sentially were not adversely affected, although 71% of the plants, when dug after the last harvest, had crown and root symptoms. These results are similar to those obtained in Ohio (2) where yields of tomato transplants set on rockwool were not decreased unless the plants were infected prior to planting. If the plants were inoculated immediately after planting, severe symptoms ensued but no yield reduction occurred.

To alleviate disease it is essential to 1) raise the pH of the container mix and of the field soil to at least 6.3, 2) prevent wounding of the crowns of the transplants, 3) use only disease-free transplants, and 4) fumigate the field (3). A combination of disease-free, nonwounded transplants, and fumigated fields of pH 6.5-7.0 should result in excellent disease control and maximum yields.

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DOES THE INITIAL CONDITION OF THE TRANSPLANTS AFFECT TOMATO GROWTH AND DEVELOPMENT?

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Additional index words. Lycopersicon esculentum, chlorophyll, ethylene, fruit size, fruit yield, root growth, shoot growth.

Abstract. **Growth changes in response to transplant handling, storage and age were evaluated in tomato (*Lycopersicon esculentum* Mill cv. Sunny). Transplants, 45-days old, were stored in trays (Not Pulled) or packed in boxes (Pulled) for 8 days at 5 and 15C. Pulled transplants had higher shoot growth than Not Pulled transplants. Also, 35-day old Not Pulled and Pulled transplants were stored at 20/28C for 3 days. Not Pulled transplants yielded more extra large fruit than Pulled transplants. Experiments were conducted in the spring and fall to evaluate transplant age (2 to 6 weeks old). In the spring, growth was similar for 4, 5 and 6 week-old transplants. Four and five-week old transplants produced the most early large fruit yield, but 4-week old transplants produced greater total yield than 6-week old transplants. In the fall, yields were similar among 2- to 5-week-old transplants.**

In Florida, fresh market tomatoes are established in the field by direct seeding or by using containerized transplants. Transplants are generally shipped directly to growers in the trays used for growing the transplants. Field establishment normally occurs between 1 to 3 days, and in some cases up to 7 days, after plant arrival. Transplants shipped out of Florida are hand-pulled from the tray, packed in boxes, and transported at approximately 14C in refrigerated trucks. Field establishment may be delayed from 1 to 7 days depending on weather conditions at planting site and distance to market.

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Transplant age at shipping depends on the grower's preference. Growers in the northern U.S. prefer tomato transplants that are at least six-weeks old and 12 to 15 cm in height. Growers in Florida prefer transplants that are 5 or 6-weeks old and 10 cm in height.

Studies on shipping containers, storage time and temperature, and plant age have been reported for bareroot and containerized tomato transplants (8,10,11,12,15). Storage at 10 to 13C for less than 10 days was recommended for tomato plants (4). Fruit yield was reduced when bareroot tomato transplants were packed at 1250 plants/crate compared to 1000 plants/crate (11).

Plant performance after initial transplanting, depends also on the physiological age of the transplants. Enhanced yield was reported using 3- to 5-week-old bareroot transplants as compared to 7- and 9-week-old transplants, respectively (8). Transplant size expressed as height, leaf area or shoot weight, when measured in the greenhouse, generally is larger for older than for younger transplants (15). In those previous studies (8,15), however, shoot and root growth changes that occur during transplant storage and subsequent to planting were not considered.

In these studies, the effects of (a) transplant handling on shoot and root growth changes during extended-low temperature storage, (b) transplant handling on early growth and yield after reduced-ambient storage, and (c) transplant age on plant growth and yield of tomato transplants were investigated.

Materials and Methods

Extended storage (Experiment 1) 'Sunny' Tomato plants were grown for 45 days at Speedling Inc., Bushnell, Fla. using their flotation system. Speedling polystyrene trays with 200 inverted pyramid cells of 2.5 cm x 7.2 cm (side length x depth; 18 cm^3) were used. Greenhouse transplant production practices were standard proprietary procedures of Speedling Inc. (3). Handling treatments were: (a) transplants that were kept directly in trays and packed in boxes (Not Pulled) and (b) transplants that were hand-pul-

led (Pulled) from trays and packed upright at 850 plants per box of 22 x 45 x 52 cm (height x width x length). Not Pulled and Pulled transplants were kept in cold rooms at 5 or 15C for 0, 2, 4, 6, or 8 days in darkness. Air temperature at the leaf and root-media level were recorded hourly using a Grant Squirrel meter/logger (Science Electronics, Dayton, Ohio). Stem diameter, stem length, leaf area, and dry weights of leaves, stem, and root were recorded. Shoot:root ratios and specific leaf area (leaf area/leaf dry weight) were calculated from the original data. Measurements were taken just prior to storing the plants (0 day) and after 2, 4, 6, and 8 days of storage. After 8 days of storage, ethylene evolution was determined from 4 individual transplants per treatment using a gas chromatograph with a flame-ionization detector and activated alumina column (13).

