

Solution space for sustainable intensification in Bougouni

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Key research activities

- We used data from multiple sources to generate a range of simple production scenarios that allow us to quickly explore options for sustainable intensification.
- Three yield scenarios: 50th and 90th percentile yields for the region, and experimental potential yields (from ICRISAT trials and other literature).
- These were evaluated for current crop allocation and with crop area optimized for maximizing profit.
- Constraints on optimization are: meeting household calorie needs from grain production and no more than 2 ha of maize for each 1 ha of cotton, because of policies which limit fertilizer availability.

Results and main findings

- Crop area is closely tied to household size, (Figure 1, inset) and crop allocation is relatively diverse (Figure 1).
- In optimization scenarios crop allocation produces enough maize to meet family food needs, enough cotton to procure the inputs for maize, and the rest of the land allocated to the most profitable crop (groundnut or cotton).
- In 50th percentile scenarios 21% of households are not food self-sufficient. This declines to <1% in all intensification scenarios.
- The percentage of households above the \$1.25/worker/day poverty line increases from 1% in the 50th percentile scenario to 86% in the optimized potential yield scenario, but less than half of households earn over \$2/worker/day, and only 12% make more than the average yearly income from gold mining (Figure 2).

Implications of the research for generating development outcomes

- Farm size is labor-constrained, and land is available for expansion.
- Farm incomes are generally low, and improved yields can only reduce levels of extreme poverty and food insecurity, and cannot compete with off-farm income sources.
- Interventions on staple crops should thus focus on food-insecure households, while more profitable options should be developed to meet poverty reduction goals.

How this work would continue in Africa RISING phase 2

- If options for testing and dissemination are presented along with their potential benefits with regards to improving food self-sufficiency and/or profitability, targeting of options can be done through farmers' voluntary selection.
- This analysis does not account for nutrition security or dietary diversity, both of which are important to consider when aiming for impact in health outcomes.
- A further analysis would also consider storage losses, impacts of warrantage systems or changes in subsidies or market prices.

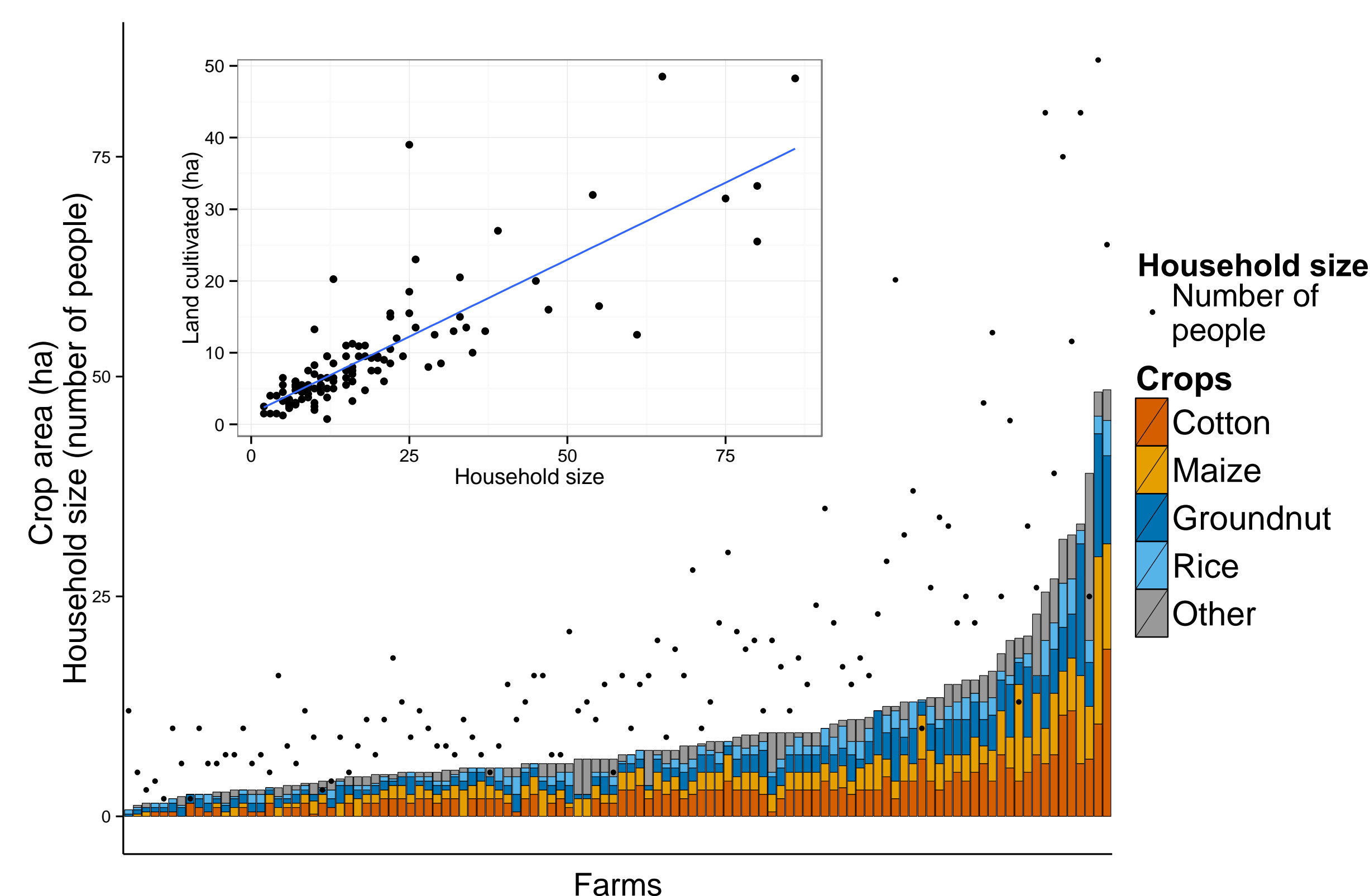


Figure 1: Current crop area allocation and household size in Flola, Sibirila, and Dieba, Bougouni district

