

The effects of adding pumice and bentonite to sawdust substrate on growth and productivity of greenhouse-grown bell pepper

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Abstract

Soilless culture in greenhouse is being developed in Iran, as in many countries of the world. This study was conducted to evaluate the possibility of applying sawdust as well as the effect of adding bentonite and pumice on vegetative growth of bell pepper cv. Inspratian. The experiment was conducted as a completely randomized blocks design with 8 treatments and 4 replications, in greenhouse of College of Agriculture, Isfahan University of Technology. The planting media consisted of different v/v ratios [100% sawdust, sawdust+ pumice at the ratios of 5, 10 and 15%, sawdust+ bentonite at the ratios of 5, 10 and 15%, and a common planting medium (85% peat+ 15% perlite) as control]. Results showed that after peat, in most cases, plants grown in sawdust+ pumice showed better vegetative growth as compared to those of pure sawdust or sawdust+ bentonite. For example, the highest fresh and dry weight of shoots and dry weight of roots were in 85% sawdust+15% pumice treatment. The results also showed that after peat, the highest chlorophyll content was determined in 95% sawdust+ 5% pumice and 90% sawdust+ 10% bentonite media. The lowest chlorophyll content was related to 100% sawdust medium. After peat treatment, the earliest flowering, fruiting and color establishment was observed in 85% sawdust+ 15% pumice, which was not significantly different from 95% sawdust+ 5% and 90% sawdust+ 10% pumice.

Keywords: Soilless culture, Growth medium.

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