

Winter Strawberry Production in Greenhouses Using Soilless Substrates : An Alternative to Methyl Bromide

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As an alternative to methyl bromide dependant strawberry (*Fragaria ananassa* Duch) production in the field, the Florida-Israeli Protected Agriculture Project, UF, has conducted research on soilless substrates, growing containers, plug transplants, plant densities, cultivars, and biological control for greenhouse strawberry production in north-central Florida. Soilless substrates such as peat-mix, pine bark, and perlite influenced total yield of field-grown and greenhouse-grown plugs when plants were grown in “Polygal” troughs or poly-bags placed at ground level. However, type of soilless substrate did not influence total yield when plants were grown in elevated poly-bags. Early yield of plugs from both sources was greater when grown in perlite, as compared to other soilless substrates, regardless of growing container. Twelve plant densities ranging from 1 to 2.6 plants/ft² (43,560 to 113,256 plants/acre) were evaluated. The yield/ft² increased linearly with plant density, however, yield per plant was reduced at a plant density of 2.6 plants/ft². Strawberry yields of 1.8 lb/ft² (6,534 12-lb flats/acre) were obtained from greenhouse production compared to a ten-year average yield of 2,392 12-lb flats/acre (FAFD, 2002) for field production. New cultivars such as ‘FL97-39’ and ‘Carmine’ produced high early yields, but ‘FL97-39’ was highly susceptible to powdery mildew (*Sphaerotheca macularis*), and ‘Carmine’ was susceptible to aphids. *Aphidius colemani* and *Lysiphlebus testaceipes* parasitic wasps, and *Neoseiulus californicus* predatory mites were effective in controlling aphids (*Aphis gossypii*) and two-spotted spider mites (*Tetranychus urticae*) respectively. Thus, protected strawberry culture can enhance early yield, improve harvest efficiency, reduce pesticide usage, and eliminate dependency on methyl bromide.