

On-Farm Management Strategies For Holding Vegetable Transplants When Planting Is Delayed Due To Adverse Weather/Field Conditions

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Objectives: to investigate strategies for holding vegetable transplants in the spring due to delayed planting in the field. Hardening periods of 0, 3, 5, and 10 days were investigated to determine any differences in final marketable yields of tomatoes and cabbage. Use of abscisic acid (ABA) was also investigated in a greenhouse study to see its effect on controlling vegetable transplant height.

Materials and Methods: Tomato ('P696') and cabbage ('China Dynasty') transplants were seeded into 288 cell plug trays on April 12. Plants were grown in the NCARS greenhouse in Fremont, Ohio. Plants were hardened off for 0, 3, 5, or 10 days prior to transplanting to the field on May 31. Hardening off conditions consisted of placing plug trays on a flat bed wagon under a covered storage building. All treatments were planted in 4 replications. Standard pesticide applications were applied throughout the growing season. Tomatoes were mechanically harvested on September 12 and cabbage was harvested on September 6. There were no differences in marketable yield, average fruit size or percent red fruit in tomatoes for any of the holding times prior to transplanting (Table 1). There were no differences in yield, average head weight or head measurements for cabbage (Table 2).

A preliminary greenhouse study using ABA on tomatoes for height control was also conducted. Tomatoes ('P696') were seeded into 200 cell plug trays. After six weeks, ABA was applied at 200 ppm and 400 ppm along with an untreated control. Plants were measured after 12 days, placed under shade cloth and measured again after 5 days. Preliminary results show ABA reduced plant height when applied at both rates of 200 and 400 ppm (Table 1). Studies will be proposed for 2006 to investigate the use of ABA on tomato and/or other vegetable transplants for any effect on crop development and final yield.

Fall cabbage transplants treated with 200 ppm ABA and an untreated control were transplanted into raised beds at NCARS on September 12. Plants will be harvested later this fall.

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Table 1. On-Farm Management Strategies for Holding Vegetable Transplants When Planting is Delayed Due to Adverse Weather/Field Conditions - 2005

Tomatoes 'P696'

Holding time before transplant (days)				Average fruit	
	Red T/A	Green T/A	Culls T/A	size (lbs)	Percent red fruit
0	39.6	6.2	5.1	0.14	89
3	39.1	6.2	5.1	0.14	89
5	40.5	5.8	6.4	0.14	89
10	38.9	6.2	6.2	0.13	88
LSD (0.05)	NS	NS	NS	NS	NS
CV	14.4	49.9	47.4	14.2	3.2

Greenhouse Study Using ABA on 'P696' Tomatoes

Treatment	-----12 days after ABA treatment-----					---After 5 days of hardening under shade cloth--- -----17 days after ABA treatment-----				
	Plant ht (cm)	Stem diam (mm)	Leaf Area (cm ²)	Fresh wt. (g)	Dry wt. (g)	Plant ht (cm)	Stem diam (mm)	Leaf Area (cm ²)	Fresh wt. (g)	Dry wt. (g)
Control	17.3	2.1	102.2	6.2	0.72	22.2	2.3	139.8	8.2	0.95
200 ppm ABA	12.4	1.9	75.5	4.4	0.51	14.9	2.1	103.3	5.8	0.64
400 ppm ABA	11.6	2.1	55.0	3.4	0.37	13.3	2.3	86.5	4.7	0.47
LSD (0.05)	1.75	NS	14.53	0.89	0.19	1.89	NS	23.72	1.63	0.21
CV	24.7	5.2	29.8	31.3	37.9	32.3	4.7	26.6	32.2	40.1

Table 2. On-Farm Management Strategies for Holding Vegetable Transplants When Planting is Delayed Due to Adverse Weather/Field Conditions - 2005.

**Cabbage
'China Dynasty'**

Holding time (days)	Marketable T/A	Cull T/A	Average head wt (lbs)	Core length (in)	Equitorial (in)	Polar (in)
0	16.3	0.5	4.0	3.1	6.3	7.7
3	17.2	0.0	3.9	2.9	6.3	7.5
5	16.0	1.2	4.1	3.2	6.2	7.8
10	16.4	0.5	3.9	2.9	6.2	7.5
LSD(0.05)	NS	NS	NS	NS	NS	NS
CV	8.6	16.5	10.4	12.8	5.2	6