

Hydroponic Beit Alpha Cucumber Production using Pine Bark as an Alternative Soilless Media

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Abstract. Beit Alpha cucumber is an exciting new greenhouse crop for production in the southeast US and Florida. Beit Alpha cucumbers are short, seedless fruit with dark-green skin and an excellent sweet flavor. Beit Alpha types lead the cucumber market in the Middle East and much of Europe. Beit Alpha type cultivars grown hydroponically under a protected structure have a prolific fruit set, yielding more than 60 high-quality fruit per plant during one season leaning towards unlimited market potential in the US. Hydroponic vegetable production is generally associated with high investment costs of the structure and irrigation components as well as other costs, such as the media, which must be replaced annually or with each crop. Beit Alpha cucumber cv. 'Alexander' was grown in Spring 2001 and 2002 in a passive-ventilated high-roof greenhouse in Gainesville, FL. Three types of media, coarse perlite, medium perlite, and pine bark, were compared for effects on greenhouse cucumber yield and irrigation drainage (leachate) during two seasons. Both coarse and medium grade perlite are commonly used media in hydroponic systems. Pine bark is widely used in the nursery-container industry as a substitute for peat and is available at a relatively low cost. During both seasons, fruit yield was the same regardless of media type. On several occasions, leachate volume was greater for plants grown in pine bark compared to the two grades of perlite, possibly suggesting a reduced need for irrigation volume when using pine bark. Pine bark was found to be a suitable, low-cost replacement for perlite in a hydroponic Beit Alpha cucumber production system.

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