

Performance of Ecologically Friendly Coir Grow Bags for Improving the Plant Root Architecture with Enhancement in Growth and Yield

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Abstract

Grow bag cultivation, a method popular among urban gardeners, is regarded as an ideal system for rooftop farming. It is not only space-efficient, but also ensures there is enough space for root growth and air circulation. One of the main benefits of growing in grow bag is their versatility and mobility. They can also be used in place of garden beds in areas with poor soil quality. This paper focuses on the sustainable agricultural and economic development by finding out alternatives to the use of ever harmful plastic grow bags. This work investigates on the idea of substituting plastic bags by coir grow bags for growing vegetables, flowers, medicinal plants, trees etc. The coir grow bag using treated coir and synthetic grow bag with minimal soil media were used for the study. In addition, the study also focuses to compare the plant growth, yield, effect of root pruning in coir grow bag and in the plastic grow bag using a diverse range of plant species. The objective was to evaluate the effect of coir grow bag on root and shoot growth. Seedlings of amaranthus, tomato, brinjal, chilli, herbs, eighty five varieties of medicinal plants, ornamental plants were transplanted. The yield and growth of amaranthus in control plastic grow bag and in coir bag were well studied. The

experiment were conducted for vegetative growth, yield and root growth. The coir grow bag variant exhibited noticeable impact on visual plant condition. The yield and height of the plant was found to be high in coir grow bag compared to synthetic grow bag. The trial studies proved that the plant grown in these coir grow bags is superior to those of a conventional plastic control grow bag.

Keywords – Grow bag; coir; root pruning; plastic; sustainable