



## Effect of partially and fully decomposed FYM on nitrogen mineralization, carbon loss and available nutrient status of sorghum

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### ABSTRACT

The post culture study was conducted on, Effect of partially and fully decomposed FYM on nitrogen mineralization, carbon loss and available nutrient status of sorghum during 2007-08. Seasonwise (at beginning of winter, end of winter and at mid summer) soil samples were collected, processed and analyzed for nitrate-N and ammonical-N, carbon loss and available nutrient status. The result revealed that the concentration of nitrate-N was maximum at mid summer and ammonical-N was at beginning of winter. The maximum ammonical-N at beginning of winter because at that time the crop was harvested and fresh organic residue was remaining in field. The higher nitrate-N at mid summer showed the complete mineralization of organic matter and hence ammonical-N and nitrate-N were maximum in respective season. The significantly maximum nitrate-N was recorded in all the three season due to addition of 10 tonne fully decomposed FYM with RDF over all other combination. It indicates the maximum availability of nitrogen to arable crop like sorghum, which absorbed mostly nitrate form of nitrogen. The result further reported that the content of organic-C and total-N was significantly maximum where 10 tonne fully decomposed FYM with chemical fertilizers was added. Similarly the available NPK status improved slightly at end of winter and slight increase or decrease end at mid summer was recorded over at beginning of winter was observed. The addition of FYM either fully or partially decomposed with or without chemical fertilizers recorded slight improvement in fertility status of soil over its initial status.

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**Key words :** Sorghum, Farm yard manure, Inorganic fertilizer

### INTRODUCTION

Among the food grain crops, sorghum occupies an important place due to its use as a staple food by the large population of India. Besides grain, it also provides quality fodder for livestock. It occupies third place in area and production in India. Sorghum is considered as drought tolerant crop and hence, rated as an important component of dry land agriculture. It successfully grows under wide range of temperature between 15<sup>o</sup> to 40<sup>o</sup> C with annual rainfall from 400 to 1000 mm. It grows well in any type of soil, but clayey loam soil rich in humus is found to be the most ideal for its growth. It tolerates mild salinity from pH 5.5 to 8.0.

The long term application of 100 per cent NPK recommended dose with 10 tonnes FYM ha<sup>-1</sup> increased the organic carbon, total and available nitrogen content in soil (Ravankar *et al.*, 1998). It is apparent that there is a need to generate more information about the effect of long term application of partially and fully decomposed organic manures like FYM on the fertility status, nitrogen mineralization and management of C in soil and improve soil physical, chemical and biological properties.

### MATERIALS AND METHODS

The pot culture experiment was conducted at cage house Soil Science and Agricultural Chemistry Section,

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