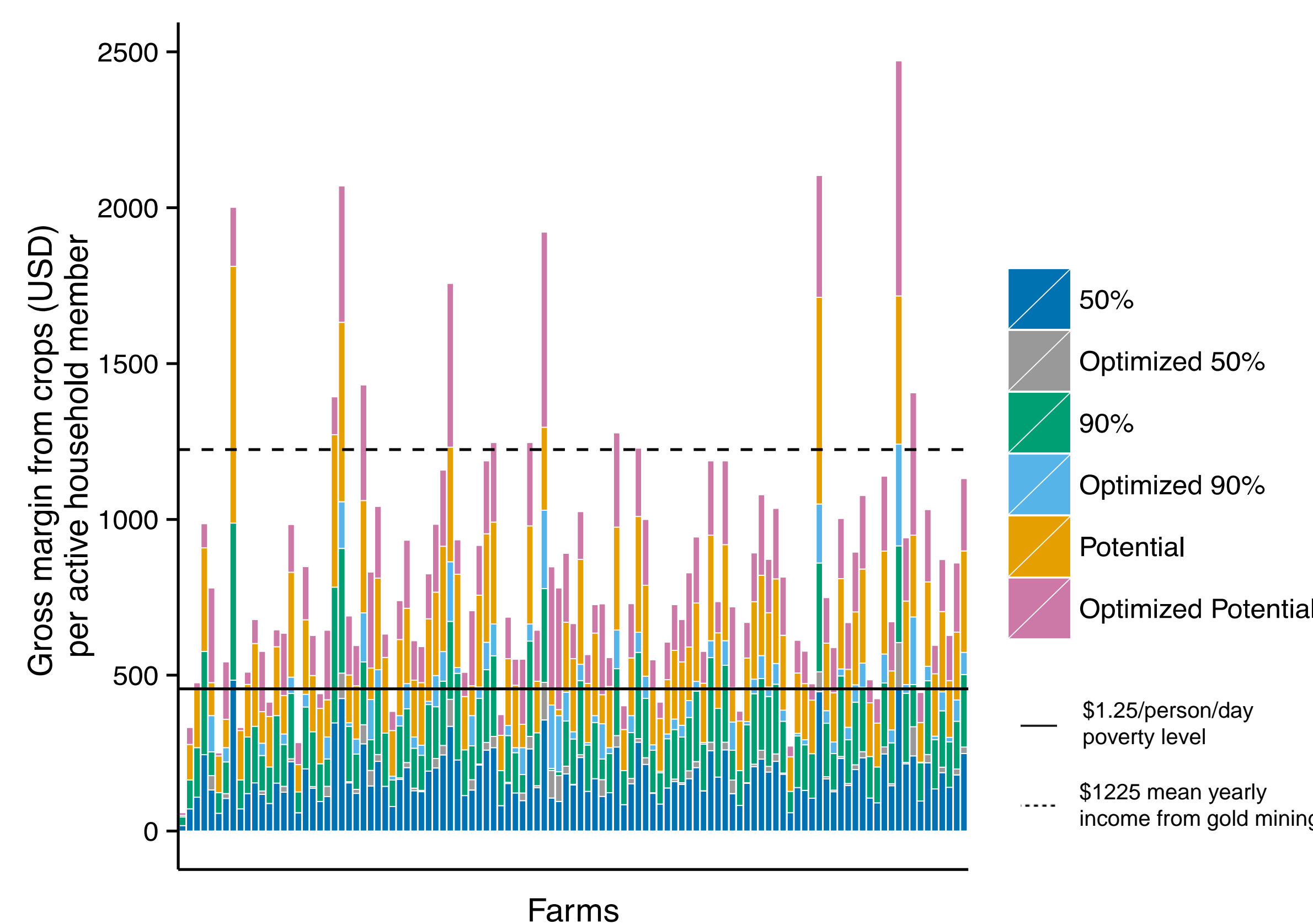


Figure 2: Income from crop production in six intensification scenarios. Farms are ordered by total area as in Figure 1

Current partnerships and future engagements for out scaling

Yield data from the IFRPI Mali AfricaRISING Baseline Survey. Market prices collected by the Institut d'Economie Rurale. Other data collected in collaboration with the Compagnie malienne pour le développement du textile (CMDT), Association Malienne d'Eveil au Développement Durable (AMEDD), Mouvement Biologique du Mali (MoBioM), Wageningen University and ICRISAT.

This information will be shared with project partners in order to better plan and target dissemination activities. It will also be important to share insights with policymakers, as this analysis has implications for agricultural policy.