A Healthy Diet for Arua's Growing Population: A Scenario Analysis

Results of 2019-2022 study

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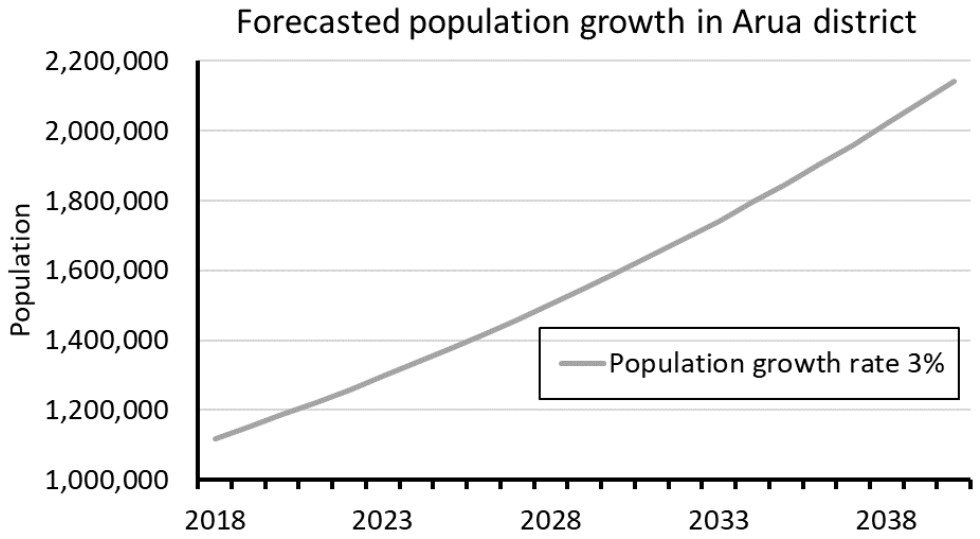
Research Questions

- At 3% pop. growth: doubled population by 2040
- Low crop & animal yields
- High post-harvest losses
- Unbalanced diet high in carbohydrates
- **Is a healthy diet for all in Arua possible?**
- **How much land needed in 2040?**



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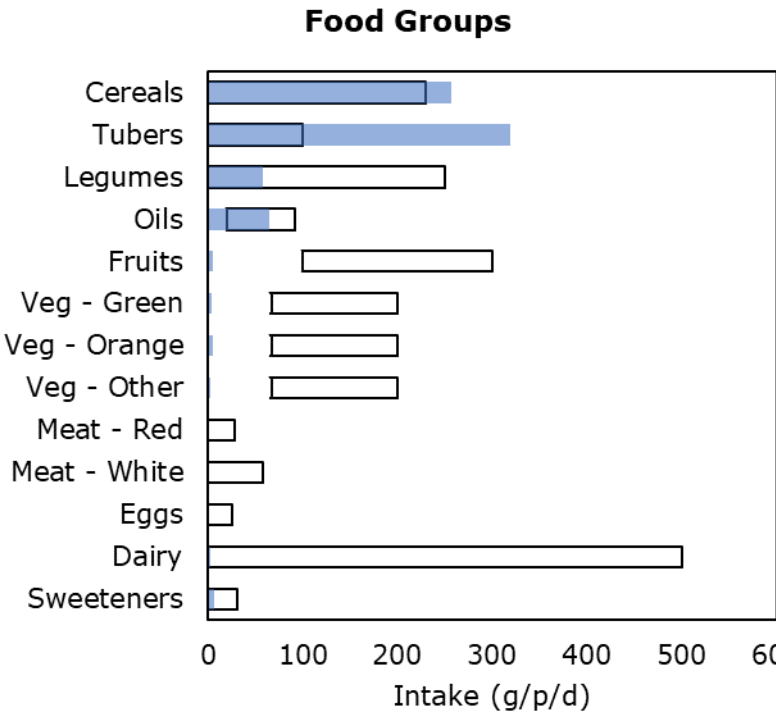
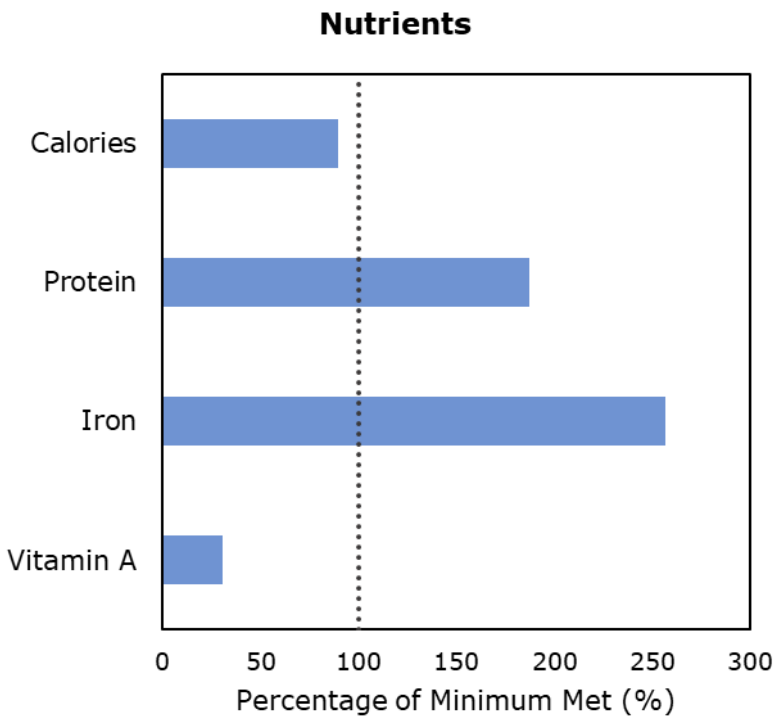
Current & Healthy Diet





