

# Long Term Effect of Nutrient Application on Soil Chemical and Biological Properties and crop Productivity in Sorghum-Wheat Cropping Sequence on Vertisols

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## ABSTRACT

The experiment was under taken during the year 2007-08 to study the effect of long term fertilization and manuring on soil chemical and biological properties. The dynamics of soil characteristics was studied in the ongoing long term fertilizer experiment initiated during *kharif* 1988 at Akola, Maharashtra. The experiment comprised of twelve treatments including NPK levels with and without FYM, sulphur and zinc replicated four times in randomised block design. The manure and fertilizers were given to sorghum crop every year and only fertilizers were applied to wheat crop. The soil samples from all the treatments were collected from 0-20 cm depth. The chemical and biological soil characteristics were studied. Significantly highest increase in the soil organic carbon and total nitrogen were recorded in the treatment of FYM @10 t ha<sup>-1</sup> + 100% NPK. The availability of N, P, K, S, soil microbial biomass carbon, soil microbial biomass nitrogen, dehydrogenase assay and productivity of sorghum and wheat were significantly increased with the integrated application of organic manure (FYM @ 10 t ha<sup>-1</sup>) and chemical fertilizer (100% NPK) over control and other fertilizer treatments in 20 years of experimentation.

**Key words** : Dehydrogenase assay, Long term effect, Soil microbial biomass carbon, Soil microbial biomass nitrogen