



AGRICULTURAL YIELDS & FOOD SECURITY IN KARAMOJA, UGANDA

The Root of Civilization





PRESENTED BY

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Overview

This project investigates the interplay between crop yield, population, and land area in Karamoja District, Uganda. Agriculture is a cornerstone of food security and livelihoods in the region. Key areas of focus include the analysis of sorghum and maize yields, cultivated land areas, total production, and population statistics. The study aims to uncover patterns and correlations among these variables, addressing issues like food shortages and economic hardships stemming from low crop yields, which contribute to poverty and food insecurity. Grasping these dynamics is essential for crafting community support strategies and promoting sustainable development.



Learning objectives



1. How do crop yields (sorghum and maize) vary across the different districts in Karamoja?



2. How do crop yields (sorghum and maize) vary across the different districts in Karamoja?



3. Which districts exhibit higher or lower agricultural productivity based on yield and area data?



4. What are the potential factors contributing to the observed variations in crop yields?

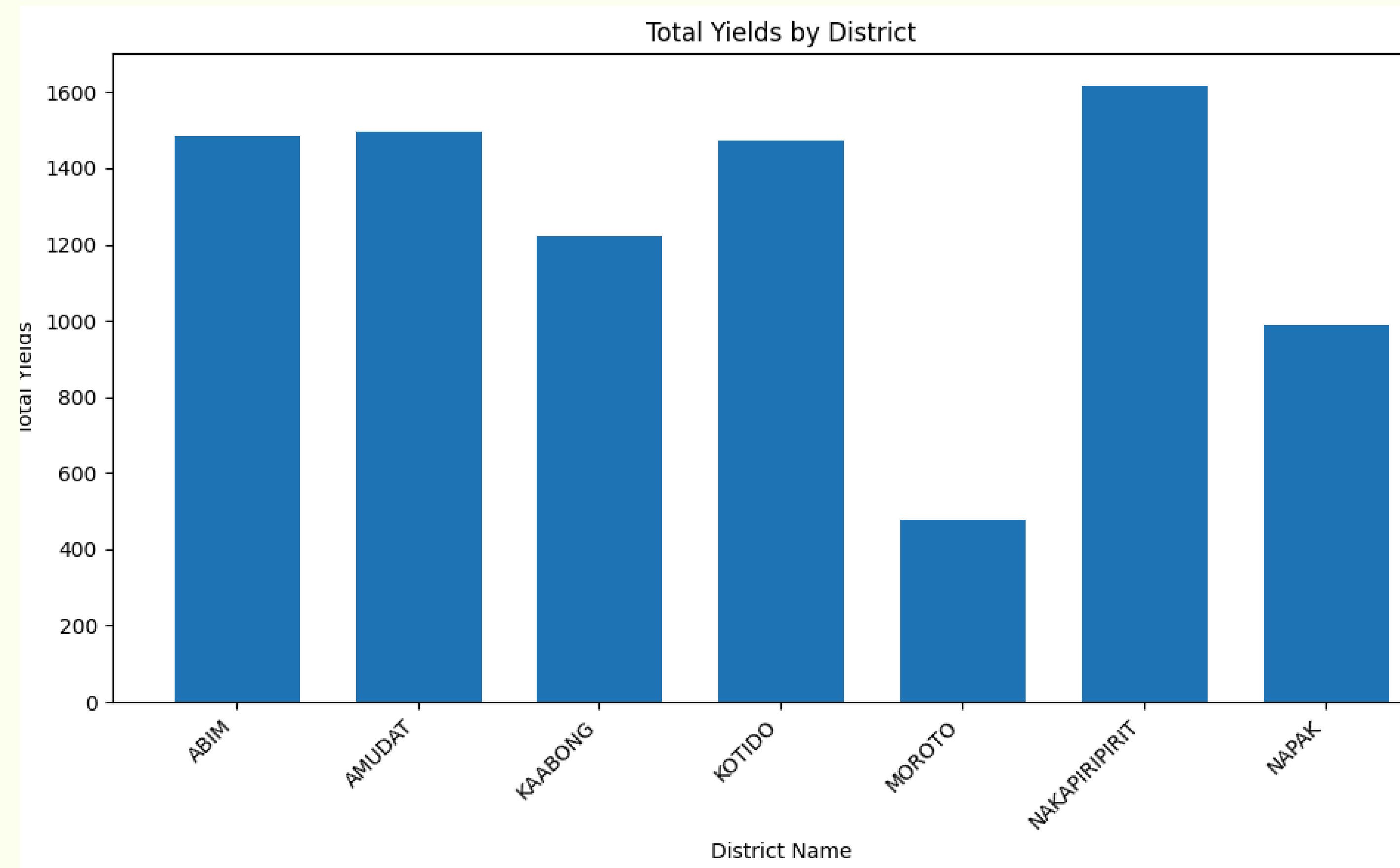


THIS PROJECT AIMS TO ANSWER:

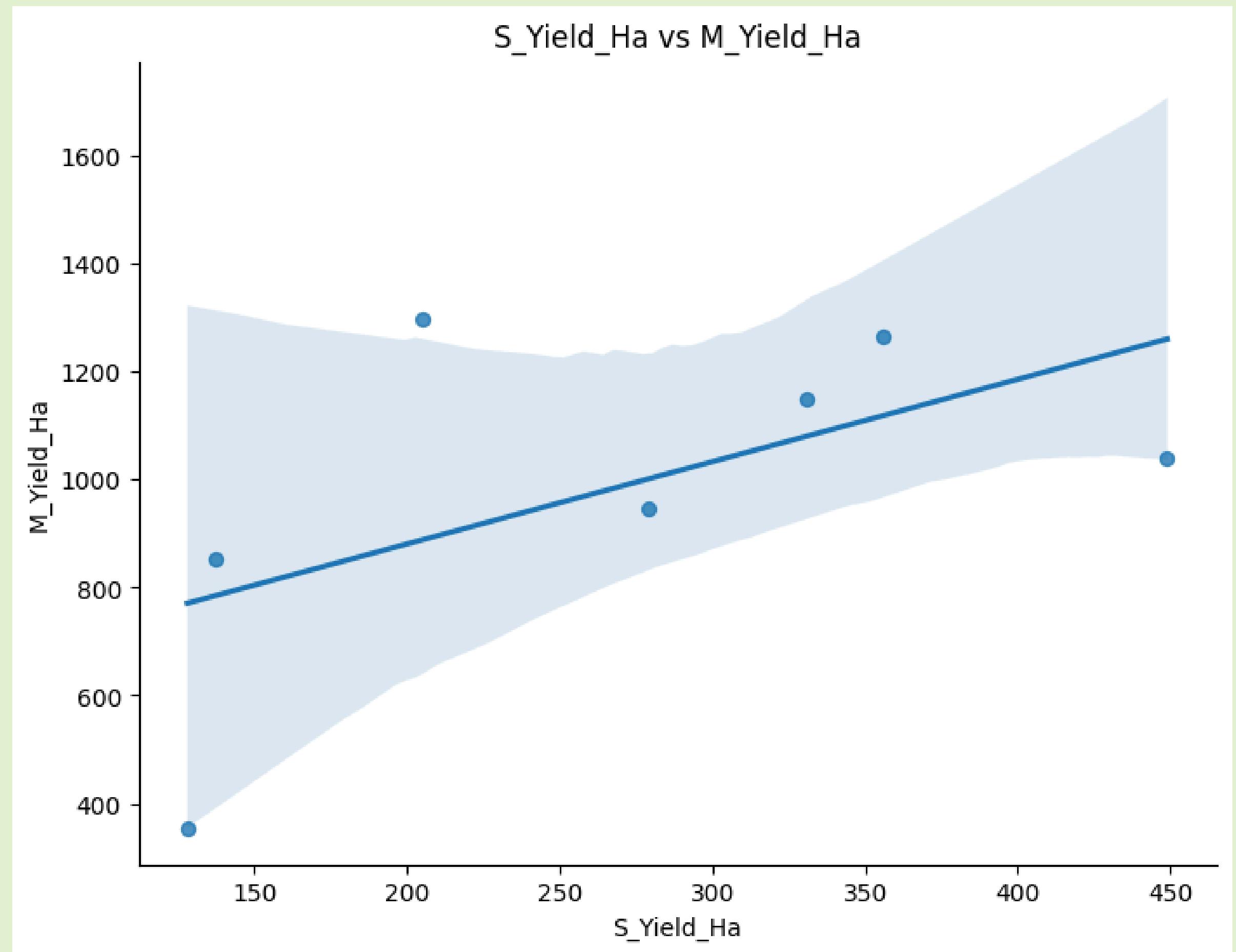
It is built to help NGO's and stakeholders make sense of remote-sensed data on sorghum and maize yields.