Reduced storage (Experiment 2) 'Sunny' tomato plants were grown for 35 days in trays with 128 inverted pyramid cells of 3.8 cm x 6.4 cm (side length x depth; 30.7 cm^3). Treatments were: Not Pulled and Pulled transplants, as described for Expt. 1, with the exception that Pulled transplants were packed at 550 plants/box. At 35 days after seeding (DAS), plants from each transplant group were kept in a closed wax-cardboard container placed inside the packing house (darkness), at 20/28C (night/day), for 0, 1, 2, or 3 days. Prior to transplanting growth measurements were taken as described for Expt. 1. Transplants were set on 17 Aug. 1989 in Bradenton, Fla. at N.T. Growers, Inc. Farm on a sandy, siliceous, hyperthermic, Alfic Haplaquods soil. Raised beds, 0.2 m in height were spaced 1.8 m apart with each bed 0.8 m wide. Preplant fertilization (39N-100P-62K $kg \cdot ha^{-1}$) was applied broadcast and incorporated into the bed. Topdress fertilizer (216N-311K $kg \cdot ha^{-1}$) was applied into 2 bands on the bed surfaces, 0.25 m to each side of the bed center. Beds were fumigated with methylbromide-chloropicrin (2:1) at 207 $kg \cdot ha^{-1}$ and covered with white polyethylene mulch (0.038-mm thickness). Plants were spaced 0.50 m apart in the center of the bed. Drip tubing, Netafim (Netafim, Altamonte Springs, Fl.), was positioned 15 cm deep and at 25 cm from the bed center. Drippers were spaced 60 cm with a drip discharge of 2.25 $l.h^{-1}$. Irrigation was applied daily to keep a water table of 40 cm from the top of the bed. Fruits were harvested at the mature green stage from 10 plants at 75, 93, and 115 days after transplanting. Fruits were graded by size (14) into medium (57-65 mm dia.), large (65-70 mm), and extra large (>70 mm) sizes, counted and weighed. Misshapen, diseased, or undersized (<57 mm) fruits were considered culls.

Transplant age (Experiment 3) Seedlings were grown at Speedling, Inc., Bushnell, Fla. using the flotation system. Speedling trays with 128 inverted pyramid cells were used. Tomato seeds were sown in a peat-vermiculite-perlite mix on 19 and 26 Dec. 1988 and on 2 and 9 Jan. 1989, to obtain 3- (3W), 4- (4W), 5- (5W), and 6- (6W) week-old transplants.

Transplants were planted on 2 Feb. 1989 at a commercial farm located in Parrish, Fla. on a sandy, siliceous, hyperthermic, Entic Haplaquods soil. Plants were grown on single raised (15-cm-high) beds spaced 1.8 m between rows and 0.6 m within rows. Fertilizer (26N-107P-42K $kg \cdot ha^{-1}$) was broadcast and incorporated in the center of the bed. Topdress fertilizer (300N-480K $kg \cdot ha^{-1}$) was applied in 2 bands in shallow grooves on the bed surface 25 cm to each side of the bed center. Beds were fumigated with methyl bromide:chloropicrin (67:33) at 210 $kg \cdot ha^{-1}$ and covered with black polyethylene mulch (0.038-mm thickness). Subseepage irrigation was used. Standard pesticides and cultural practices were used (5). The monthly means after transplanting were 18.5C for Feb. and 21.2C for March.

Plants were sampled (2 per replication) destructively at 0, 7, 14, 21, and 28 days after planting. Plants were manually excavated with a shovel in an area 20 x 20 cm, with the plant in the center of the square, to a depth of 30 cm. Then, plants were gently shaken to remove adhering soil, placed in polyethylene bags, and transported to 5C rooms, where they remained for 1 to 2 days, until examined. Shoots were excised at soil surface, growth measurements were taken described in Expt. 1 and relative growth rates calculated (6). Fruits were harvested at the mature-green stage from 10 plants per replication at 89, 104 and 124 days after transplanting and graded (14).

