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Soil Temperature, Corn Emergence, and Stand Problems

**R. L. Nielsen, Agronomy Dept., Purdue Univ. W. Lafayette, IN 47907-1150
rnielsaen@purdue.edu (Originally published in the Chat'n Chew Caf☞, 16 April
!999).**

The following article appeared in the Ag Answers newsletter in 1999 and although intended for field corn producers, it provides good information for sweet corn growers.

A small percentage of farmers in and OH we'll call them dice-rollers already have their corn seed in the ground. Their gamble, according to Purdue Extension specialist Bob Nielsen, is that their seeds will germinate and seedlings will emerge despite a variety of challenges. Not the least of those challenges is getting significantly fewer growing degree units (GDUs) than seed planted later. Corn requires approximately 125 growing degree units (GDUs) from planting to emergence and should be calculated from soil temperatures, not air temperatures. By this time, few, if any, areas of the state have yet accumulated enough GDU's since April 1 for corn emergence let alone since any more recent planting dates. Therein lies the risk associated with early planted corn.

Obviously, delayed corn emergence increases the exposure of the seed and young seedlings to soil-borne insects and diseases plus surface crusting of the seedbed. It is not uncommon for early April-planted corn to take two to four weeks to emerge. Once emerged, another week or so passes before significant nodal root development occurs at the crown of the seedling. Until these roots develop, corn seedlings are extremely vulnerable to seed or mesocotyl damage from disease, wireworm, seedcorn maggot, and white grub. Additionally, slow germination and mesocotyl elongation increases the risk of underground leafing out due to soil crusting. The limited seed reserves of small sized seed can also contribute to the susceptibility of early planted corn to these risks.

Bottom Line: From the editor: Get out you soil thermometers and monitor soil temperatures as you make you planting decisions.

Some Soil Temperatures from Wednesday, April 12, 2000 FOR THE 24 HOUR PERIOD ENDING AT APPROXIMATELY 7AM ON APR 12 2000

STATION	TEMP		PCPN (IN.)	RH		SOIL TEMP				
	HI	LO		HI	LO	GRASS		BARE		
					HI	LO	HI	LO	HI	LO
CIRCLEVILLE 1 SW	52	34	0.10	..	..	49	47	47	47	
FREMONT (AG)	41	26	T	100	87	43	40	42	38	
GALLIPOLIS	60	34	0.55	..	..	..	..	55	50	
MARIETTA WWTP	55	54	1.05	..	..	..	..	56	55	
MCCONNELSVILLE L	53	35	0.59	..	..	..	..	54	52	
NEW LEXINGTON 2	51	35	1.05	..	..	..	..	51	50	
RIPLEY EXP FARM	56	34	0.18	..	..	52	50	51	49	
WILMINGTON	52	34	0.10	98	84	44	42	51	46	
WOOSTER EXP STN	48	32	T	..	..	45	41	..	..

Below is a different viewpoint that appeared in: 'Crop Production Magazine'. We will let you be the judge.

Midwestern Update: Corn, Four Myths of early planting.

Information in the regional update is provided by the independent operating companies of United Agri Products.

Myth 1. Early planted corn does poorly. Research in several Midwest states indicates that corn growers come out ahead planting long season hybrids before mid May. South of I-80, planting should be completed in April.

Myth 2. Wait until temperatures are warm. In cool soils, biological activity has not yet started. Seedlings may lack nutrients and grow slowly. Band placement of fertilizer is recommended with additive materials that help develop root mass and seedling vigor.

Myth 3. Plant early corn shallow. Soil is often warmer in the top 2 inches, but there are other reasons for planting corn at a normal depth. Some experts recommend setting the planter at 2 inches to account for mechanical variation during planting. In cool weather, shallow planted corn is more susceptible to injury from herbicides.

Myth 4. Overplant to make up for losses. Some growers increase seed populations when planting early. But the truth is, this is unnecessary. If emerging plants have proper nutrition and root mass, more plants survive, leading to a more uniform stand. Increasing populations without taking other measures such as starter fertilizer and soil insecticides where needed can increase unevenness of stands.