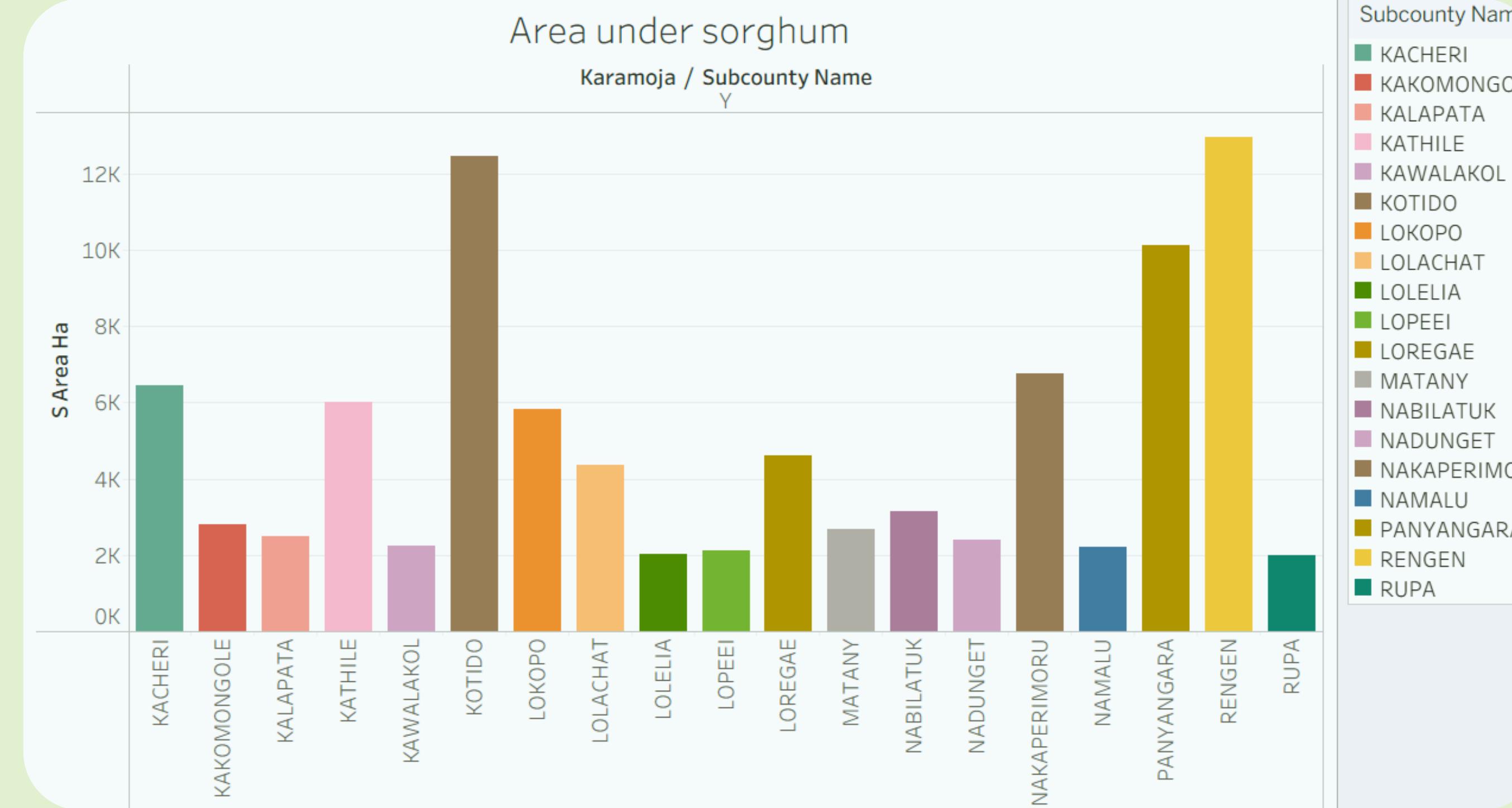
- This graph shows the contribution of the respective district yields to the total yield.
- Nakapiririt District has the highest yield while Moroto District has the lowest.



