Indian Journal of Agriculture and Allied Sciences
A Refereed Research Journal

ISSN 2395-1109
Volume: 1, No.: 1, Year: 2015

RESPONSE OF INTEGRATED NUTRIENT MANAGEMENT ON SOIL PROPERTIES AND YIELD ATTRIBUTES OF MUNG (*VIGNA RADIATE L.*) VAR. SAMRAT

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Abstract: *An experimental was conducted during July to October 2012 to find out the response of integrated nutrient management on soil properties and yield attributes of mung (var. Samrat) NPK fertilizer levels the recommended dosage of fertilizer (RDF) N,P and K, and FYM levels. Result of this study showed a significant increase in plant height, number of leaves, nodules, fresh weight of plant, dry weight, pods, and yield. Application of INM also had a great impact on the post-harvest available nitrogen, phosphorus and potassium.*
Key words*: Nutrient management, fertilizer, attributes, soil properties, mung, yield, nodules.*

Introduction: The green revolution in india has been marked with phenomenal rise in fertilizer consumption. It was 0.07 million tonnes (Mt) in 1950's which became 47.7 Mt (2008-09) and 52 Mt (2009-10), yet nutrient supply is the major constraints in the development of Indian agriculture. The excess mining of nutrient *e.g.* removal of N, P, K and micronutrients by the crops is more than their replenishment with fertilizer. In future, the problem will aggravate, as more has to be produced due to continuously increasing population. Therefore, the application of nutrients needs to be increased to keep soil fertile and make agriculture sustainable. Traditional use of chemical fertilizers in agricultural production cannot be over emphasized, but with fertilizer costs going up, these need to be supplemented or substituted with available organic wastes or manures.

Integrated Nutrient Management is the system involved efficient and judicious supply of all major plant nutrient sources; Inorganic fertilizer in conjunction with organic fertilizer for sustaining soil fertility, health and productivity. It has shown that the integrated approach had shown to produce high crop yield that when each applied alone. Organic fertilizer is prepared from a combination of cattle dung and urine, waste feed and fodder, materials used as litter etc. On being allowed to decompose under favorable conditions with the help of microbes already present in the excreta. The decomposition is carried out in pits or trenches, about one meter in depth, the length and breadth depending upon the quantity of raw materials to be decomposed.

The average composition of FYM for various nutrients are as Nitrogen 0.5%, Phosphorus 0.25%, Potassium 0.5%, Lime 0.6%, Ash 4.9%, Sulphuric acid 0.13%, Magnesium 0.15% [1]. The contents of nitrogen, phosphorus and potassium in farm yard manure are quite variable because of variation in quantity of dung. Inorganic fertilizer supply in the key to increasing agricultural production by enhancing the land productivity: N-Helps in Plant height and yield. P- Helps in Photosynthesis, respiration, other processes in cell enlargement. K- Is available in Indian soil, its application helps in increased plant growth rate flower/plant, percentage pod set.

India is the major pulse growing country of the world. India rank first in both area and production. Pulse crop play an important role in agriculture economy of India by virtue of their ability to fix atmospheric nitrogen. Pulse plant is in itself a mini-fertilizer factory by contributing substantially to the enrichment of the soil. Together, they add many times more nitrogen to our soil per unit area than is added in the form of chemical fertilizer. The productivity of different

pulse is quite low which is 350 to 750 kgha^{-1} mainly due to several agro-ecological, biological, institutional and socio-economic constraints. The major causes for low production are ecological factors, lack of appropriate pulse production and post-harvesting technology, basic research and socio-economic constraints coupled with non-availability of healthy seeds and rhizobia culture in adequate amounts.

Materials and Methods

The experiment was conducted on the soil of order "Azonal soil" of great soil group and texture soil is sandy loamy during July to September 2012 at research farm Department of soil science SHIATS-DU Allahabad. FYM well decomposed on an average contains 0.5% nitrogen, 0.25% phosphorus, 0.50% potassium. While in inorganic form urea contains 46% N, single super phosphate 16% P_2O_5, and murate of potash 60% k_2O. The soil sample collected from the experimental site (0-15cm) depth before the crop was sown and after the crop was harvest was collected for chemical analysis to ascertain chemical effect of NPK and FYM levels on soil properties. The experiment was laid out in a factorial completely randomized design with three replications. NPK and FYM were applied as per different levels before sowing. Mung seed variety samrat was grown as test crop. Three irrigations were provided at 20, 40, 60 Days After Sowing. After harvesting the crop at maturity stage when the pods turned black brown in colour. Plant height was taken from three randomly selected plant when the interval of 20 days from each treatment. The plants collected from next to penultimate row to each plot at the interval of 20 days, were run dried for 4-5 days followed by oven dry for 72 hrs. At 60^{o}C to a constant weight and recorded in mung /plan. Pods were randomly selected from each plot were counted and averaged as pods per plant. The grain yield obtained from each plot was thoroughly cleaned and sun dried. The yield of the crop was observed [2,3 & 4].

Results & Discussion

In the table shows that the observation taken for on yield qha^{-1} at 2nd picking Mung plant was found due to interaction of Inorganic Fertilizer (I) and Farm Yard Manure(F), that the maximum and minimum yield were observed 18.99 and 9.367 in treatments T_2 [I_0F_2]= @0% NP&K + @ 100% FYM and T_0[I_0F_0] = (Control) [@ 0% NP& K = @0%FYM] respectively, which were found to be significant [2,3 & 4].

Conclusion: It is concluded that the applications of Integrated nutrient management significantly increasethe growth and yield of Mung. It was found that the effect of FYM in combination with inorganic fertilizer was the most effective at treatment I_2F_2 (NPK 100% +FYM 100%) maximum yield was reported in same treatment.

References

1. Menhi Lal, Singh, A. K. and Shahi, H. N. (2002). Proceedings of International Symposium on *Food, Nutrition and Economic security through diversification in sugarcane production and processing systems*. 16-18. p. 331-337.
2. Gaind, S., Gaur, A. C. (1990). Shelf life of phosphate-solubilizing inoculants as influenced by type of carrier, high temperature, and low moisture. *Canadian Journal of Microbiology*, 36(12): 846-849.
3. Reddy, K.R., and D'Angelo, E.M. and DeBusk, T.A. (1990). Oxygen transport through aquatic macrophytes : The Role in waste water treatment. *Journal of Env. Qual.* 19, 261-267.
4. Singh, T.D., Basham, M.E., Nordeen, E.J., Nordeen, K.W. (2000). Early sensory and hormonal experience modulate age-re-lated changes in NR2B mRNA within a forebrain region controlling avian vocal learning. *J Neurobiol* 44:82–94.