Minimum:

2171 kcal

29 g

7 mg

431 mcg

Current Diet → Living Standards Measurement Survey (LSMS) production data

Healthy Diet → EAT-Lancet diet + European Food Safety Authority

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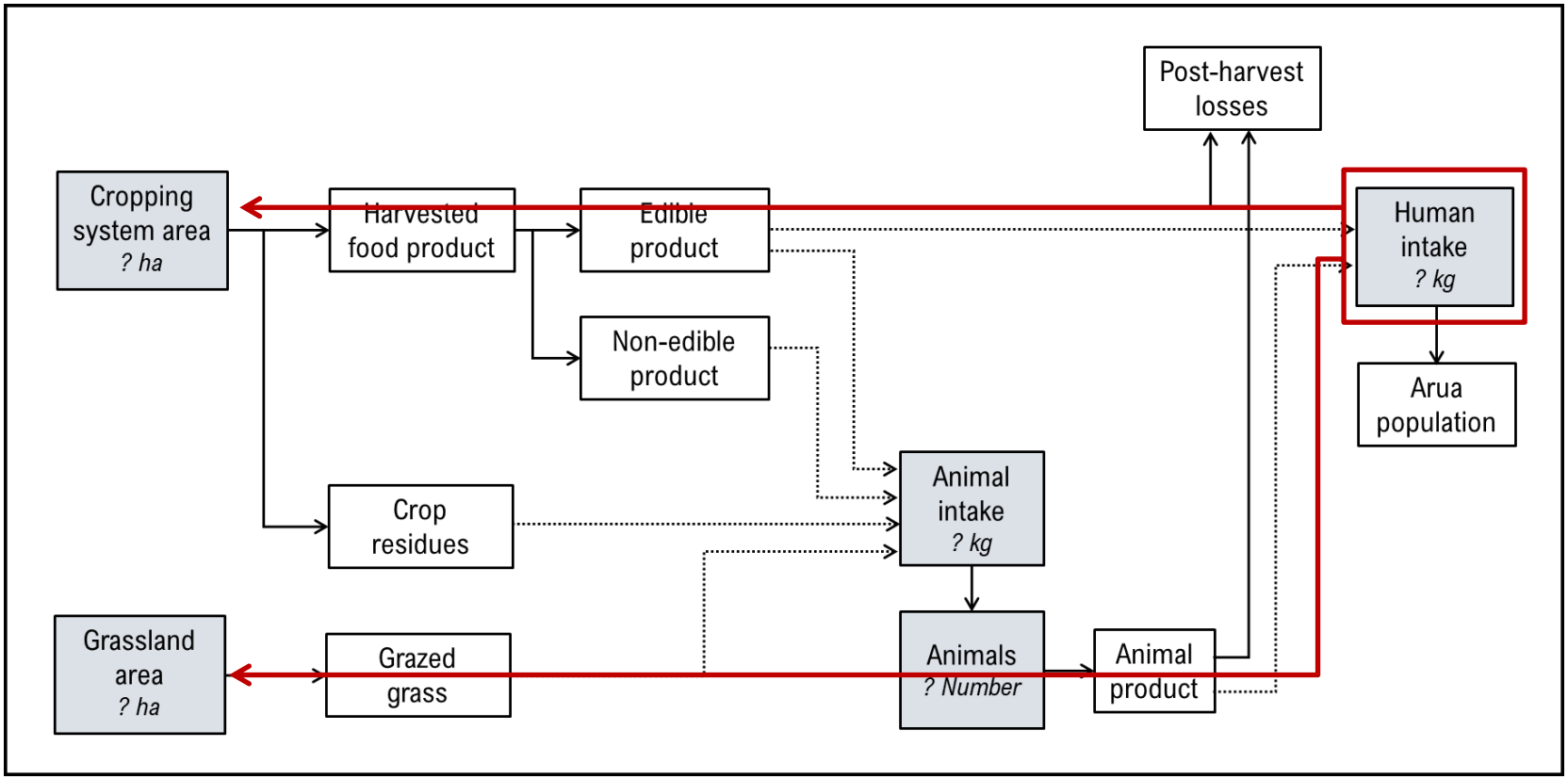
Food System Model: From Diet to Land Use