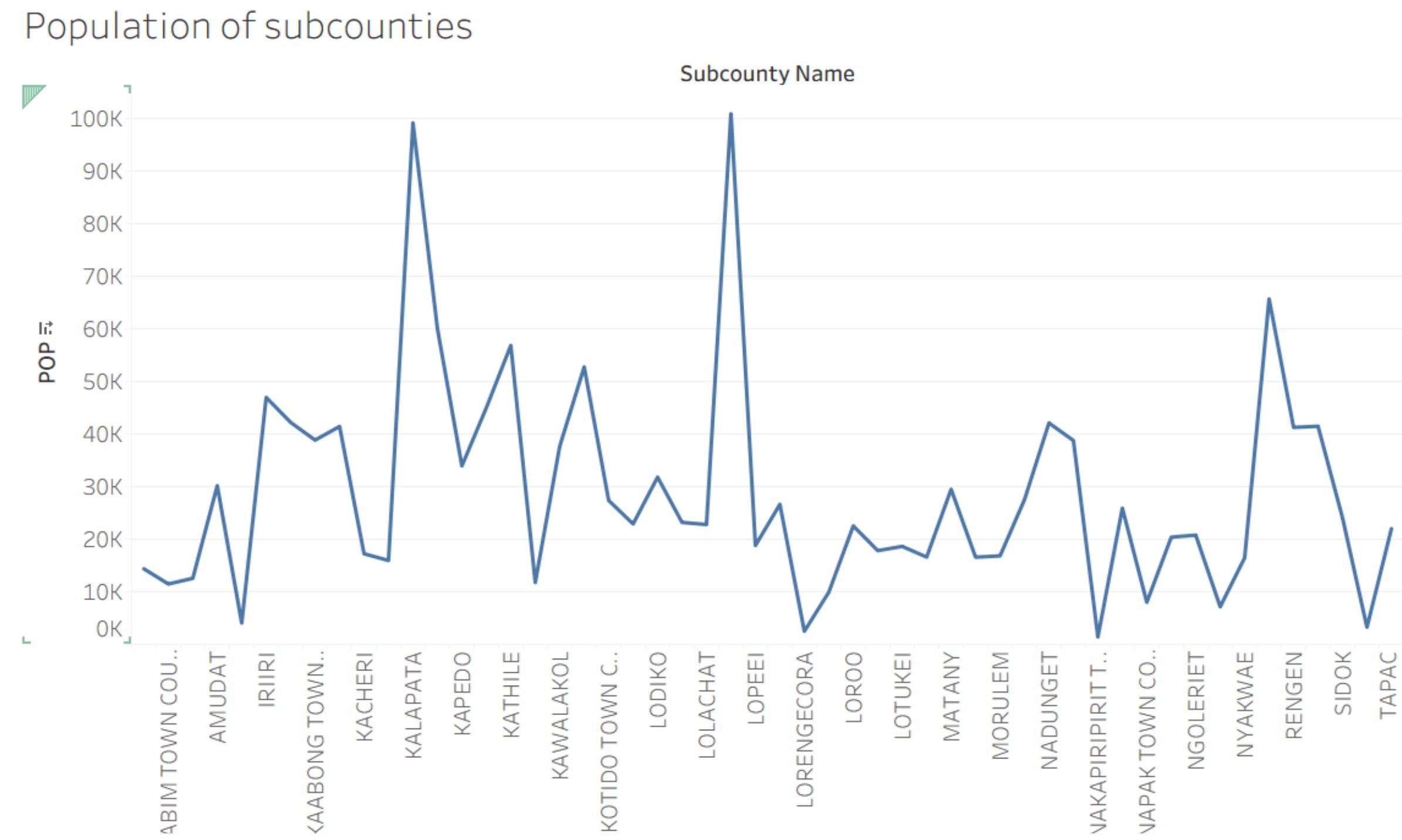
- This graph shows the relationship between the production of Maize and Sorghum.
- The scatter plot with a regression line suggests a weak positive correlation between Sorghum and Maize yields per hectare. While there is a general trend of increasing Maize yields with increasing Sorghum yields, the relationship is not strong.