Transplant age (Experiment 4) Transplants were grown in trays with 200 inverted pyramid cells. Tomato seeds were sown in trays on 15, 21 and 28 July, and 4 Aug. 1989, for the 2-, 3-, 4- and 5-week-old transplants and plants were set on 17 Aug 1989 in the same field as Expt. 3. Cultural practices were the same as for Expt. 3, except that beds were mulched with white polyethylene. Plant sampling (1/replication) was performed at 0, 7, 14, and 21 days after planting. Fruits were harvested at 75, 90 and 109 days after planting. Temperature means after transplanting in the field were 28.6C for Aug. 27.9C for Sept.

Transplant age (Experiment 5) Transplants were set on17 Aug. 1989 in the same field as Expt. 2. The transplant ages were 2 (2W), 3 (3W), 4 (4W) or 5 (5W) weeks. Chlorophyll (Chl) a, b, a+b in $mg \cdot g^{-1}$ fresh weight were determined (3 plants/replication) on the newest fully expanded leaflet (> than 2 cm long) in a UV/VIS spectrophotometer (Lambda 3A, Perkin-Elmer, Norwalk, Conn.) at 663, 652, and 645 nm (2). Fruits were harvested from 10 plants per replication at 75, 90 and 109 days after planting.

Statistical analysis A randomized complete block design (RCDB) with 10 replications per handling treatment was used at each storage time (Expts. 1 and 2) and a RCBD with 4 replications for each transplant age treatment (Expts. 3, 4 and 5). Data were subjected to analysis of variance and main effects of storage time and transplant age were partitioned into orthogonal contrasts.

Results and Discussion

Expt. 1. Pulled transplants stored at 5C had a longer stem length, more stem dry weight, higher specific leaf area, higher shoot:root ratio and smaller root dry weight than Not Pulled transplants (Table 1). Shoot growth promotion in Pulled transplants was possibly a response to a higher air temperature in the shoot and root environment (Fig. 1,A) caused by the respiration heat generated by the high packing density (11). The root growth limitation in Pulled transplants could have been due to excess moisture in the root environment which may have reduced oxygen availability. Specific leaf area increased linearly from 0.213 to 0.250 $cm^2 \cdot mg^{-1}$ as storage time increased from 0 to 8 days, indicating that growth was maintained primarily at

Table 1. Means of root and shoot growth measurements in response to tomato transplant handling and storage time at 5°, 15°C, and 20/28°C.

Handling method (HM)	Stem diameter (mm)	Stem length (cm)	Leaf area (cm^2)	Dry weights: Leaf (mg)	Dry weights: Stem (mg)	Dry weights: Root (mg)	Specific Leaf area ($cm^2.mg^{-1}$)	Shoot: root ratio
				Storage at 5°C[z]				
Not Pulled	2.4	13.2	33.8	160	110	46	0.214	6.1
Pulled	2.5	14.6	38.9	163	122	42	0.243	7.1
	NS	**	**	NS	**	*	**	**
Interaction HM x Time	NS	NS	*	NS	NS	NS	NS	NS
				Storage at 15°C[z]				
Not Pulled	2.5	13.4	34.5	156	115	47	0.227	5.9
Pulled	2.6	14.8	39.4	163	127	47	0.250	6.3
	NS	**	**	NS	*	NS	**	NS
Interaction HM x Time	NS	NS	NS	NS	NS	*	NS	NS
				Storage at 20/28°C[y]				
Not Pulled	3.2	8.3	30	120	76	48	0.242	4.1
Pulled	3.1	7.7	26	111	68	45	0.237	4.0
	NS	**	**	NS	*	*	NS	NS
Interaction HM x Time	NS	NS	NS	NS	NS	**	**	**

[z]Means were pooled across storage times (0, 2, 4, 6 and 8 days). Tomato transplants were 45-days old at time = 0.
[y]Means were pooled across storage times (0, 1, 2 and 3 days). Tomato transplants were 35-days old at time = 0.
[NS,*,**]Nonsignificant or significant F-test at P = 0.05 or 0.01, respectively.

