IDENTIFICATION OF POTATO (*Solanum tuberosum*) YIELD LIMITING NUTRIENTS IN KENYA; A CASE STUDY OF MERU AND NYANDARUA REGIONS

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Introduction

Potato production in Kenya is low due to several constrains among them low soil fertility. Nutrient mining as a result of continuous cultivation with limited application of nutrient fertilizer and manure and overreliance on Di Ammonium Phosphate (DAP) fertilizer that could lead to more acidic soils aggravates soil fertility problem.

The ability of the Kenyan soils to supply adequate nutrient for potato yield potential is not known thus the aim of the study was to identify limiting nutrients to potato productivity in selected sites

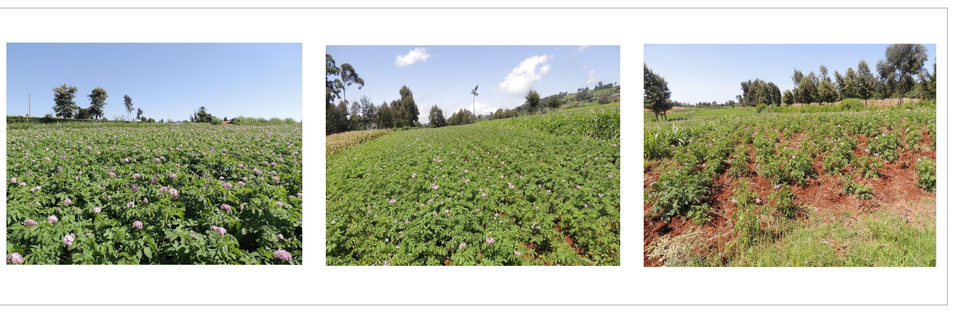
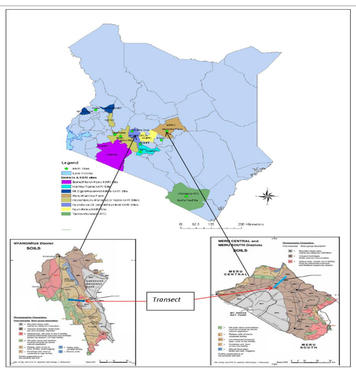


Figure 1. pictures of potato variety Shangi at flowering from different farms in Kenya showing varying crop nutritional status

Materials and Methods

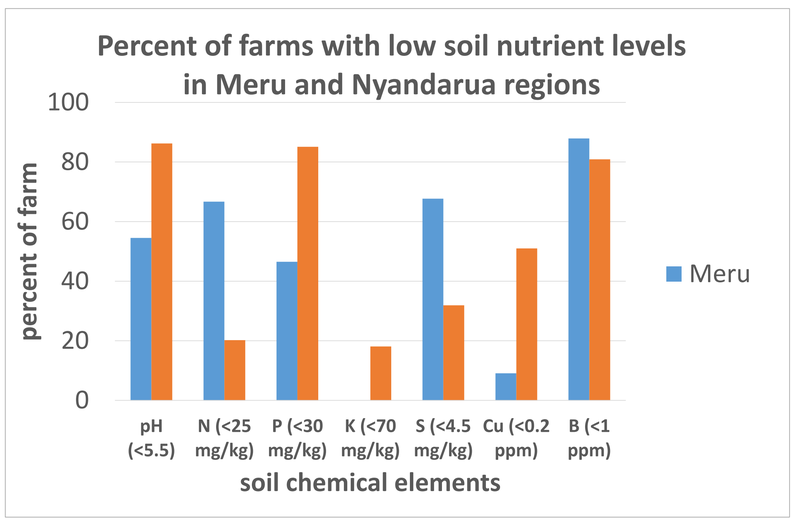


- 198 soil and potato leaf samples (4th leaf) were collected from farmers' fields in Meru and Nyandarua during flowering stage
- Soil chemical and plant nutrient were determined
- Nutrient sufficiency ranges for soil and leaf nutrient levels were used to cluster farms into low, optimum or high.
- Pearson correlation was used to correlate the soil chemical properties and leaf nutrient content

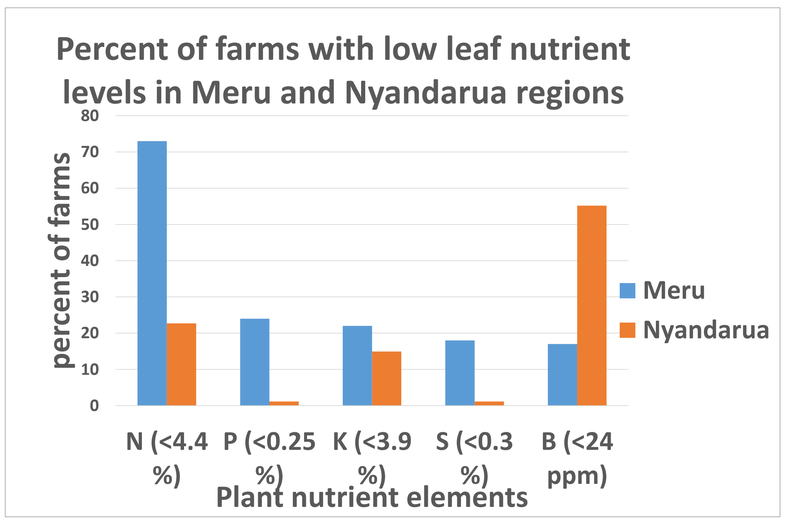
Figure 2. map of Kenya showing potato growing regions and the soil map of sampled region, picture during leaf and soil sampling

Results

Soil samples indicated several farms were low in pH, N, P, K S, Cu and B in both or one of the regions



In reference to the leaf samples, N, P, K, S and B were found to be limiting in a number of farms in both or one of the regions



pH had significant (P<0.05) positive correlation with soil P, K, B, Ca and Mg and negative correlation with Cu.

Element	Region	P	K	B	Cu	Ca	Mg
pH	Meru	0.49	0.47	0.74	-0.59	0.79	0.69
pH	Nyandarua	0.43	0.7	0.76	-0.46	0.78	0.57

There was significant positive correlations between soil and plant P, K, Ca and Cu

Conclusions

- ❑ In conclusion, N, P, K, S and B were limiting in a number of farms thus new fertilizer blend should incorporate the elements
- ❑ Liming should be considered for soils with low pH.

Acknowledgement

The BMZ for funding project activities and Gottingen university for providing laboratory facilities

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