

On-farm Organic Media Production Using Local Materials within the Northeast, Thailand

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Abstract

*On-farm production of organic media is a promising idea for recycling organic residues (by being used to fertilize valuable agricultural products). Rice straw and invasive aquatic weeds are mainly raw organic materials from the Northeast area of Thailand. The principle, qualifying growing media must have a well-drained mixture that has optimal water retention and is pathogen-free, having sufficient nutrients to provide to the seedlings before transplanting. The proposal is that organic mixes such as rice straw, rice bran, water lettuce, fermented fruit juices, and molasses may be used for our own organic propagated materials and, that may be used as a substitute for commercial products. Therefore, the objective of this pilot study is to compare the chemical properties of on-farm growing media with commercial inorganic and organic products. Raw material was collected from the rice fields within Sakon Nakhon province, Thailand. Water lettuce (*Pistia stratiotes*) and water hyacinth (*Eichhornia crassipes*) were obtained from the government irrigation canal and left to decompose naturally, (for at least 6 months). Rice straw was chopped into one inch sized pieces. Rice bran and molasses were obtained from the local rice and sugar mills. Decomposed aquatic weeds, chopped rice straw, and rice bran were mixed thoroughly in a ratio of 95:4:1 (w/w/w), respectively. Molasses and fermented fruit juice at 1:2 (v/v) were diluted with water and then added to the mixtures above. The optimal humidity of the organic mixes was controlled 50-60%. For accelerating the fermentation process, the organic mixture pile was then covered with a plastic sheet. The pile was turned over when the internal temperature exceeded 140 °F. The color and heat of the mixture was regularly monitored, (to assure the process was completed). The organic mixtures can be ready as sowing media, after 6 months. On-farm organic media was then compared to the commercial organic and inorganic media. Samples of the media were submitted to the Department of Soil Science, Kampaengsaen Campus, Kasetsart University, Thailand, to analyze the nutrients in the organic matter. The results show that available plant nutrients from on-farm media were comparable to two commercial media. On-farm sowing media contained sufficient plant nutrients which having the highest level available P and K (above the others). The on-farm media had a slightly lower pH value but was higher in EC than the others were. During our preliminary observations, the tested seedlings from the on-farm media had growth and fertility rates comparable to the commercial inorganic media. However, the proportion of raw material components will be re-evaluated with a goal of enhancing their positive qualities. In conclusion, on-farm media is a promising concept, helping to replace commercial products and minimize cost. It will be a future prospect for the extension programs to help the small farms, within the Northeast area.*

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