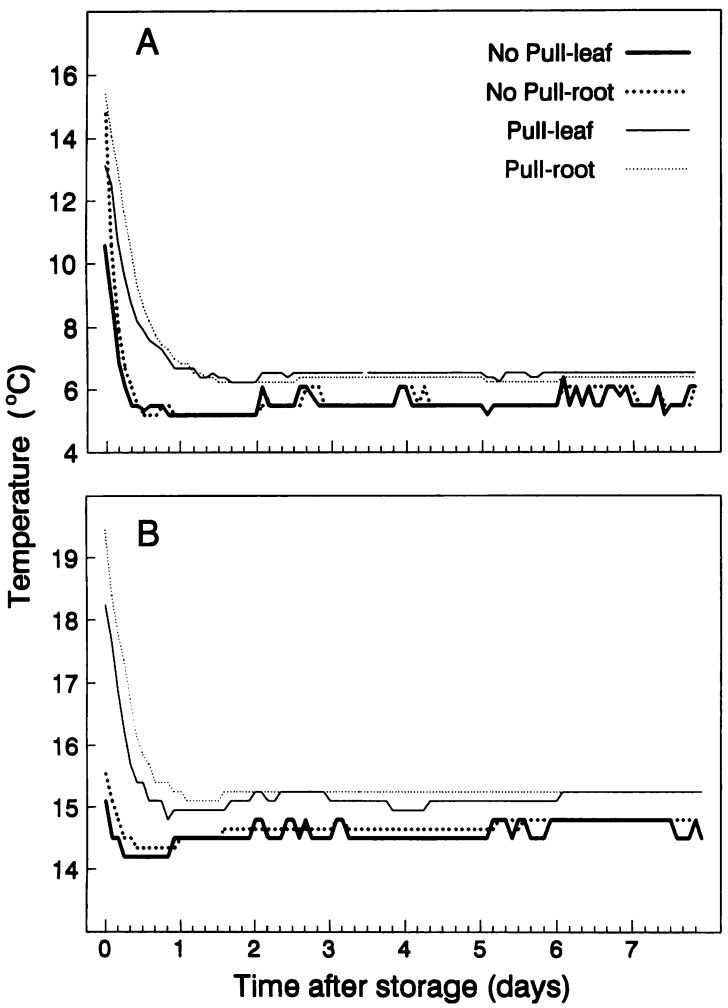

Fig. 1. Average air temperature at the leaf and root level for Not Pulled and Pulled tomato transplants kept at (A) 5C and (B) 15C.

the expense of leaves. Similar growth responses were found at 15C (Table 1), however, leaf and stem growth continue to increase for up to 4 days and decreased thereafter (not presented). Lower leaves began to turn yellow after 6 days and leaf deterioration was accentuated after 8 days of storage.

At 5C, leaf area of Pulled transplants increased up to 4 days time at which there was 35% larger leaf area than the Not Pulled transplants. The latter had about the same initial leaf area for the duration of the experiment (Fig. 2).

Ethylene evolution was 2.5 at 5C and 2.2 at 15C for Not Pulled plants, and 5.3 at 5C and 2.1 ($ml \cdot g^{-1} \cdot hr^{-1}$) at 15C for Pulled plants. Ethylene stimulation for Pulled plants held at 5C might be attributed to the additive effects of excess of moisture, chilling temperature, and physical stress (1). At 15C, newly basal roots formed from the hypocotyl, and proliferated in the upper root-media zone, which is a less anaerobic environment than the lower root zone. This new root growth, more evident after 4 days, may have given access to oxygen, reducing ethylene evolution.

Expt. 2. Transplants, packed at 2,350 plants·m^{-2}, had significantly shorter stem length, and lower leaf area, stem dry weight and root dry weight than Not Pulled transplants that were packed at 658 plants·m^{-2} (Table 1). Under high packing density, and in the presence of high air temperature in the dark, Pulled plants might be expected to deteriorate more than Not Pulled plants. Pulled transplants had higher specific leaf area, lower root dry weight, and higher shoot:root ratio than Not Pulled transplants after 2 days of storage (Table 1).