Arua Crops & Animal Types

Food Groups	Crops
Cereals	Maize
	Sorghum
Tubers	Cassava
	Sweet potato
	Plantain
Fruit	Mango
	Banana
	Papaya
Legumes	Beans
	Pigeon pea
	Soybeans
Oil crops	Sesame
	Groundnuts
Vegetables	Tomato
	Cabbage
	Onion
	Pumpkin
	Eggplant
Sweeteners	Sugarcane
Fodder	Grass

Animal Types
Dairy Cattle
Beef Cattle
Goats
Chicken

Model Parameters: What We Know

Parameters:	Source:
■ Crop yields	→ LSMS data
■ Crop edible fractions	→ Literature
■ Livestock yields	→ LSMS data
■ Post-harvest losses	→ Literature
■ Nutritional contents	→ Literature

Scenarios:

A. Current diet

B. Healthy diet

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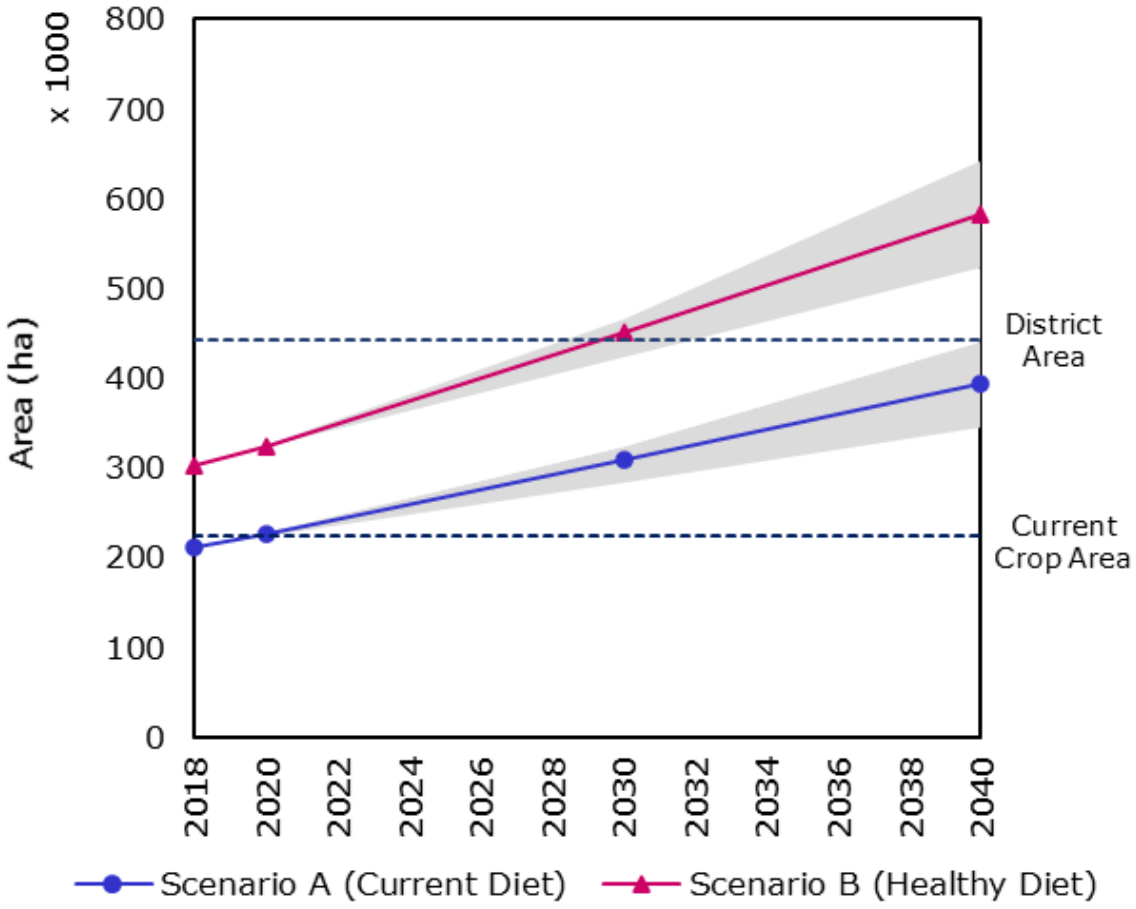
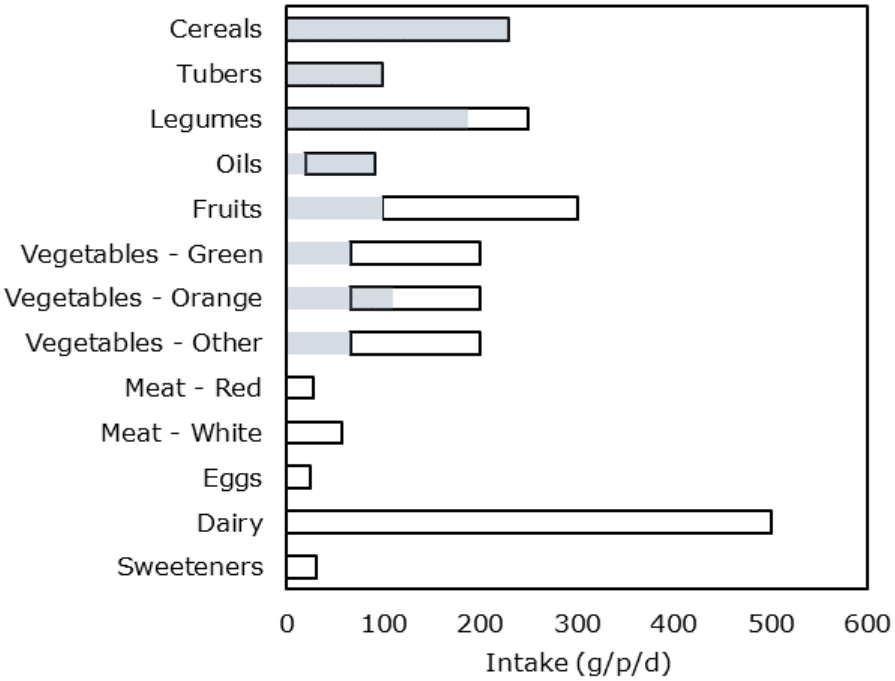
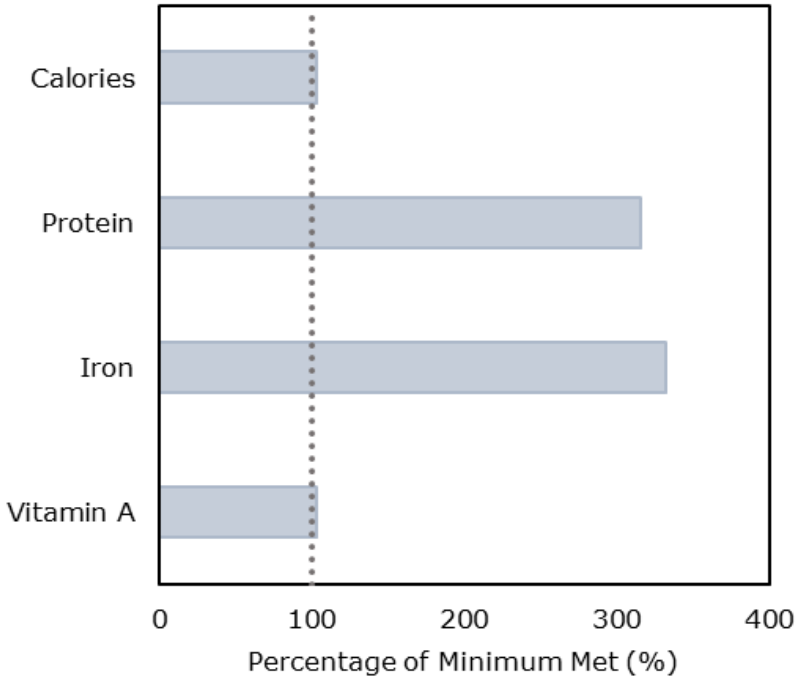
Results: Crop Land Use



