

Bangon Ubon 2014: Effects of Rice Straw Management with Tillage Systems and Fertilizer Types on Rice Growth, Yield and Carbon Accumulation. Master of Science (Soil Science and Management Technology), Major Field: Soil Science and Management Technology, Department of Soil Science. Thesis Advisor: Mr.Suphachai Amkha, Ph.D. 91 pages.

The effects of rice straw management with tillage systems and fertilizer types on growth, yield and carbon stock was investigated by using the Pathumthani 80 rice. This experimental design was 2x2x2 Factorial in Randomized Completely Block Design with 4 replications. The first factor was rice straw management (rice straw burning; B1 and rice straw incorporation; B2). The second factor was tillage system (conventional tillage; T1 and minimum-tillage; T0) and the third factor was fertilizer type (chemical fertilizer; Fc and organic fertilizer; Fo). The results showed that rice straw management by rice straw incorporation method gave the highest of plant height and tiller number, which increased soil organic matter, available P and exchangeable K as compared to rice straw burning. In addition, conventional tillage gave the highest of plant height and tiller number. However, minimum-tillage gave the highest of rice yield and carbon stock in plant and soil. By the time, the fertilizer type as chemical fertilizer application gave the highest of plant height, tiller number and yield.

Interaction between rice straw management with tillage system and fertilizer type on growth, yield and carbon stock in rice was found. The results were revealed that conventional tillage with chemical fertilizer gave the highest of plant height. The rice straw burning with organic fertilizer application increased soil pH, while the rice straw incorporation with organic fertilizer application increased soil organic carbon and soil organic matter. The rice straw incorporation with chemical fertilizer or organic fertilizer application was gave the highest of available P and exchangeable K after harvesting time. The final that, rice straw incorporation with conventional tillage and chemical fertilizer application gave the highest of normal seed/panicle and yield.

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Thesis Advisor's signature