In the first and second fruit harvest, Not Pulled transplants had more (3.7 and 3.2 $t \cdot ha^{-1}$) extra large fruits than Pulled transplants (2.2 and 1.9 $t \cdot ha^{-1}$), respectively. Similarly, Not Pulled plants had 70% more total extra large fruits than Pulled plants (Fig. 3). Total marketable fruit

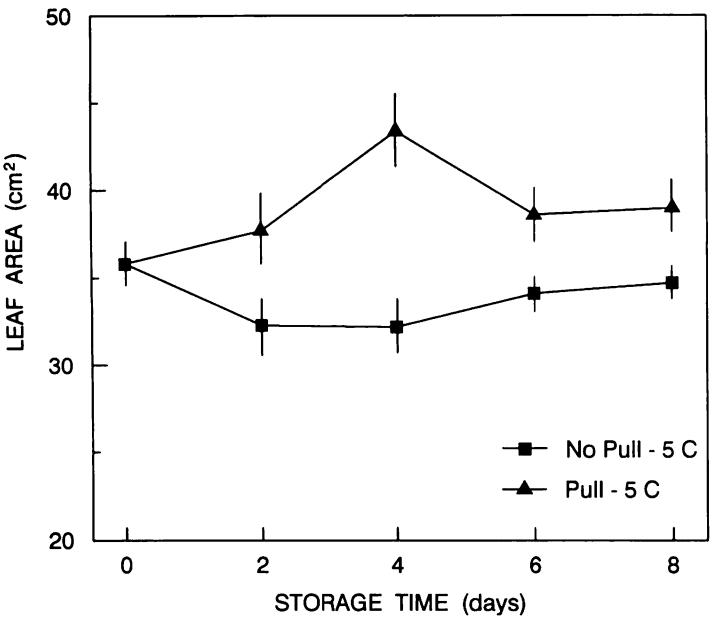

Fig. 2. Effects of storage time on leaf area of Not Pulled and Pulled tomato transplants stored at 5C. Vertical bars represent ±SE.

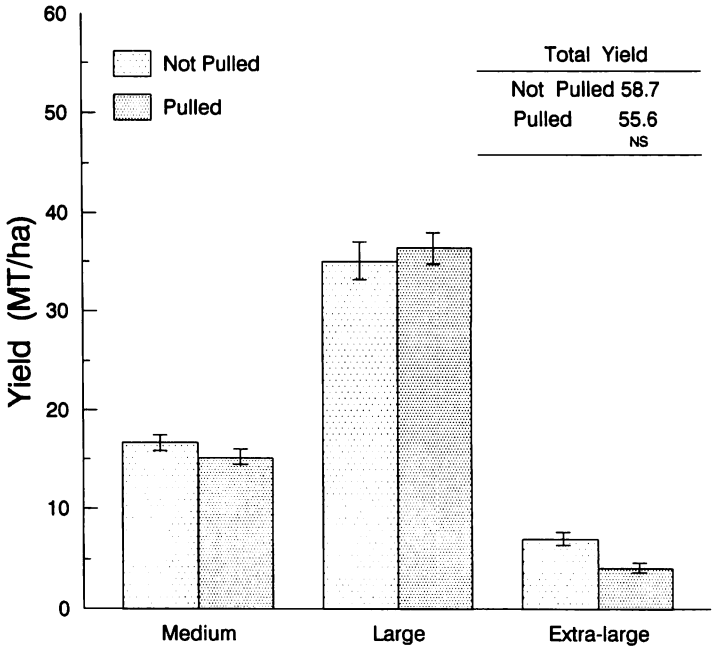

Fig. 3. Effects of tomato transplant handling on yield. Expt. 2. Vertical bars represent ±SE.

yield was not affected by handling method. Increased transplant storage time from 0 to 3 days generally did not lead to a decrease in fruit yield, with the exception of extra large fruits which had a linear decrease in yield from 3.5 to 2.4 t·ha^{-1} when stored from 0 to 3 days.

Expt. 3. Stem length and leaf area increased linearly with increasing transplant age, 1 and 2 weeks after transplanting, (Table 2). However, during the first week of growth 3- and 4-week-old transplants had a significantly higher (0.107 g·g^{-1}·day^{-1}) relative growth rates (RGR) than older (0.064 g·g^{-1}·day^{-1}) transplants. Between 2 and 3 weeks, 4-week plants had a significantly higher plant RGR and root RGR (0.124 g·g^{-1}·day^{-1}) than 6-week (0.078) plants. Thus, younger transplants had a greater capacity to resume growth than older transplants. During seedling culture, older (5-week and 6-week) transplants can be exposed to more water and fertilizer stress than younger (3-week and 4-week) transplants (7). Nutrient deficiency and dehydration generally decrease the permeability of roots, possibly due to suberization of the cell walls (9).