- This graph shows the total area under sorghum for the respective districts.
- Kotido & Rengen have the highest area under sorghum in Karamoja sub-county.

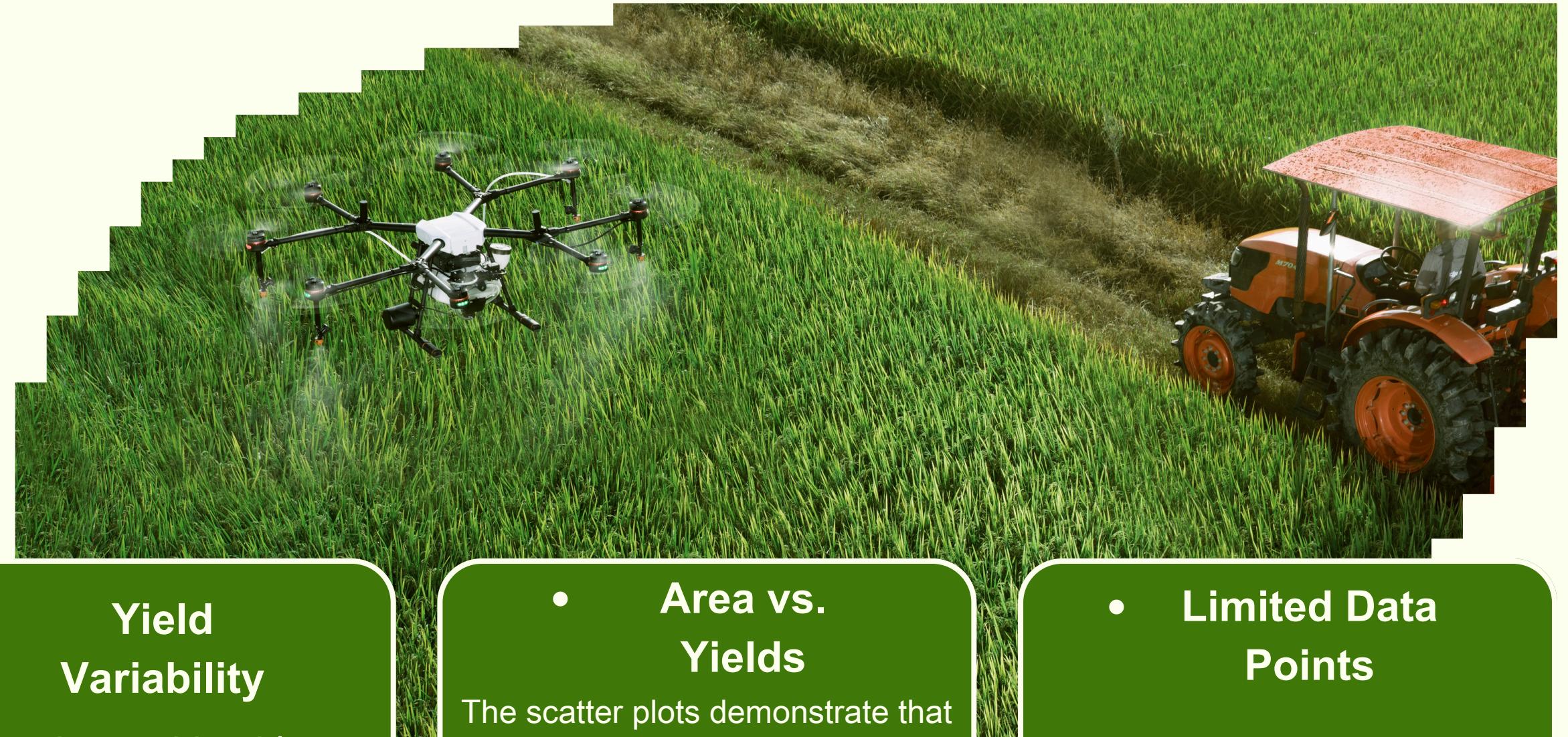


- This graph shows the total population by district.
- Kalapata & Lolachat sub-counties have the highest population density .
- Population density in the sub-counties is not evenly distributed.



Building a Better Future

(Conclusions)



- **Population Distribution**

The population is not evenly distributed across the districts, with Kaabong having a significantly higher population compared to others.

- **Yield Variability**

There is considerable variation in both Sorghum and Maize yields (S_Yield_Ha, M_Yield_Ha) across the districts. Moroto shows particularly low yields for both.

- **Area vs. Yields**

The scatter plots demonstrate that there is no significant linear correlation between crop areas (Crop_Area_Ha, S_Area_Ha, M_Area_Ha) and yields (S_Yield_Ha, M_Yield_Ha). This indicates that merely expanding the cultivated area may not result in increased yields unless other contributing factors are also considered.

- **Limited Data Points**

The analysis is based on a very small dataset (7 entries), which limits the generalizability and statistical significance of the findings.

Sustainable Agriculture

Conserve Water and Soil

Smart irrigation, rainwater harvesting, and soil-friendly techniques prevent erosion and protect these vital resources.

