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## **Changes in soil ecosystem and enzyme activity in hilly region of India as influenced by different organic nutrient sources**

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**E**ffect of different organic nutrient sources on soil ecosystem as well as enzymatic activities were studied in a subtropical hilly agro-ecosystem in India. At crop harvest, soil enzymatic activities and physico-chemical properties of soil were analyzed after cultivating for two consecutive years along with its residual effects. Comparing with control treatment, addition of poultry manure (PM), farm yard manure (FM) and vermicompost (VC) increased SOC by 35%, 57% and 53%, respectively, at recommended dose of application. Dehydrogenase activity was higher in the FM treatments by 40-198% followed by 20-102% in VC treatments, 10-60% in PM than in control. Protease and cellulase activity increased in all the treatments significantly except control.  $\beta$ -glucosidase activity was higher in PM treatment and was at par with highest rate of application. Alkaline phosphatase and urease activity was more influenced by application of FM compared with VC and PM. Activity of hydrolase enzymes was different in PM, FM and VC treatments. Phosphatase activity was increased and is attributed to microbial stimulation by organic C and soil pH. Differences in all enzymatic activities were narrowed down in residual treatments compared with control having little change in the trend in tomato-garden pea cropping system. This finding is more important for hilly regions because of variable soil depth, pH, moisture and fertility status. As our general recommendation of organic nutrient is mostly based on N requirement of crops, it is better to supply through FYM for better soil health and biological properties.

### **Biography**

Shaon Kumar Das has completed his MSc from IARI, New Delhi, India in 2010 and got gold medal for his outstanding contribution in MSc in 2011. He joined Agricultural Research Service as Scientist in 2011. He has published more than 10 International papers in reputed journals and serving as an editorial board member of many international journals. Currently, he is working as Co-PI in National Initiatives on Climate Resilient Agriculture (NICRA) project under Ministry of Agriculture, Govt. of India.

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