LABLAB EFFECT ON SOIL PROPERTIES AND SUBSEQUENT MAIZE-COWPEA INTERCROP

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ABSTRACT
The ability of herbaceous legumes to supply nitrogen to subsequent cereal crops could be harnessed to alleviate the difficulties in cereal production due to poor soil fertility and expensive inorganic fertilizers. Field experiments were carried out in Zaria, Nigeria to determine the soil improvement potential of Lablab purpureus accessions and evaluate the grain and fodder response of maize-cowpea intercrop to one-year fallow rotation. Six lablab accessions (ILRI 147, ILRI 4612, PI 388013, PI 183451, PI 195851 and PI 532170) of different maturity groups and natural vegetation represented the fallow treatments. The maize and cowpea test crops were TZE Comp.5 W and IT99K-241-2, respectively. Lablab fallow improved soil organic carbon, nitrogen, phosphorus and potassium. The early maturing PI 388013 increased phosphorus and potassium by 179 and 100 %, respectively whereas extremely late maturing PI 195851 increased nitrogen by 18 % while another early maturing accession PI 183451 increased organic carbon by 11 % relative to natural fallow. Lablab grain and fodder yields ranged from 0.6 to 1.4 t ha⁻¹ and 2.4 to 3.9 t ha⁻¹, respectively. Compared to natural fallow, intercropping maize on plots previously planted to ILRI 4612 led to significantly higher fodder yield (2.8 to 4.1 t ha⁻¹) meaning an increase of 46 %. Lablab or natural fallow did not influence grain yield and 500-seed-weight of maize; it did not also influence 100-seed-weight, grain and fodder yields of cowpea. The fallow period for lablab may not have been long enough for significant improvement of soil properties to impact maize and cowpea performance in relation to natural fallow. The study showed that a maize-cowpea intercrop following lablab in rotation can be of rational inclusion in the farming system of the zone.

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