

Development of a paper based novel seed laying technology for paddy cultivation

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Abstract

Rice is the staple food in many of countries. However, farmers face many problems such as weed growth, labor cost and machinery cost to obtain a satisfactory yield from paddy cultivation. In this study, a paper based novel seed laying technology for paddy cultivation was used to minimize weed growth, reduce labor cost, maintain spacing between plants to maximize the tillering capacity. The proposed paper was produced from a banana stem which is a byproduct of banana cultivation and rice seeds were pasted on the paper using a non-toxic glue and it was laid in the properly prepared paddy field. The weight loss of the paper material was 15.6% in 15 days and completely decomposed in 43 days. This experiment was conducted in two locations using four fields: control paddy field and paper-based paddy field (with and without fertilizer). In the paper-based paddy field (with fertilizer), the height of the seedlings in 63 days was observed and it was higher than that of the control. According to the information obtained from field testing in 91 days, the weeds had been physically controlled by the paper and control plot had natural weed growth. The yield was obtained after 105 days for each paddy field. There the yield of paper-based paddy field (with fertilizer) was 1112 g/m² and it was higher than the control paddy field. By putting the paper material into the paddy field, weed control can be accomplished physically and the need for chemical weed management can be reduced. A machine to manufacture seed embedded paper material is in the design stage at present.

Keywords: *Banana paper material, weed control, higher yield, tillering ability*