

THE EFFECT OF RICE STRAW BIOCHAR AND DIFFERENT RATES OF NITROGEN FERTILIZER ON GREENHOUSE GASES EMISSION IN RICE PRODUCTIVITY

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In the next 25 years, extensive mineral fertilizer application for increased rice productivity will direct to worsen greenhouse gases emission problem. In agriculture, increased Nitrous Oxide (N₂O) emission is due to the application of Nitrogen fertilizers. Besides, most of the world's rice is grown in flooded conditions that favour methane-producing bacteria. Therefore, the use of mineral fertilizer should be addressed not only for the food but also for climate change mitigation. So these studies investigate the effect of rice straw biochar and different rates of nitrogen fertilizer on greenhouse gas emission in rice production. The pot experiment was conducted in randomized complete block design with four replications. Treatments are control, T₁ (only 150 kg N/ha) and rice straw biochar (9 ton/ha) + (30, 60, 90, 120, 150 kg N/ha) T₂, T₃, T₄, T₅ and T₆ respectively. Leaf area, plant height, tiller numbers, SPAD value and gas sampling (CO₂, CH₄ and N₂O) were carried out at every two weeks interval. Yield parameters after harvesting were recorded. Rice straw biochar through different N fertilizer rates showed synergetic effect on rice plant growth. The yield increasing over control (around 20.7%) was found in T₃, T₄ and T₅. Biochar treated soil had increased cumulative CO₂ emission over control. Although there had no exact trend of reduction of gas emission, all biochar treated soil had significantly reduced seasonal methane and nitrous oxide gas emission. Specifically, application of rice straw biochar (9 ton/ha) through 60 kg N/ha could be recommended for enhanced growth, increased yield, and reduced greenhouse gas in relative to control and therefore rice straw should be recycled into biochar as fertilizer materials.

Biography

Lai Lai had experience in conducting yield trial experiments, pod borer resistant varieties of pigeon pea, incidence of chafer betel and effective insecticide in pigeon pea, groundnut and mungbean. In her MSc, she observed Effect of Storage Methods on Fungi, Aflatoxin Contamination and Seed Quality of Small- and Large-Seeded Types Peanut. She is Staff Officer in department of agriculture under ministry of agriculture, livestock and irrigation, Myanmar. She is responsible in testing seed quality, field inspection, and seed certification for seed farm, contract farmers in rice growing township. As a member of technical extension group, she was teaching quality seed production and seed quality control procedures, post-harvest technologies to DOA staffs in different regions. Currently, she is pursuing PhD in University Putra Malaysia. Her research path way is Effect of Rice Straw Biochar and N Fertilizer Management Strategies on Greenhouse Gases Emission in Sustainable Rice Productivity

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