Early and total fruit yields were similar with all transplant ages (data not shown). However, 4-week and 5-week transplants had more early large fruit and 4-week trans-

Table 2. Shoot growth characteristics of tomato transplants as affected by age, Spring 1989 (expt. 3) and fall 1989 (expts. 4 and 5).

Transplant age (weeks)	Stem length (cm)			Stem diameter (mm)			Leaf area (cm²)		
	T_0[z]	T_1	T_2	T_0	T_1	T_2	T_0	T_1	T_2
				Experiment 3, spring					
3	3.9	6.1	8.3	1.6	3.3	4.8	9	38	106
4	6.0	7.3	9.4	2.5	4.4	5.0	21	63	110
5	7.5	9.4	12.9	2.6	4.1	5.3	26	62	204
6	8.3	11.3	14.9	2.6	3.8	5.6	28	81	211
Significance	Q*	L**	L**	Q**	Q*	L*	L**	L**	L**
				Experiment 4, fall					
2	4.2	7.8	11.0	1.6	3.5	8.4	6	27	200
3	5.5	8.1	11.2	2.1	3.2	8.5	10	40	203
4	8.3	9.6	15.7	2.6	3.8	8.6	21	41	390
5	13.1	11.5	15.6	2.9	3.7	7.4	30	30	195
Significance	Q**	L**	L**	L**	NS	NS	L**	Q*	NS
				Experiment 5, fall					
2	4.2	6.9	11.3	1.6	2.8	4.3	6	20	122
3	5.5	7.3	9.2	2.1	3.2	3.8	10	26	73
4	8.3	9.5	12.9	2.6	3.7	4.6	21	38	114
5	13.1	13.3	16.7	2.9	3.5	4.5	30	52	174
Significance	Q**	Q*	Q*	L**	L*	NS	L**	L**	NS

[z]T_0= time an initial transplanting. T_1 and T_2 are times 1 and 2 weeks after transplanting.
NS,*,**Nonsignificant or significant F-test at P=0.05 or 0.01, respectively. Transplant age effect were linear (L) or quadratic (Q).

plants more total large fruit yield than 6-week transplants (Fig. 4). Therefore, the growth advantages of younger (3-week and 4-week) transplants were translated into similar or higher yields than older transplants.

Expt. 4 Four or 5-week-old transplants had significantly longer stems than 2-week and 3-week plants (Table 2). At transplanting, leaf area increased linearly with increasing transplant age from 2 weeks to 5 weeks; however, in this experiment, these differences were minimal 1 week after transplanting.

Early and total marketable fruit yields were similar among transplant age treatments and 4-week transplants produced a higher early and total extra large fruit yield than did 5-week transplants (Fig. 5).

Expt. 5 There was a linear increase in stem diameter and leaf area with an increase in transplant age at planting and 1 week after transplanting, but there were no differences 2 weeks after planting (Table 2). At planting, Chl a+b for 2-week seedlings was 1.73 (SE±0.08) $mg \cdot g^{-1}$ fresh weight, 44% and 17% higher than that of the 5-week and 4-week seedlings. Lower values for older transplants at transplanting may have been due to reduced light interception resulting from plant competition in the container. After 4 weeks of growth Chl a+b was similar among transplant age treatments.

Specific leaf area at transplanting exhibited a linear decrease from 0.436 (SE±0.021) for 2-week transplants to 0.255 (±0.007) $cm^2 \cdot mg^{-1}$ for 5-week-old transplants; however, after transplanting, values were similar for all transplant age treatments. Younger transplants, with initially higher Chl a+b, specific leaf area values, and relative growth rates, may have had a more efficient photosynthetic system than older transplants.

Fruit yield and fruit size were not different among treatments for early or total harvests. Total yields ranged from 43.6 ($t \cdot ha^{-1}$) for 2-week to 46.8 for 5-week old transplants. The lack of fruit yield differences between 2-week and 5-week transplants indicates that there is no advantage to use 5-week transplants compared to younger transplants.

