Soil Physiochemical Properties in Paddy Fields where Weeds are Depressed

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Abstract *: The objective of this research is to elucidate the physicochemical properties with special emphasis on soluble nitrogen, in soils of paddy fields where growth of weeds is depressed. Experiment was conducted in nature farming paddy fields (17 fields with Andosol and 12 fields with other group of soils) in prefectures of Nagano, Gifu, Shizuoka, Ibaragi and Miyagi in Japan. Soil samples were taken from the 0-2 cm and 2-5 cm layers 10 days after the seedlings were transplanted. Mineralized nitrogen was extracted by 2 M KCl and measured by the steam distillation method. Biomass nitrogen was extracted with 0.5 M* K_2SO_4 *and measured by the chloroform method. The ratio of available nitrogen to soil was determined by measuring the mineralized nitrogen after a 30-day incubation at* 30^{o}*C. Biomass nitrogen was high in the 0-2 cm soil layer in fields with Andosol where weeds were depressed. On the other hand, in the soils other than Andosol with few weeds, mineralized nitrogen concentration in the 0-2 cm soil layer was high but the available nitrogen was low. This suggests that weeds are easily depressed by fast nitrogen mineralization in fields with soils other than Andosol. Moreover, mineral nitrogen was much lower in Andosol than other groups of soils 10 days after transplanting and that properties related to nitrogen mineralization in these groups of soils affected germination mechanisms of weeds.*