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Transplant Age In Vegetables

By C. S. Vavrina. 1998. HortTech 8(4) pp 550-555. adapted by R. Precheur

The effect of transplant age on yield is often discussed by growers in order to maximize yield. Generally, vegetable growers prefer young actively growing transplants. While the traditional time frame of 4 - 6 weeks is common for most producers, planting schedules result in aging transplants. Also, the transplant grower may tend to slow plant growth in an effort to remain within height limitations. When transplants are thought to be too old, concerns are raised about their subsequent growth and yield potential. Vavrina reviewed the majority of research available on transplant age and when the results of the research are distilled down to the ideal transplant age for setting a specific crop, the recommendations generally agree with those found in "Knott's Handbook for Vegetable Growers" (see below).

Research results for a few specific vegetables are summarized here. Conflicting results are probably due to the cultivar grown, greenhouse growing conditions and the environment at the location of the study.

Tomatoes:

Vavrina and Orzolek (1993) concluded that transplant age had little bearing on tomato production.

Other key points by researchers include:

- (1) young transplants (3-4 weeks) old reduce production costs but may be harder to pull from containers without injury.
- (2) Older transplants (7-9 weeks) tend to produce early yields.
- (3) Guidelines of 4-7 weeks for tomatoes are appropriate. If the grower must replant, the use of older plants should not reduce yield, fruit size or earliness.

Peppers:

Nicklow in a NY study found that pepper transplants without flower buds or with unopened flower buds produced more large fruit (early and total) than transplants with open blooms or small fruit. Weston in KY, used containerized transplants of 4, 6, 7, and 9 weeks. She found 70% more early U.S. Fancy and No. 1 fruit with 9 week old transplants. Total Fancy, No. 1 and overall yield was not affected by transplant age. Three of the studies reported in the article indicate that pepper transplants of 8 to 11 weeks may have a yield advantage for early size and number of fruit.

Cucurbits (Watermelon, Squash, muskmelon):

Research implies that transplant age does not adversely influence yield in cucurbits. Commercially, 3 to 4 week old transplants are used for general cucurbit production. Some of the findings reported that cucurbits can be held beyond this time frame without fear of yield loss. However, practical experience shows that large transplants are difficult to handle and they may require large amounts of water to become established.

Broccoli:

Research is not conclusive but older seems to be better.

Cabbage:

Transplant age did not influence cabbage early or total yield.

Cauliflower:

Research results are conflicting, more work is needed.

Lettuce:

Boa (1979) found a minor effect of transplant age on butterhead lettuce, finding older transplants tended to produce lighter heads.

In General:

New information suggests that the transplant age window for certain crops might be wider than previously thought. Older transplants generally result in earlier yields while younger transplants will produce comparable yields but take longer to do so. Modern cultivars and improved production technology enable growers to produce high yields despite transplant age.

Bottom Line:

Vavrina suggests, that if vegetable growers must reset plants after a freeze, flood, etc., they should not fear the older plants usually found at the transplant production facility.

Times Required for Growing Plants for Field Transplanting

(Table adapted from Lorenz and Maynard, 1988)

Vegetable	Time (weeks)
Broccoli	5-7
Brussels sprouts	5-7
Cabbage	5-7
Cauliflower	5-7
Celery	10-12
Corn, sweet	3-4
Cucumber	3-4

Eggplant	6-8
Lettuce	5-7
Muskmelon	3-4
Onion	10-12
Pepper	6-8
Summer squash	3-4
Tomato	5-7
Watermelon	3-4



Orthene Cutback Affects Pepper Production:

C. Welty

The new Orthene label has a restriction of 2 applications per year for peppers. This is not good news for pepper growers, who commonly use 3 to 10 applications per year to control the key pest, European corn borer. It will be especially difficult for those who grow red bell peppers, which are in the field longer than green peppers. Although it is likely that growers will be allowed to use existing stock of Orthene according to the old label that did not have this restriction, growers should think about alternate strategies for the future. The two allowed applications of Orthene should be most useful at the time of peak moth flight and egg hatch, which is usually in early to mid- August. Other insecticides that can be alternated with Orthene for corn borer control are Pounce, Baythroid, SpinTor, and Confirm. More details about the change in the Orthene label will be provided once available.



Crop Reports

Hal Kneen

Southeast:

Tomato planting has begun as drier weather has permitted entry into the fields. Planting both in ground and into plastic covered beds.

Sweet corn is germinating throughout the sandy and gravelly soils of the county. Sweet corn under the plastic continues to be 7-10 days ahead. Need more sunlight like we have received Sunday, Monday, Tuesday and Wednesday of this week.

Soil probe temperatures at 4 inches have been above 60 degrees Fahrenheit by afternoon and sinking into the lower fifties (52 degrees, the low) in the morning for the past four days.

Cabbage has enjoyed the wonderful weather of the past couple weeks and is growing.



The 7 Day Outlook*

AKRON-CANTON

DAY DATE	FRI 28	SAT 29	SUN 30	MON 01	TUE 02	WED 03
TEMP						
MIN/MAX	43 65	43 60	43 66	46 63	44 60	40 63
WIND	4 7	6 9	6 8	7 11	7 10	6 10
PREC						
PROB 24	36	30	14	42	43	38

CLEVELAND

DAY DATE	FRI 28	SAT 29	SUN 30	MON 01	TUE 02	WED 03
TEMP						
MIN/MAX	43 62	41 61	43 65	46 67	45 61	42 63
WIND	3 6	5 7	5 7	6 9	7 9	5 8
PREC						
PROB 24	31	28	14	42	42	36

COLUMBUS

DAY DATE	FRI 28	SAT 29	SUN 30	MON 01	TUE 02	WED 03
TEMP						
MIN/MAX	44 66	45 63	45 69	49 66	46 64	44 67
WIND	2 5	3 6	3 7	5 7	5 7	4 7
PREC						
PROB 24	39	26	13	38	40	35

