



A Healthy Diet for a Growing Population: A Case Study of Arua, Uganda

Improving food systems in less-favoured areas in East Africa KB-35-003-001

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Objectives and methods

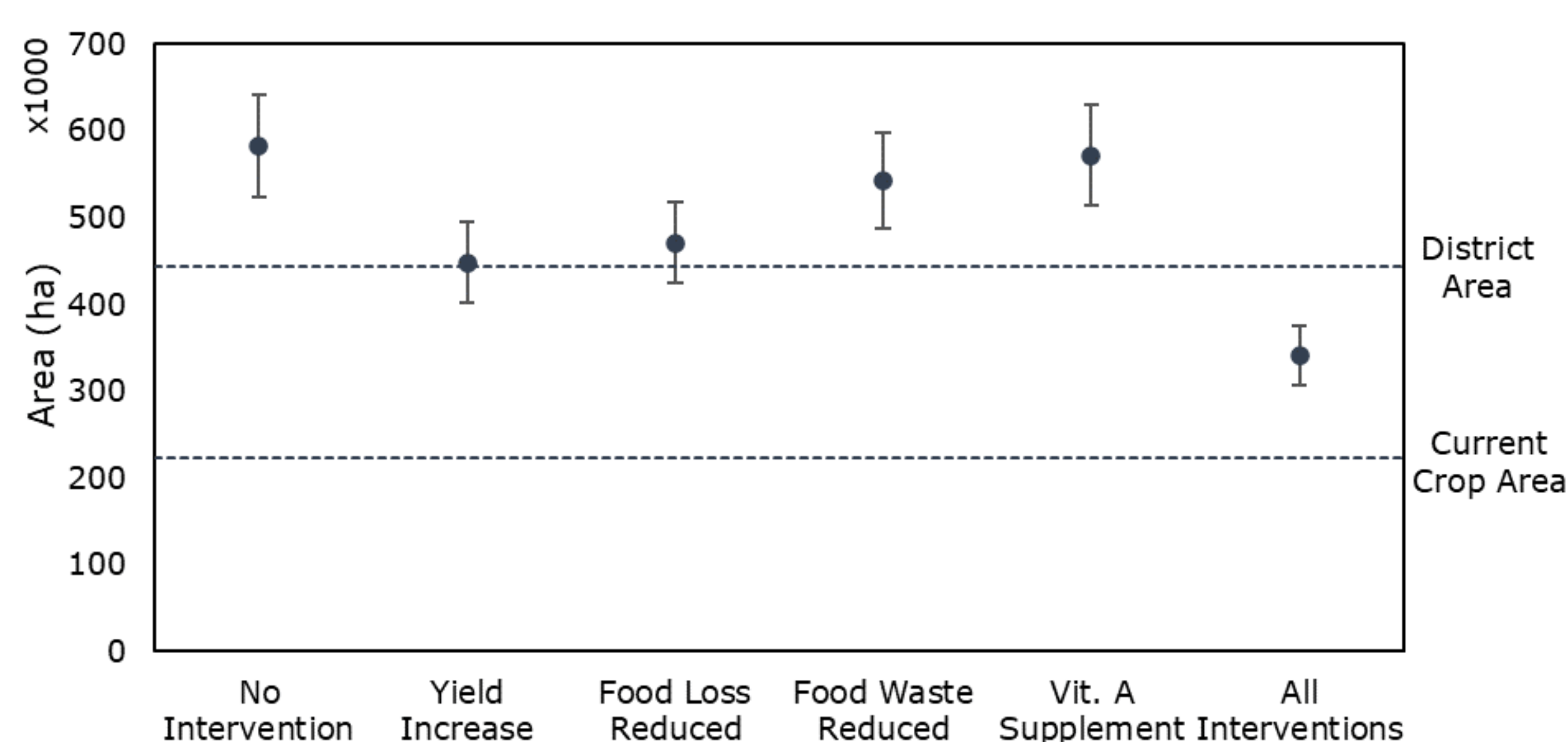
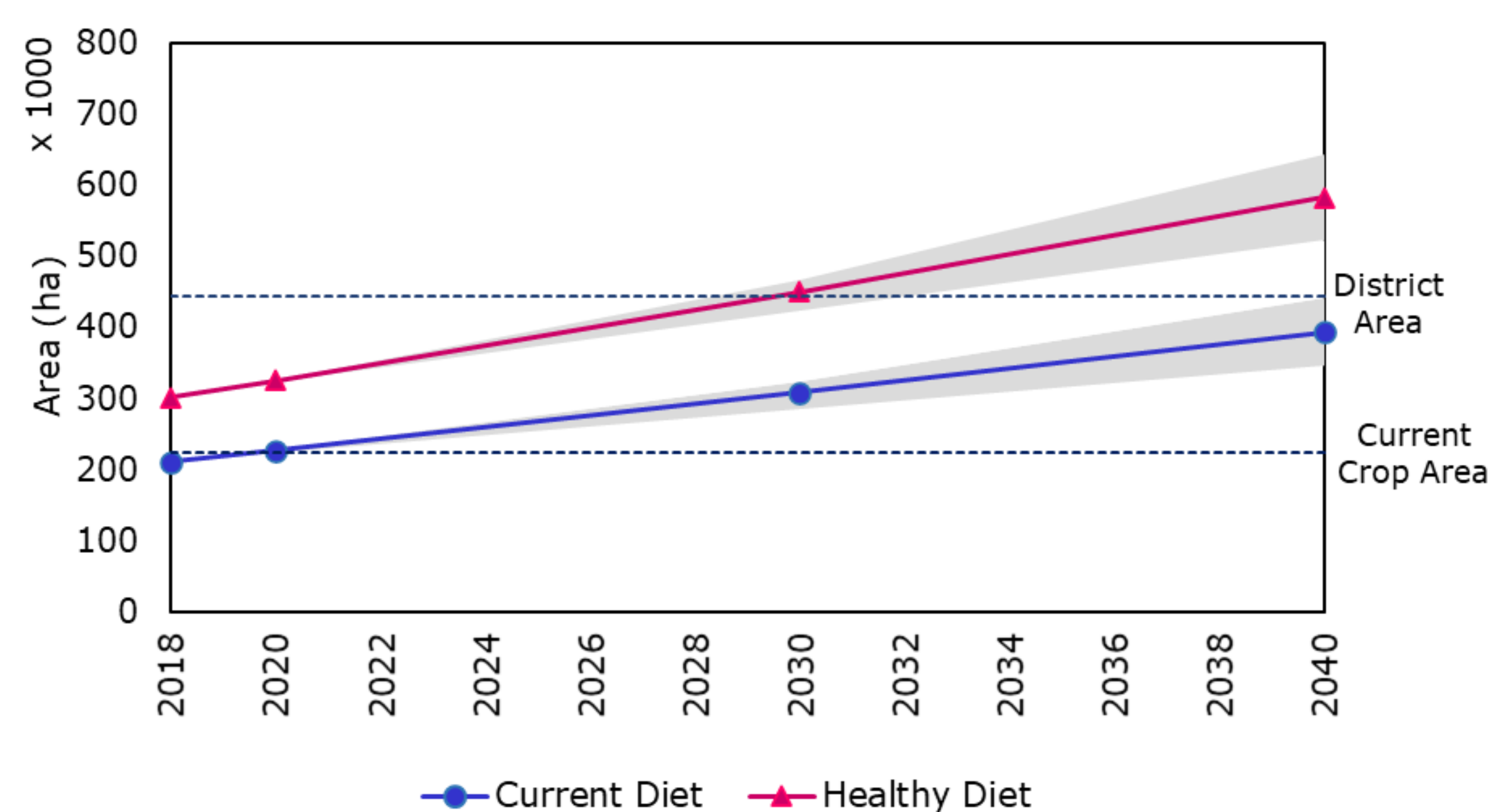
Objective: To analyse the possibilities for providing the growing population of the Arua district in Uganda with a locally-produced healthy diet in 2040.

