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Influence of long term application of farm yard manure and *in situ* green manures on crop productivity and soil organic carbon under rice-rice system in a typic haplustalf

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ABSTRACT : The effect of long- term application of inorganic fertilizers and organic materials (farmyard manure, *in situ* green manuring with daincha) on rice productivity, soil organic carbon and nutrient availability was analysed at Regional Agricultural Research Station, Pattambi, Kerala Agricultural University. 15 year rice-rice cropping system experiment consisted of twelve treatments including control, inorganic fertilizers alone and fertilizers along with organic materials such as farmyard manure (FYM) and *in situ* green manuring with daincha. Long term fertilizer experiments (LTFE) provide an opportunity to evaluate the sustainability of agricultural practices. Integrated nutrient management and *in situ* green manuring with daincha recorded higher grain and straw yields and *in situ* green manuring was identified as a cost effective and farmer friendly technology. The organic carbon content (%) in soil in 100 per cent NPK+ FYM plot and that in 100 per cent NPK+ *in situ* green manured (daincha) plot was higher than the plot receiving inorganic nutrients alone. In addition to high productivity, these also had retained soil fertility.

KEY WORDS : Long term fertilizer experiment, Rice, Productivity, Soil fertility, *In situ* green manuring, FYM

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