

Impact of Organic Fertilizer, Inorganic Fertilizer and Soil Conditioner on Growth and Yield of Cowpea (*Vigna unguiculata* L. Walp) in Sudan Savannah, Nigeria

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Abstract : The field experiment was conducted at the dry land Teaching and Research Farm of Usmanu Danfodiyo University, Sokoto, during the 2023 rainy season to determine the effects of organic, inorganic, soil conditioner and integrated use of soil conditioners (Agzyme) with organic (super gro) and inorganic fertilizers on the growth and yield of cowpea varieties. The research consisted of two cowpea varieties (SAMPEA-20-T and ex-GidanYunfa) and six combinations of organic and inorganic fertilizers and soil conditioners factorially combined and laid out in a Randomized Complete Block Design (RCBD) replicated three times. Data were collected on plant height, leaf area index, number of pods per plant, number of seeds per pod, days to 50% flowering, grain yield, and 100 seed weight. Results indicated that the 100% inorganic fertilizer had a significantly increased growth parameter such as plant height and number of leaves, while combined application of the organic fertilizer and soil conditioner resulted in a significant increase in yield parameters such as number of pods per plant, number of seeds per pod, 100 seed weight and grain yield. The study observed that the use of soil conditioner in combination with fertilizers supports sustainable cowpea production. Application of 50% recommended inorganic + 50% soil conditioner or 50% liquid organic + 50% soil conditioner was better in increasing the number of pods/plant, seeds/pod, 100 seed weight and grain yield. The ex-Gidan Yunfa cowpea variety generally performed better in most parameters measured, such as plant height, days to 50% flowering, number of pods per plant, number of seeds per pod, 100 seed weight and grain yield. Therefore, the combined application of 50% recommended inorganic + 50% soil conditioner or 50% liquid organic + 50% soil conditioner is effective for the sustainable production of cowpeas.

Keywords : integrated, fertilizers, growth, yield, cowpea, Sudan Savannah

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