INTRODUCTION

The current global climate, is characterized by large variability in rainfall and temperature leading to increased incidences of crop failure, loss of livelihoods and slow economic growth. Green gram is an important pulse these areas as a source of food and livelihood ranking second after indigenous chicken. The current national production cannot meet the growing domestic demand and yields in Tharaka Nithi County have been declining with an average of 0.56 MT/ha as compared to the national average of 0.67MT/ha for the period 2012-2016 resulting into fluctuation of producer prices. This study aims to determine the effect of climate variability on the yield and market price of green gram in Tharaka South Sub County. Specifically the study will:

i. Analyze the green grams yield and price trends from 2000-2020 in Tharaka South Sub County.
ii. Analyze the climate variability between 2000-2020 in Tharaka South Sub County.
iii. Evaluate the effect of climate variability on yield and price of green grams in Tharaka South sub county for the period 2000 to 2020.

METHODS

Stratified random sampling technique will be used to select 390 farming families practicing green gram production for the last 20years in the Sub County. Purposive sampling used to select participants for Focused Group Discussion and key informants.

Both quantitative and qualitative research designs will be utilized. The seasonal and annual trends of rainfall Seasonal and annual maximum and minimum temperature and seasonal yield of green gram will be determined using Mann–Kendall trend test. The trend will be quantified using Sen’s slope method.

Autoregressive Conditionally Heteroskedastic (ARCH) model will be used in this study to estimate climate variability, yields and price uncertainty in green gram.

RESULTS

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measurement of the variables</th>
<th>Expected sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green grams</td>
<td>Seasonal (MAM, OND) green grams yield (Kg/ha)</td>
<td>Negative/positive</td>
</tr>
<tr>
<td>Green gram price</td>
<td>Retail price</td>
<td>Negative/positive</td>
</tr>
<tr>
<td>Rainfall</td>
<td>Amount of rainfall corresponding to green grams growing seasons</td>
<td>Uncertain</td>
</tr>
<tr>
<td>Temperature</td>
<td>Mean maximum and minimum temperature corresponding to green grams growing seasons</td>
<td>Uncertain</td>
</tr>
</tbody>
</table>

Source: Author, 2021

DISCUSSION

Despite the importance of green gram as a source of food security and income, yields have been declining and in most cases do not match the changing demand. Variability in climate mainly temperature and rainfall limits green grams’ production leading to reduced yields, alterations of the areas suitable for the crop thereby causing price instability. If these challenges are left unaddressed, the farmers are likely to continue experiencing reduced yields, declining producer prices and gross margins and may turn away from farming green gram.

CONCLUSIONS

This study is needed since it will shed more light on the effects of climate variability in order to inform farmers and policy on strategic interventions to reduce green grams’ loss. The study will help in proper targeting of adaptation measures and avoid past trends where some adaptation measures have often failed... Specifically:

1. Understanding how green gram farmers are affected by climate variability.
2. Understand how climate (temperature and rainfall has been varying).
3. Understand how climate variability affects green gram yield and prices.

References


Acknowledgement

We acknowledge financial support for studies and research from the World Bank, the Government of Kenya through the Kenya Climate Smart Agriculture Project (KCSAP). Our appreciation goes to Chuka University, Department of Agricultural Economics for guiding the research and the County Government of Tharaka Nithi for availing course approval and opportunity to conduct research within the County.