Determination of effects of phosphorus sources and starter nitrogen on soil properties and soybean yield in Central highlands of Kenya

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Jackson S. Abuli, J. Mugwe and D. Mugendi
Kenyatta University, P.O. Box 43844-00100, Nairobi
Corresponding author: jacksianje@gmail.com

ABSTRACT

Objective: Farmers in central highlands of Kenya are experiencing low soil fertility that is affecting land productivity and incomes. Their attempt to address the situation has been hampered by high fertilizer prices. By using legumes that fix atmospheric nitrogen farmers' cost of production can be minimized. To function effectively, legumes require more P for nitrogen fixation, which is inadequate in the central highland farms. Soybean has huge potential for improving soil fertility and socioeconomic benefits of agriculture. This study aims to: (1) determine the effect of sources of phosphorus on yields of soybean and on soil properties; (2) to assess the effect of these sources on soybean N fixation potential and soil N balance. The study will also assess the effect of applying starter N on soybean yields and their N fixation potential.

Methodology; The study areas are Kigogo in Meru south district and Kamujine in Tigania District. The study

purposes to enhance soybean production and improve soils through use of appropriate source of P and small amount of starter N. The main treatments are six sources of P with or without Nitrogen source. DAP is the reference input as it has both P and N. The experimental design is randomized complete block design (RCBD) with four replications. Data will be analyzed by Analysis of variance (ANOVA) and means separated using Tukey's Least Significant Difference (LSD) (p=0.05).

Application of expected results: The study results will contribute to existing body of knowledge on soybean production whose use may translate to improved soil fertility, higher yields, sustainable farming systems and better farm incomes for the farmers in the central highlands of Kenya.