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Effect of Integrated Nutrient Management on Growth, Yield and Yield Attribute of Sugarcane

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Fertiliser is one of the expensive inputs for sugarcane production in Bangladesh. As a long duration and exhaustive crop, it depletes a considerable amount of nutrients from soil. As a result, soil fertility in sugarcane growing areas is declining. Considering this issue, a field experiment was conducted in the location of Iswardi, Pabna in Bangladesh during 2013-2014 cropping season. In this experiment, seven treatments were used to appraise their effects on growth, yield and yield attribute of sugarcane. All these treatments were completely randomised and replicated thrice. Among the treatments, the highest growth parameters such as internodes length (17.20 cm), number of internodes (22.67), plant height (4.38 m), stalk height (2.86 m) and stalk girth (23.62 mm) were achieved in treatment with combined application of poultry litter and inorganic fertiliser (Treatment 3).Maximum tiller population (211.76 x 10^3) was also found with this treatment at 150 days after transplanting (DAT).Tiller population increased from 120 to 150 DAT and after that time, decreased gradually. The highest millable cane stalks (126.15 x 10^3/ha) and cane yield (144.02 t/ha) were also recorded in the same treatment and followed by the treatment with cow dung and inorganic fertiliser (Treatment 4). Maximum amount of chlorophyll (40.46 spad unit), LAI (7.57) and dry matter (3.81 kg/m^2) were also obtained from the treatment with poultry litter (Treatment 3) followed by the treatment with cow dung (Treatment 4). As for the economic aspect of fertiliser management packages, maximum benefit cost ratio (BCR) of 4.06 was obtained from the treatment with poultry litter followed by treatment with cow dung. Significant changes were not found in one cycle of sugarcane cultivation in initial and postharvest soil characteristics viz., pH, organic C, total N, P, K and S contents due to integrated use of different fertiliser packages. It is concluded from the present findings that treatment with combined application of poultry litter followed by the treatment with cow dung and inorganic fertiliser exhibited better productivity, profit and integrated nutrient management technology for sole sugarcane cultivation without soil fertility degradation in High Ganges River Floodplain soils.

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