

P071

Establishment of suitable rice cultivar in relation to improvement soil physical and chemical properties on paddy field

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Abstract

Rice has important role as a primary food resource in especially the Asia, Korea, China, India, Indonesia and Japan. After development and increasingly using artificial chemical fertilizer, rice is getting high quality and quantity to satisfy ever-increasing people. On the other hand, the earth environment is more polluted each day. Nowadays consumers are looking for the organic crops or foods that were grown with eco-friendly method and in pure farmland. With the immergence of this trend, it is time to development environmentally-friendly agriculture. One of the methods is growing green manure crops in winter or spring on the fields. For this reasons, growing rye and Italian ryegrass are useful to use green manure to enhance rice production without chemical fertilizers and make the property of the soil eco-friendly. To know how improve the quality and quantity of rice with green manures, rye and Italian ryegrass, first the characteristics of green manure corps were measured. Dry matter yields of the rye and Italian ryegrass were 2.21 and 1.81 t ha⁻¹. And the percentages of the dry matter were 28 and 32%. And, analyzed mineral components in rye and Italian ryegrass were nitrogen, organic matter, P₂O₅, CaO, K₂O and MgO. Specially, the percentages of the organic matter and the CaO between rye and Italian ryegrass have difference appreciably. the height of the rice on the Italian ryegrass-fertilized field was the highest among the variant fields. The height of the rice on the non-fertilized field was the lowest. Yield of the Italian ryegrass-, rye- and non-fertilized rice are 805.2, 639.9 and 415.3kg 10a⁻¹. At the result, Italian ryegrass is the most effective green manure among the 3 treated-fertilized.

Keywords: eco-friendly method, green manure, Italian ryegrass, rice, rye

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