

SOIL MICROBIAL BIOMASS CARBON (μgCg^{-1} DRY SOIL) AT DIFFERENT GROWTH STAGES OF PADDY AS INFLUENCED BY LONG TERM APPLICATION OF FERTILIZERS AND MANURE UNDER CHHATTISGARH CONDITION

Rakesh Kumar Bhagat¹, D.K. Dewangan¹, G.K. Jatav^{1,2*}, V.A. Nayak¹ and R.N.Singh¹

¹Indira Gandhi Krishi Vishwavidyalaya, Raipur-492012, Chhattisgarh, India.

²Institute of Agricultural Sciences, B.H.U. Varanasi-221005

*Email: gouravjatav143@gmail.com

Abstract: A field study was carried out during *Kharif* season of 2010-11 at the Research and Instructional Farm of Indira Gandhi Krishi Vishwavidyalaya (IGKV), Raipur (C.G.). Experiment was conducted to examine the “soil microbial biomass carbon (μgCG^{-1} dry soil) at different growth stages of paddy as influenced by long term application of fertilizers and manure under Chhattisgarh condition”. Soil microbial biomass carbon at different growth stages of paddy were determined from surface (0-15 cm) soil samples. The soil microbial biomass carbon at different growth stages was determined in paddy crop and fertilizer application significantly influenced soil microbial biomass carbon where the highest soil microbial biomass carbon was recorded under T₄ (100% NPK +FYM) followed by T₅ (50% NPK +GM), T₂ (100% NPK) treatment. T₁(Control) recorded the lowest soil microbial biomass carbon. The grain yield of rice was observed to be significantly influenced due to different treatments. The highest was recorded with T₄ (100%NPK +FYM), and was found significantly superior over rest of the treatments. The lowest grain yield was noticed under control plot.

Keywords: microbial biomass, paddy, grain yield, FYM

REFERENCES

- Follett, R.F. and Schimel, D.S.** (1989). Effect of tillage practices on microbial biomass dynamics. *Soil Sci. Soc. Am. J.* **53**: 1091-1096.
- Haubensak, K.A.; Hart, S.C. and Stark, J.M.** (2002). Influences of chloroform exposure time and soil water content on C and N release in forest soils. *Soil Biol Biochem.* **34**: 1549-1562.
- Kaur, T. and Brar, B.S.** (2008). Organic matter, microbial biomass and enzyme activity of soil under maize wheat cropping system. *J. Crop and Soil.* **18**:24-30.
- Powlson, D. S.; Brookes, P. C. and Christensen, B. T.** (1987). Measurement of microbial biomass provides an early indication of changes in total soil organic matter due to the straw incorporation. *Soil Biol Biochem.* **19**: 159-164.
- Sparling, G.** (1992). Ratio of microbial biomass carbon to soil organic carbon as a sensitive indicator of changes in soil organic matter. *Austr J Soil Res.* **30**: 195-197.
- Singh, Y.V.; Singh, B. V.; Pabbi, S. and Singh, P. K.** (2007). Impact of organic farming on yield and quality of basmati rice and soil properties.
- Zhang, J.; Qin, J.; Yao, W.; Bi, L.; Lai, T. and Yu, X.** (2009). Effect of long- term application of manure and mineral fertilizers on nitrogen mineralization and microbial biomass in paddy soil during rice growth stages. *Plant Soil Environ.* **55**(3): 101- 109.