAO, Inclusive Rural Transformation and Gender Equality Division, Italy*

⁵*Food and Agriculture Organisation of the United Nations, Germany*

⁶*FAO, Inclusive Rural Transformation and Gender Equality Division , Italy*

⁷*Food and Agriculture Organisation of the United Nations, Italy*

⁸*Food and Agriculture Organisation of the United Nations, Italy*

Abstract

Sustainable intensification (SI) practices are widely promoted as win-win-win approaches for fostering agricultural productivity growth while reducing the environmental and health consequences of conventional agriculture. Yet their ability to improve the economic wellbeing of small-scale producers has not been empirically tested in a multi-country context. Using nationally representative plot and household level data from seven countries in sub-Saharan Africa, we measure the returns to family labour, returns to land, and changes in labour inputs associated with the application of four SI practices: cereal legume intercropping, organic fertiliser, soil and water conservation, and agroforestry. Using an OLS model with a battery of demographic, farm-specific and spatial control variables, and a variety of robustness checks, we show that only cereal-legume intercropping consistently generates positive returns to family labour. The adoption of the other three practices are shown to generate negative returns to family labour, due to a combination of increased labour inputs and/or reductions in returns to land. The results further show important regional heterogeneities between east and west Africa, with SI practice being more profitable for adopters in west Africa. We find limited evidence suggesting that adopting SI practices as bundles or increased adoption duration changes the overall findings. Similarly, our results show that SI practices generate few additional returns to family labour in the context of extreme precipitation or drought. Taken together, our results suggest that there is a significant risk that the public goods generated by SI practices can come with significant private costs to the small-scale producers who adopt them. While widespread adoption of SI practices is essential to support a transition toward a more sustainable agrifood system, achieving this will require technical solutions to reduce their labour burden and productivity and policy solutions that effectively compensate producers for the public goods through their private efforts.

Keywords: Africa , climate change, profitability, returns to labour, returns to land, sustainable intensification

Contact Address: Esther Heesemann, Food and Agriculture Organisation of the United Nations, Vogesenstr 23, 79115 Freiburg im breisgau, Germany, e-mail: esther.heesemann@fao.org