

[P2] Farming System

Thu. Sep 9, 2021 12:15 PM - 2:00 PM Room 2 (Poster) (Farming System)

1:15 PM - 2:00 PM

[P2-24] Alternative Usage of Poultry Litter Ash for Phosphorus and Potassium Fertilizer in Forage Rice Cultivation

○Yuka Sasaki¹, Keishiro Sato^{1,2}, Takayuki Tokuhashi^{1,3}, Ken-ichi Kakuda¹ (1.Faculty of Agriculture, Yamagata University, Japan, 2., Agro-Kanesho Co., Ltd., Japan, 3.Niigata Central Union of Agricultural Cooperatives, Japan)

Forage rice cultivation is needed to enhance productivity while reducing production cost. The highest blending ratio of forage rice in feed is used for broiler. Broiler litter is useful if it is burned in a boiler connecting with floor heating system of chicken house, and its residue is poultry litter ash (PLA). PLA is inexpensive and unutilized resource and in high phosphorus (P) and potassium (K). The objective of this study was to investigate the efficacy of PLA for alternative usage of P and K fertilizer in forage rice cultivation. A field experiment was conducted in 2017 and 2018 in a paddy field of Field Science Center, Faculty of Agriculture, Yamagata University, Japan. The field had two area: P fertilizer had not been applied (No-P) and K fertilizer had not been applied (No-K) since 1999. Treatments were the application of PLA burned at about 500°C, PLA burned at about 800°C, and NPK fertilizer in both area and NK fertilizer in No-P area and NP fertilizer in No-K area. Both PLA contained P in more than 90% of citric acid-soluble form while less than 1% of water-soluble form; K in more than 90% of citric acid-soluble form and about 30% of water-soluble form. Yield and P uptake did not differ significantly among treatments in No-P. Thus, we could not conclude the efficacy of PLA for alternative usage of P fertilizer. Yield and K uptake were significantly lower in NP treatment than the others and did not differ significantly among NPK and two PLA treatments in No-K. Thus, both PLA can replace K fertilizer. K fertilizer efficiency of PLA to NPK treatment was about 80%.