CINCINNATI

DAY DATE	FRI 28	SAT 29	SUN 30	MON 01	TUE 02	WED 03
TEMP						
MIN/MAX	46 67	46 65	47 69	52 73	48 69	49 72
WIND	4 8	6 8	6 8	8 10	8 10	7 9
PREC						
PROB 24	53	23	12	35	37	33

DAYTON

DAY DATE	FRI 28	SAT 29	SUN 30	MON 01	TUE 02	WED 03
TEMP						
MIN/MAX	46 65	44 62	46 67	49 66	47 67	44 69
WIND	3 6	4 7	4 7	7 9	7 9	5 8
PREC						
PROB 24	41	22	13	37	38	33

TOLEDO

DAY DATE	FRI 28	SAT 29	SUN 30	MON 01	TUE 02	WED 03
TEMP						
MIN/MAX	40 66	41 62	43 68	46 65	44 64	42 66
WIND	3 7	5 8	3 7	7 12	7 10	6 9
PREC						
PROB 24	19	19	15	42	39	34

YOUNGSTOWN

DAY DATE	FRI 28	SAT 29	SUN 30	MON 01	TUE 02	WED 03
TEMP						
MIN/MAX	39 64	40 60	42 67	44 65	42 60	38 62

WIND	4	6	5	7	5	8	5	9	6	9	6	8
PREC												
PROB 24	39	33	14	42	44	38						

* **LEGEND:**

TEMP MIN/MAX - forecasted minimum and maximum temperature for time periods midnight to noon and noon to midnight.

WIND - MEAN WIND SPEED(KTS) FOR TIME PERIODS periods midnight to noon and noon to midnight.

PREC. PROB. 24 - probability of precipitation for the 24 hour period.



What's New At The VegNet Web Site

● Pumpkin Production Chart

Originally available only in the print version of the 2000 Ohio Vegetable Production Guide, this WEB version can be found in "The Pumpkin Patch" The chart is a quick guide and timeline to key factors necessary for a successful pumpkin crop.

● Another NEW! VegWeb Fact Sheet.

Table on Susceptibility of sweet corn hybrids to Stewart's Bacterial Wilt as rated by Jerald Pataky (Univ. of Illinois). Adapted by Dr. Celeste Welty, Extension Entomology, OSU Columbus. This table was published in last week's VegNet Newsletter. A WEB edition is now available from the VegNet homepage. More information on Stewart's wilt and its history in Ohio will be available soon.

● Vegetable Faculty WEB Pages.

Dr Matt Kleinhenz has recently posted his faculty webpage. At the site you can find his research projects, results and review his presentations made this past winter. A link from VegNet will be provided soon. To visit Matt's homepage, go to:

<http://www.oardc.ohio-state.edu/kleinhenz/>

● From Dr. Brent Rowell, Univ of KY,
email: browell@ca.uky.edu

Our new KY Vegetable Recommendations book is on the web now. A print version is also available. The introductory section on marketing might be of interest to southern OH tobacco growers.

<http://www.ca.uky.edu/agc/pubs/id/id36/id36.htm>

The marketing section is also available as a separate publication.

<http://www.ca.uky.edu/agc/pubs/id/id134/id134.htm>

[Visit: "The Library, Online Edition of the 2000 OH Vegetable Production Guide, NOW AVAILABLE."](#)

The OH Vegetables Production Guide ranks #22 in top downloads from OSU Extension Ohionline with over 1,000 downloads. Most of the new features are available in the online edition including the New Insecticide Efficacy tables. The new Pumpkin Production Chart is not there but I hope to have it posted soon in "The Pumpkin Patch" section of the VegNet website.

NEW! VegWeb Fact Sheets.

This new feature offers some valuable information on certain aspects of vegetable production that you can print out directly in your home or office. The first two are by Dr. Mac Riedel, OSU Plant Pathology, and are available from the VegNet homepage.

- **Fungicides Labeled for Pumpkins**
Confused by the many new fungicides now available for pumpkins. Check out this fact sheet to see how to use these fungicides.
- **Fungicide Activity For Control of Tomato Diseases** Which fungicide is best for a particular tomato disease.

[Available from the Vegetable Crops Homepage, Click Here!](#)

The 1999 Pumpkin Review and Slide Show.

Yield Data plus pictures of pumpkin cultivars from this year's trials. Also, see pumpkin varieties rated for powdery mildew resistance. There are many new and interesting pumpkin varieties in all size categories.

[Visit: 'The Pumpkin Patch' for pictures and yield data.](#)

The 1999 Green Pepper Evaluation and Slide Show.

[Yield Data Slide Show](#) From The Muck Crops Branch at Celeryville,

From The Enterprise Center

- **Comparison of Disease Control on Fresh Tomatoes using TOMCAST and SKYBIT to Time Fungicide Applications.**
- **Evaluation of WaterMelon Cultivars for Southern Ohio, 1999**

- **1999 Ornamental Corn Evaluation**
- **Evaluation of Eastern Style Muskmelons for Southern Ohio, 1999**

[Link To Research Summaries From The Enterprise Center at Piketon.](#)



[Return to Vegetable Crops Homepage | Ohio State](#)

[University Extension](#)

We appreciate very much the financial support for this series of vegetable reports which we have received from the board of growers responsible for the Ohio Vegetable and Small Fruit research and Development Program. This is an example of use of Funds from the "Assessment Program".

Where trade names are used, no discrimination is intended and no endorsement by Ohio State University Extension is implied. Although every attempt is made to produce information that is complete, timely and accurate, the pesticide user bears the responsibility of consulting the pesticide label and adhering to those directions.

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