Results: Healthy Diet with Minimal Land Use





- Nutrient & food group needs met
- No animal products nor sweeteners
- Minimal fruit & veg → inefficient calorie production

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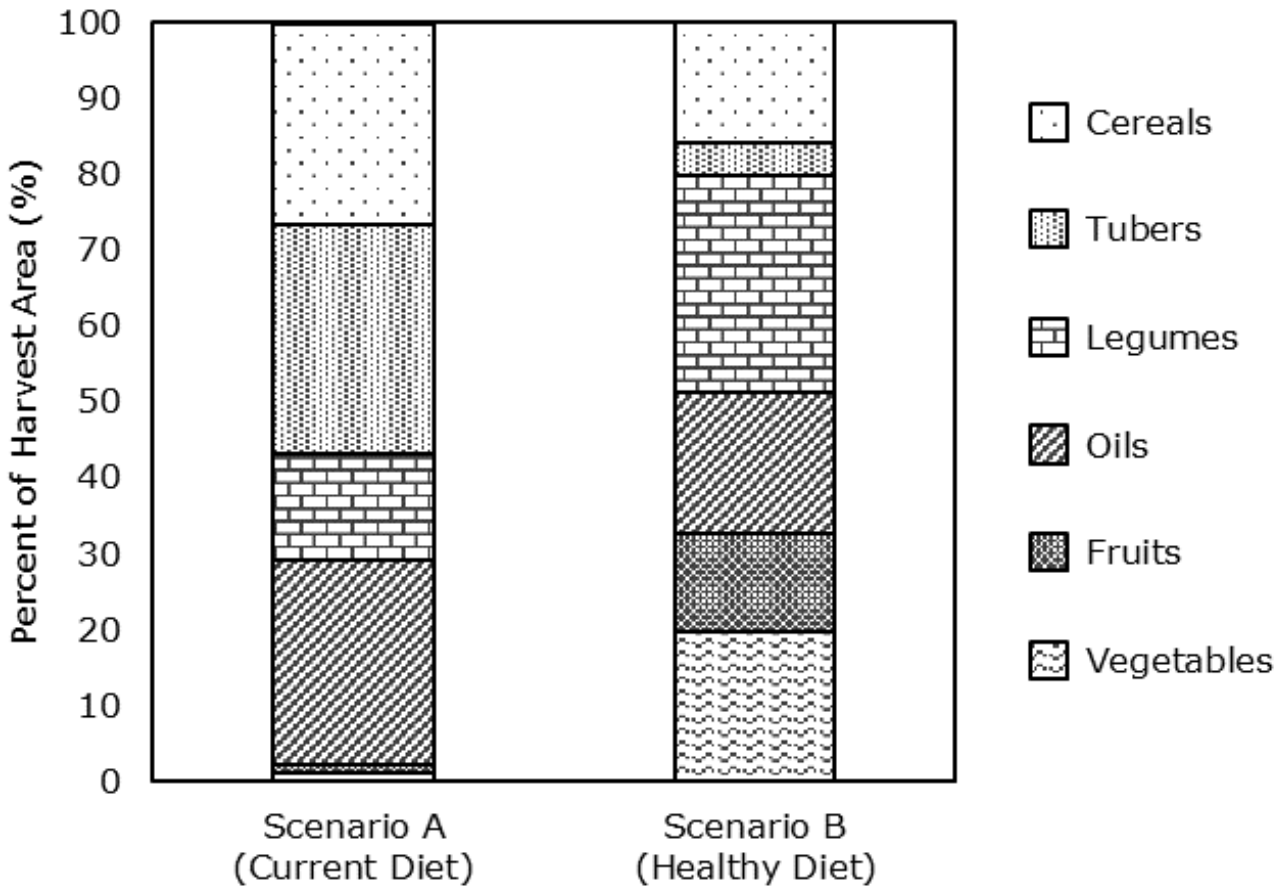
Results: Crop Shifts



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Scenarios: What if…?