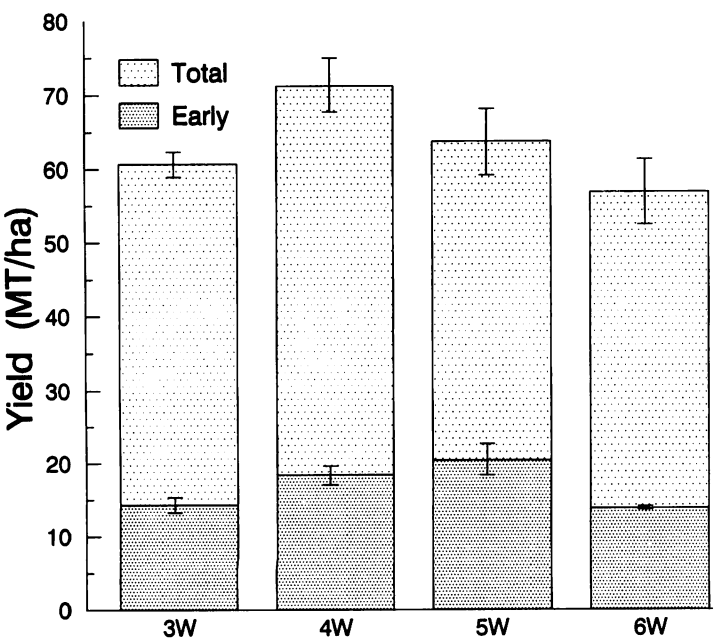

Fig. 4. Effects of tomato transplant age (3 to 6 weeks) on large fruit yield for the early (first) and total (pooled) harvests. Expt. 3, spring 1989. Vertical bars represent ±SE.

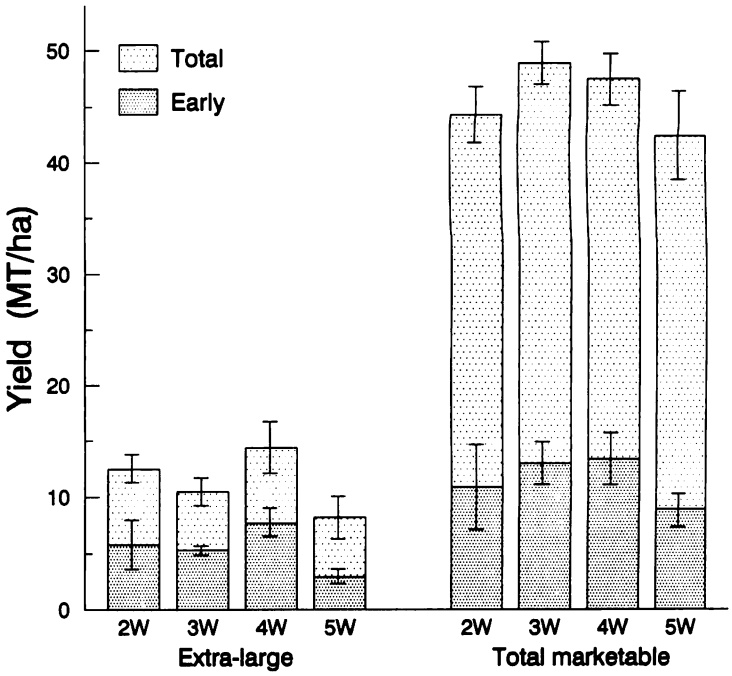

Fig. 5. Effects of tomato transplant age (2 to 5 weeks) on extra-large and total marketable fruit yield for the early (first) and total (pooled) harvests. Expt. 4, fall 1989. Vertical bars represent ±SE.

Therefore, the present studies indicated that transplant maturity and handling affected transplant growth, especially after 4 days of storage at either 5 or 15C. Not Pulled 45-day-old transplants maintained superior shoot and root characteristics than Pulled transplants. Although temperatures between 10 to 13C were suggested to suppress root growth (4) our data clearly indicated that shoot and root growth continued at even lower temperatures. After 6 days plant separation was difficult due to root binding in Pulled transplants. Storage temperatures should be selected to avoid the possibility of chilling injury or physiological disorders that may be expressed after planting (16). Growth and fruit yield of 35-day-old transplants were more affected by transplant handling. Therefore physical stress when pulling and packing should be minimized. If planting is delayed beyond 2 days, storage at lower than ambient temperatures would be desirable.

