Agricultural land suitability evaluation

By Yohanes Gutema

Introduction

- Agricultural growth satisfies one of our basic needs i.e. food, and it is the most powerful tool to tackle extreme poverty, food shortage, and to improve shared prosperity, and it constitutes nearly 33.3% of the global GDP (Knudsen et al., 2018).The growth of agricultural land suitability evaluation is among the agricultural activities intended to enhance productivity. As the population increases, land use and land covers are also growing and similarly reducing food security (Mokarram et al., 2019) which results in food shortage. To resolve these problems and to ensure food security, land suitability evaluation is a powerful tool to support decision-making in land-use planning (Bagherzadeh et al., 2019) along with machine learning technology.

Statement of the problem

Ensuring food security required to meet the demand for growing population is remain a key challenge across the globe particularly for developing countries like Ethiopia. Here are the problems that going to be addressed by this study.

- The mismatch between the actual requirements, and what is implemented on a land
- Failed to identify the level of land suitability for wheat and barley crops quickly and automatically
- Performing land suitability assessment is a long process and time-consuming task for both agricultural professionals and land evaluators

Methodology

To implement and develop this idea the following development tools are required

- Supervised machine learning algorithm
- Anaconda Navigator
- Python
- Flask server
- Computer with high processor
- Soil data

Role /significance of Idea

- it helps agricultural experts, land evaluators, hence farmers to determine the level of land suitability classes and to decide which crop is suitable for a particular land unit before crop cultivation quickly with improved accuracy.
- Once farmers get soil test reports along with climatic and topographic data from agricultural experts, they can decide which crop among the two can be cultivated on their specific land using this study result.
- It also minimizes farmers' doubt regarding their land status to get an improved yield.

Previous solution

- Most of existing solution attempted to identify the level of land suitability for various crop is based on conventional which consumes time, cost, effort, and unable to predict the level of land suitability quickly and accurately.