A. Current diet

B. Healthy diet

C. Healthy diet + Yield increase of 30%

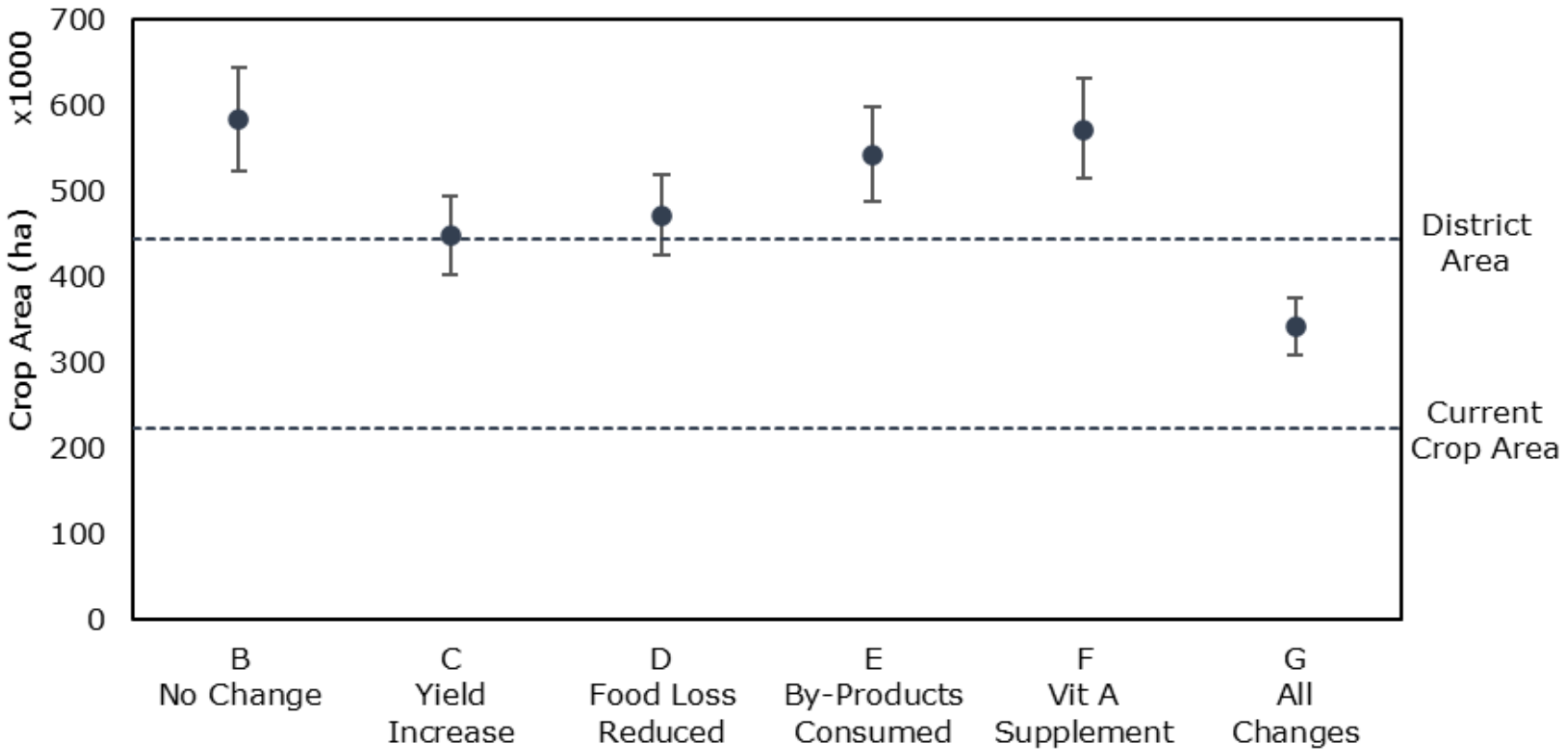
D. Helathy diet + Post-harvest losses decrease of 30%

E. Healthy diet + By-products consumed (30% of total)

F. Healthy diet + Vit A supplement (30 of requirement)

G. Healthy diet + All changes at once

Results: Scenarios



Conclusions

- Crop area increase regardless of diet → Deforestation & land conversion
- Healthy diet area larger than district → Nutritional gap
- Intake shift from staples to fruit, veg, & legumes
- Changes to food system needed across sectors

Policy Implications

- What does this mean for policy on:
  - Food imports→ infrastructure, import from where, costs for population?
  - Increase crop yields → what is needed? e.g soil fertility improvement
  - Other more productive crops (not considered in study)
  - Population migration

Thank you

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