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Impact of long term application of straw alone and in combination with inorganic fertilizers on organic matter levels in rice soils of low country intermediate zone of Sri Lanka

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Long term effect of application of rice straw and inorganic fertilizer in different combinations on the improvement of organic matter level in rice soils of Low Country Intermediate Zone was investigated. Treatments used in the experiment were straw 2t /ha with inorganic fertilizer, straw 3t /ha with inorganic fertilizer, straw 2t / ha alone, straw 3t / ha alone, recommended inorganic fertilizer only and the control (no straw, no inorganic fertilizer). Statistical design used in the experiment was Randomised complete Block Design with nested treatment arrangements. A field trial was conducted over 8 cultivation seasons at the Regional Agricultural Research Centre, Makandura, and the last two seasons (*Maha* 1998/99 and *Yala* 1999) were selected for the present study. Rice variety Bg 94-1

(3.5 months) was cultivated and standard cultivation practices were followed avoiding the application of pesticides as much as possible. The soil samples were taken at 1, 2 and 3 months after sowing at 0 -2, 2 – 4, 4 – 8 and 8 – 12 cm depths from the soil surface. Soil samples were stored according to the standard procedures. Results showed that, irrespective of the treatment or season, organic matter levels of surface soil layer were significantly (p=0.05) decreased with the soil depth. Straw amended treatments, straw 2t /ha with inorganic fertilizer, straw 3t /ha with inorganic fertilizer, straw 2t /ha and straw 3t /ha showed significantly increased organic matter percentages of 1.81, 1.94, 2.03 and 2.10 respectively than organic matter percentages of 1.50 and1.32 of inorganic fertilizer alone and the control respectively in *Maha* 1998/1999. In *Yala* 1999, straw amended treatments, straw 2t /ha with inorganic fertilizer, straw 3t /ha with inorganic fertilizer, straw 2t /ha and straw 3t /ha showed significantly increased organic matter percentages of 1.57,1.65, 1.78 and 1.90 respectively than organic matter percentages of 1.18 and 0.87 of inorganic fertilizer alone and the control respectively. Generally, straw amended treatments considerably improved the soil organic matter percentage over no straw treatments, after long-term application of straw in different combinations.

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