Method: We use a regional land use model based on linear programming optimization to analyze multiple food system scenarios with alternative demographic pathways. Healthy diets are based on the EAT-Lancet study and EFSA nutritional recommendations.

Relevance: Understanding how to build and use models to support local policy makers to improve policies and programming.

Results, solutions and contribution to transitions

- Land use for food production will likely increase drastically due to increasing population, resulting in wide-scale land conversion.
- A healthy diet for Arua's population requires an increase in calorie and vitamin A intake and an intake shift from cereals, tubers, and oils towards vegetables, fruits, and legumes.
- Producing a healthy diet for Arua's future population would be impossible within the district's total area without drastic changes to the food system.
- The most effective interventions towards enabling a healthy diet are those tackling macro- *and* micro-nutrient availability simultaneously.
- An integral approach is needed, implementing multiple interventions across different food system sectors at the same time.



(Top) Projected land use for food production in Arua given the current (circle) and a healthy (triangle) diet, with the population following SSP2 projections. The shaded area is the envelope of crop areas based on SSP1 and SSP3. (Bottom) Crop area required for a healthy diet for Arua in 2040 given alternative interventions in the food system. Dots represent crop areas for the population following SSP2, and bottom and top error bars following SSP1 and SSP3 respectively.

External partners

We collaborated with Muni University in Arua to:

- Provide input for the model parameters on food production.
- Organize workshops with local stakeholders from both the public and private sector to characterize Arua's food system and validate model results.

Other partners, including Office of the Prime Minister, World Food Programme and the Food and Agricultural Organization also supported the project with data and insights.

What's next?

- Publication on methodology and Arua case.
- Expanding the model to understand trade-offs between healthy diet and other sustainability objectives and constraints, including:
 - Soil nutrient balances.
 - Financial objectives.
 - Labour market constraints.
- Upscaling analysis to country level:
 - Data available on trade.
 - Insights can be used for policy on national food system development.



(Left) Cabbage is one of the few vegetables currently produced commercially in Arua. (Top Right) The current diet in Arua is very high in carbohydrates with few nutrient dense products. (Bottom Right) Workshop with local stakeholders to characterize Arua's food system.

Questions for audience

- What other scenarios are interesting to analyse?
- Application of the methodology in other regions?
- What is a link to your work? What can you offer that is useful for us?
- How can this type of analysis be useful for stakeholders in deciding where and what to invest in?
- Which variables should be added to the upscaling analysis?



Key publications