The results reported herein suggested that under Florida conditions, no improvement in fruit yields can be expected when using the traditional 5- and 6-week-old transplants compared to younger 4- and 5-week transplants during spring and fall, respectively. Young transplants resume growth faster in the field, and can be produced at low costs, by early removal from the greenhouse.

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IMPROVED STAND ESTABLISHMENT OF *SHRUNKEN-2* SWEET CORN BY SEED TREATMENTS

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Additional index words: Zea mays, emergence, *Trichoderma,* priming, fungicide.

Abtract. **Seeds of *shrunken-2 (sh2)* sweet corn (*Zea mays* L.) were inoculated with *Trichoderma harzianum,* treated with captan or a combination of captan + carboxin + metalaxil + imazalil, and captan + *Trichoderma,* primed via Solid Matrix Priming, and the combination of *Trichoderma* and priming to improve emergence and growth in field trials during fall 1988, spring 1989, and spring 1990 in Gainesville, Florida. Solid Matrix Priming is a presowing treatment, where the seeds are mixed with a solid and water instead of osmotic liquid solution. The physical and osmotic characteristics of the solid carrier control the seed hydration. Fungicide seed treatments were the most effective method to improve emergence rate, emergence percentage, seedling performance and total marketable yield. Solid Matrix Priming, *Trichoderma,* and the combination of both treatments generally did not improve seed performance.**

Poor germination in *sh2* sweet corn hybrids has been attributed to low seed vigor and susceptibility to seed and soilborne diseases (1, 11, 15, 18). Different treatments have been proposed to reduce fungal incidence on and in sweet corn seed. Effective disease control was reported by Berger and Wolf (1) using benomyl and captafol in a slurry seed treatment. The combination captafol + diazoben and benomyl + diazoben were the most beneficial seed treatments in 'Florida Sweet' sweet corn to control seed and soilborne diseases (3).

Seed treatments with antagonistic agents are a method to introduce biological disease control into the soil-plant environment (4). Species of *Trichoderma* fungi have been reported as active biosuppressive agents. *Trichoderma harzianum* controlled damping off in bean, peanut and eggplant (5). The combination of *Trichoderma* strains and Solid Matrixing Priming in tomato seeds reduced damping off occurrence (7). Seeds of cotton, cucumber, pea, snap bean, sweet corn, and wheat treated with 2 strains of T. *harzianum* increased the stands compared to the control (6).

Solid Matrix Priming (SMP) is a relatively new procedure, wherein seeds are mixed with an organic or inorganic solid carrier instead of osmotic liquid solutions to improve germination rate and stand establishment (9). Taylor et al. (16) reported better emergence in carrot, cucumber, lettuce, onion, and tomato, when the seeds were primed by this method as compared to non-treated seeds. However, seeds of sweet corn 'Crisp N Sweet' primed via SMP did not have superior germination and stand characteristics as compared to nontreated seeds in a field trial (2).

The objective of this work was to evaluate the effect of Solid Matrix Priming (SMP), T. *harzianum,* fungicides, and the combinations of SMP + *Trichoderma,* and captan + *Trichoderma* seed treatments on field stand establishment of *sh2* sweet corns.

Materials and Methods

Studies were conducted during 1988, 1989, and 1990 at the IFAS Horticultural Unit in Gainesville, Florida on an Arredondo fine sand soil (loamy, silaceous, hyperthermic Grossarenic Palenundult). Seeds of 2 sweet corn hybrids (*Zea mays* L.) cv Crisp N' Sweet 711 and How Sweet It Is were used in 1988 and 1989 trials. In spring 1990, the cultivars used were Supersweet Jubilee and How Sweet It Is. The seeds were treated with captan: (N-[(trichlorometyl) thio]-4-cyclohexene-1, 2-dicarboximide, and the combination of captan + carboxin: Carboxin(5,6 dihydro-2-methyll-1,4 oxathiin-3-carboxinilide) + metalaxil: N-(2,6-dimethylphenyl)-N-(methoxyacetyl) alanine methyl ester + Imazalil: (1-(2-(2,4-dichlorophenyl 1)-2(2-propenyloxy)ethyl)-1h Imidazole at commercial rate. The biolog-

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