Introduction

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The production of containerized vegetable and ornamental transplants (plugs) in 1996 exceeded 24 billion plants in the United States alone (Styer and Koranski, 1997). Plug producers face the same basic challenges as those faced by the receiver of the transplant: fertilizer and irrigation schedules, insects, diseases, etc. However constraints unique to the plug itself complicate the very process of production.

Type of irrigation applied can change the physical properties of the medium (Argo and Biernbaum, 1994), alter fertilizer retention in small soil volumes (Biernbaum, 1992), and modify plant growth habit (Leskovar et al., 1994). Container (tray) height can exert an immense effect on drainage and hence frequency of irrigation, aeration (Milks et al., 1989), and germination (Cantliffe, 1998). Increased root restriction in small cells reduces biomass and net photosynthetic assimilation rate (NeSmith, 1993), and length of stay in the greenhouse may compromise yield in vegetable transplants (Vavrina and Orzolek, 1993). Carbon dioxide enrichment of the greenhouse and compression of the soilless medium can be used to increase shoot growth (Tremblay et al., 1987; Nicola and Cantliffe, 1996), but rapid expansive growth is generally discouraged. Varying temperature (Berghage, 1991), inducing water stress (Latimer, 1990), mechanical conditioning (Latimer and Beverly, 1993), and withholding nutrients (Liptay and Nichols, 1993) are necessary methods to be mastered when controlling plant growth to produce quality transplants. It is important to mention, however, that greenhouse microclimates are so variable, irrigation and fertilization programs are difficult to standardize (Dufault, 1998).

The fifth National Symposium on Stand Establishment sponsored by the ASHS Stand Establishment Working Group addressed many issues at play in transplant production and performance with a transplant workshop. The collected works featured at that workshop are presented here.

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