

Transplant Size and Sowing Date for Cucumbers

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Materials and Methods

Cucumber seeds (cv. “Calypso”) were seeded in the greenhouse at Highmoor Farm, the Maine Agricultural Experiment Station in Monmouth on 11 June and 26 June 2002 to allow transplanting to occur 15 days and 30 days after seeding. The seeds were started in four different transplant containers, including 7.6 cm (3 inch) diameter x 7.6 cm deep round peat pots, 5 cm (2 inch) diameter x 5 cm deep round peat pots, 6 cm diameter x 5.9 cm deep round plugs (24 count), and 3.8 cm diameter x 5.9 cm deep round plugs (72 count). All containers were filled with a peat/vermiculite mix (Redi-Earth[®]) and fertilized twice with liquid 16-32-16. Seedlings were hardened-off by being placed outdoors from 7 a.m. to 3:30 p.m. for three days prior to being transplanted into plots outdoors on 11 July, 2002. All plots were covered with black plastic mulch, and all transplants received liquid starter fertilizer (15-30-15) at planting.

Results & Discussion:

It should be noted that this experiment was originally designed with the intent of using muskmelon (cv. “Earlqueen”) as the test plant, as well as an earlier transplanting date (29 May). However, a prolonged period of cool wet weather killed more than 50% of the seedlings following transplanting, and the experiment was restarted using, by necessity, a shorter season cucumber variety (“Calypso”). It is interesting to note however, that in terms of survival during the early inclement weather, the older (34 day) melon plants in the large (7.6 cm) peat pots were far better than any of the other treatments. In that situation, it was clear that the largest plants were best able to deal with the stress of cold and soil saturation.

Seedlings started in the large (7.6 cm) peat containers had the largest plants at the time of transplanting for both the 18 and 34 day seeding dates (Table 1). These plants had significantly greater fresh weights, dry weights and more leaves than any of the other treatments. However, it is interesting to note that seedlings started in the large peat pots had noticeably slower germination than all of the other treatments, probably as a result of cooler media temperatures in these containers. Plants started in the 24 plug trays had the next largest plants by all parameters measured, followed by the small (5 cm) peat pots, which tended to dry out quickly in the greenhouse, making them more challenging to manage. The 72 plug trays showed the quickest germination, of all the treatments, but produced the smallest plants.

All transplants established well and produced acceptable harvests of marketable fruit. There were no significant differences between seeding dates on early or total yield among any of the container types (Table 2). Therefore, in this experiment, allowing seedlings an additional 15 days of growth in the greenhouse did not significantly affect the number or weight of fruit the plants produced.

Transplants from the 24 cell trays produced the greatest early yield and total yield, regardless of seeding date, although there were few significant differences across the container types. The small peat containers and the 72 plug trays had very similar yields, slightly less than the 24 plugs. The large peat pots had the lowest overall yield, but this may have been due in part to plot placement, which, although random, exposed this treatment to more weed competition than other treatments.

While container size did affect transplant size in this trial, these differences had little impact on yield once the plants became established in the field. This suggests that using small to medium size plug trays rather than large peat pots may provide a more efficient and economical way to produce cucumber seedlings, and that these seedlings require only a short growing period in the greenhouse prior to transplanting. However, earlier trials demonstrated that larger transplants are better able to survive under conditions of environmental stress, which are typical of the early growing season in the northeastern United States. Therefore, while smaller transplants may be suitable for mid to late season production, larger transplants may be a better option for early season production.

Table 1. Cucumber transplant characteristics at planting as a result of container size and days from seeding in the greenhouse, Monmouth, Maine, 2002.

Treatment	Sub Treat.	Plant Fresh Weights (g)	Plant Dry Weights (g)	Number of Leaves
3" Peat	18 days	5.79	0.39	3.0
3"Peat	34 days	14.63	1.06	5.4
2" Peat	18 days	2.98	0.20	2.0
2" Peat	34 days	4.20	0.35	3.4
24 Plug	18 days	4.15	0.28	2.6
24 Plug	34 days	7.82	0.73	4.0
72 Plug	18 days	2.70	0.16	1.8
72 Plug	34 days	2.86	0.30	2.6
LSD 0.05		0.976	0.08194	0.6478

Table 2. Cucumber yield characteristics as a result of transplant container and size, Monmouth, Maine, 2002.

Treatment	Sub Treat.	Early Yield (kg)	Early No.	Total Yield (kg)	Total No.
3" Peat	18 days	12.27	74	22.72	151
3"Peat	34 days	14.96	81	30.90	195
2" Peat	18 days	12.94	81	32.66	208
2" Peat	34 days	11.65	76	29.03	196
24 Plug	18 days	16.83	101	35.18	229
24 Plug	34 days	17.11	105	37.25	237
72 Plug	18 days	10.95	68	33.89	233
72 Plug	34 days	11.74	74	28.98	200
LSD 0.05		3.47	23	11.42	73

