Nuttapon Buachan 2014: Carbon Stock in Rice Cultivated Soils with Different Soil Management. Master of Science (Environmental Science and Technology), Major Field: Environmental Science and Technology, Division of Science. Thesis Advisor: Ms. Kruamas Smakgahn, Ph.D. 82 pages.

This study aims to assess the carbon stock, rice growth and rice yield in different soil management. This experiment design by CRD. Suphanburi 1 rice variety was planted in pot experiments by with four treatments of soil preparation; 1) control (CL) (without rice straw or rice straw burning), 2) soil incorporated with dried rice straw (SDR), 3) soil incorporated with rice straw burning (SBR), and 4) soil with organic fertilizer (SOF). Air sampling was taken in order to analyze for soil carbon lost as methane and carbon dioxide emission. Soil properties were analyzed before and after growing period. The soil carbon stock was calculated based on net carbon content. Moreover, rice growth, rice yield and biomass were observed throughout the growing season.

The results of soil carbon stock from SDR, SBR, SOF treatments were higher than CL, with the percentages of 30.65, 26.29, and 37.12 percent, respectively. SBR treatment showed the highest growth rate of rice, when compared to other treatments. The highest rice grain weight per panicle observed from SBR treatment 4.58 percent, which was percent higher than CL. However, the SOF treatment showed highest weight of rice grain, which is 21.23, 10.22, and 9.67 percent higher than that rice cultivation in CL, SDR and SBR respectively. Based on this study, it can be concluded that rice cultivation in SDR, SBR and SOF showed the contents of soil organic matter, soil organic carbon, total carbon, C/N ratio, and total nitrogen were higher than CL, with carbon stock and rice yield also showed that those were higher than CL.

Student's signature

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