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Soil fertility and quality parameter as inluenced by INM in soybean grown during summer season under different land configuration

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ABSTRACT : A field experiment was conducted during summer season of 2011 at the soil and water management research unit farm, Navsari Agricultural University, Navsari to study the soil fertility and quality parameter as inluenced by inm in soybean (*Glycine max*.L) grown during summer season under different land configuration. The soil of the experimental plot was clayey in texture, low in nitrogen, medium in available phosphorus, fairly rich in available potassium and slightly alkaline in reaction. Total eight treatment combinations comprising of two land configuration treatments (L_1: Raised bed, L_2: Flat bed) and two treatments of integrated nutrient management (N_1: RDF 30:60:00 NPK kg/ha, N_2: 75% RDF+ (PSB + *Rhizobium*) and two treatments of biocompost (B_0: No biocompost $B_{1:}$ Biocompost @ 10 t/ha) were evaluated in factorial Randomized Block Design with four replications. The soybean cv. Gujarat soybean-2 was used as test crop. A remarkable increase in nitrogen uptake in stover and phosphorus content in stover were recorded in raised bed sowing. Organic carbon also significantly increased due to raised bed sowing. The treatment 75 % RDF + biofertilizer (*Rhizobium* and PSB) recorded significantly higher N content and uptake by seed and stover. Though it was found to be non significant in N, P and K content and uptake by seed and stover. The treatment 75 % RDF + biofertilizer (*Rhizobium* and PSB) recorded significantly higher organic carbon content (0.62). Oil yield, organic carbon and soil available nutrients were significantly higher in biocompost application. Oil and protein, N, P and K content and N, P, K uptake in seed and stover remained unaffected by biocompost application. Remarkably higher N uptake in stover was significantly increased with biocompost application.

Key Words : N uptake, Land configuration, Biocompost

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Soybean [*Glycine max* (L.) Merrill] belongs to the family Fabaceae. The wild ancestor of the soybean is *Glycine soja* (previously called *G. ussuriensis*), a legume native to central China. It is considered as the 'miracle crop or wonder legume'. The potential of soybean crop to augment protein and oil production has been well recognized in the recent years. The productivity of this crop is nearly 2-3 times higher than traditional pulses. Due to several merits, its cultivation has gained momentum in several states of the country. However, its productivity remained still lower in spite of higher potential of the crop. The factors responsible for the low yield are poor management and injudicious use of nutrients.

Land configuration can play an important role for easy and uniform germination as well as growth and development of plants. It is particularly useful in areas having poor quality of irrigation water because it helps to avoid direct contact of young plants with saline irrigation water. The superiority of raised bed system could be ascribed to proper drainage of excess water coupled with adequate aeration at the time of irrigation or heavy rainfall.

Among the several factors, nutrient management is one of the most crucial factors responsible for high productivity of soybean. The basic concept of integrated nutrient management is the maintenance or adjustment of soil fertility and to supply plant nutrient at an optimum level for sustaining the desired crop productivity through optimization of the benefits from all possible sources of plant nutrient in an integrated manner. The role of biocompost is well recognized, which supplies macro and micro nutrients that are necessary for plant growth. It also develops a sustainable agriculture system by maintaining soil