Rotate Crops

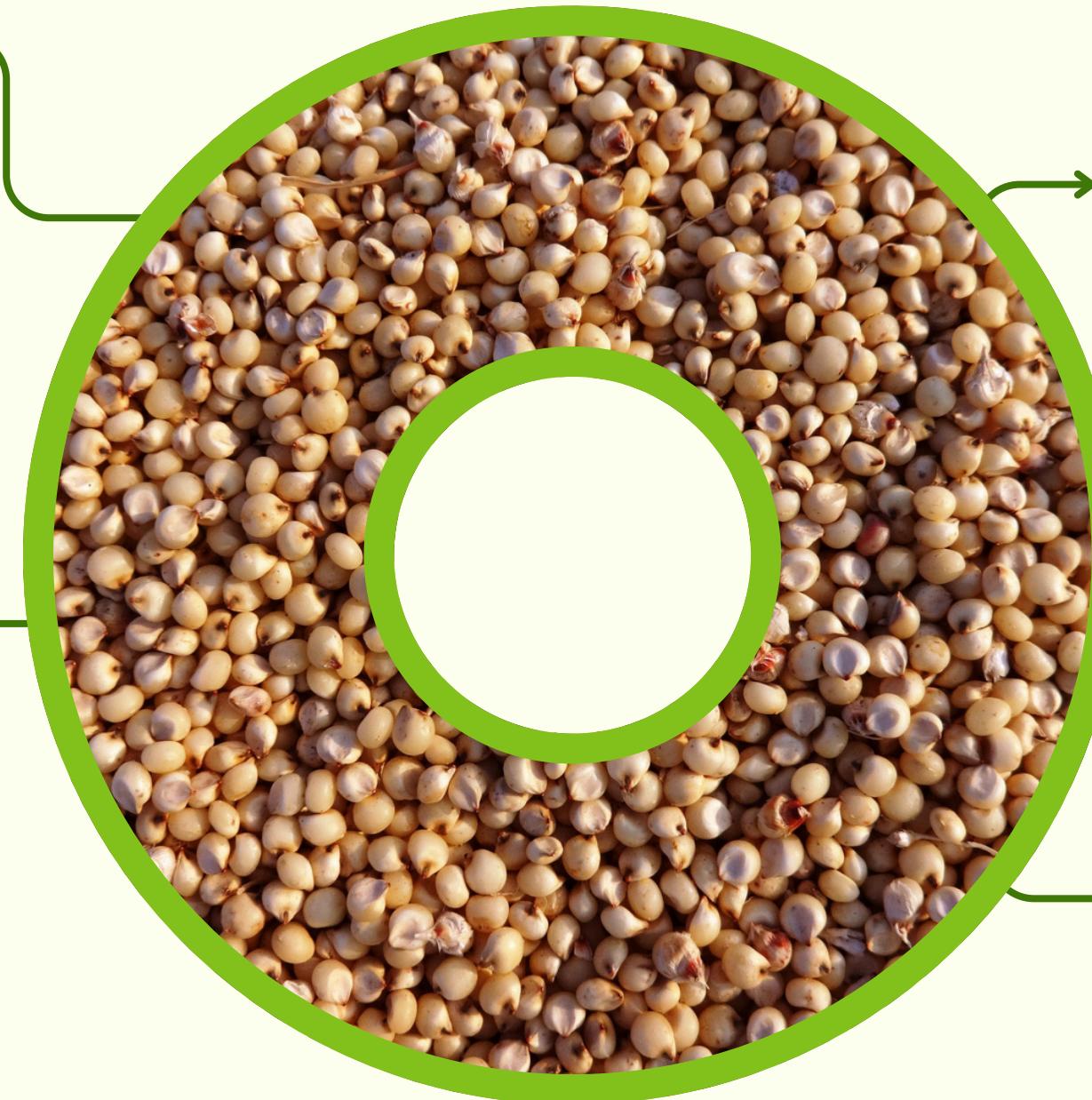
Crop rotation restores soil nutrients, reduces pests naturally, and boosts long-term yields without overworking the land.

Reduce Chemical Use

By limiting synthetic fertilizers and pesticides, we protect water sources, human health, and surrounding wildlife.

Increased Produce

By doing the crop rotation, it ensures that there is increased crop produce all year long and also maintains the soil fertility



RECOMMENDATIONS

Investigate low yields in Moroto

Further research should be conducted to understand the reasons behind the significantly lower Sorghum and Maize yields in the Moroto district. This could involve soil analysis, climate assessment, and farming practices evaluation.

District-Specific Interventions

Given the variation across districts, interventions and agricultural programs should be tailored to the specific needs and conditions of each district.

Focus on Yield Improvement Strategies

Instead of solely focusing on increasing cultivated land area, efforts should be directed towards improving yield per hectare in districts with lower productivity. This could involve introducing improved seed varieties, better irrigation techniques, and sustainable farming methods.

Data Collection

To enable more robust statistical analysis and draw more reliable conclusions, it is highly recommended to collect more comprehensive data over a longer period and potentially include other relevant variables such as rainfall, temperature, soil type, and farming inputs.



Future work

With more time we would have been able to find out the specific reason for the fluctuating yields even though production is in same area. This will enable maximizing the resources for boost supply and demand.

With a dataset of yearly produces instead of farmers being uncertain about season and quantity of production we can estimate the future productions.





Thank You!