Using Mechanical Conditioning To Control Vegetable Transplant Height

by J. G. Latimer, HortTech 8(4) pp 529-539. adapted by R. Precheur

Mechanical conditioning is an excellent means of regulating the growth of vegetable transplants. Height reduction can be as much as 20 to greater than 50% when compared to untreated plants. Other advantages include: increased stem and petiole strength, improved stress tolerance and enhanced stand establishment in the field. The application procedures reported for transplants include: wind, shaking, and brushing.

In vegetable transplants, brushing of the shoots has received the most attention. Methods of application have included brushing shoots with a small broom, a dusting brush, a folded sheet of typing paper, a piece of cardboard, a suspended aluminum bar or PVC pipe or a wooden dowel stick.

Brushing for height reduction has been studied extensively in tomatoes and is also effective in other vegetable crops including eggplant, cucumber, squash, watermelon, some cultivars of broccoli and cabbage, bell peppers and lettuce. One of the best characteristics of brushing as a means of growth reduction is the lack of persistence of the effect after treatment ceases. Plants generally resume normal growth within 3 days after treatment stops.

How Much and Dose Response:

Ten to 40 strokes per day were effective in controlling tomato transplant height. Sanders found effective growth reduction of tomato, pepper and eggplant transplants with brushing with 8 cycles (back and forth) applied 3 to six times per day. Brushing applied in the morning seems to be more effective. The technique used should not result in any plant damage and the plants should not be wet when the treatment is applied.

Brushing has not been widely adapted because of the time and labor commitment. Automation is the key to making it feasible for many operations. Some growers have used a traveling irrigation boom with a suspended bar for brushing and have had good results.



The 7 Day Outlook*

AKRON-CANTON

DAY DATE	FRI 14	SAT 15	SUN 16	MON 17	TUE 18	WED 19
TEMP						
MIN/MAX	45 66	52 76	54 73	53 67	47 66	48 69
WIND	8 10	8 10	7 9	7 11	7 9	7 9
PREC						
PROB 24	35	29	53	52	37	35

CLEVELAND

DAY DATE	FRI 14	SAT 15	SUN 16	MON 17	TUE 18	WED 19
TEMP						
MIN/MAX	43 66	52 75	54 72	52 69	45 64	47 68
WIND	7 10	8 9	6 9	6 8	6 8	6 8
PREC						
PROB 24	37	29	52	52	36	34

COLUMBUS

DAY DATE	FRI 14	SAT 15	SUN 16	MON 17	TUE 18	WED 19
TEMP						
MIN/MAX	45 68	53 79	55 76	54 71	48 70	49 73
WIND	5 8	5 7	4 7	5 7	4 7	4 7
PREC						
PROB 24	29	30	55	49	34	32

CINCINNATI

DAY DATE	FRI 14	SAT 15	SUN 16	MON 17	TUE 18	WED 19
TEMP						
MIN/MAX	50 72	57 79	57 77	55 75	52 73	55 80
WIND	8 11	8 11	7 10	7 11	9 10	8 10
PREC						
PROB 24	25	31	57	43	31	30

DAYTON

DAY DATE	FRI 14	SAT 15	SUN 16	MON 17	TUE 18	WED 19
TEMP						
MIN/MAX	46 69	54 77	56 76	54 71	49 70	49 75
WIND	7 10	8 10	6 8	6 8	6 8	6 8
PREC						
PROB 24	26	30	56	45	32	32

TOLEDO

DAY DATE	FRI 14	SAT 15	SUN 16	MON 17	TUE 18	WED 19
TEMP						
MIN/MAX	42 68	51 71	53 72	51 68	44 66	47 70
WIND	8 11	9 10	8 9	10 11	7 10	7 9
PREC						
PROB 24	34	28	52	48	33	34

YOUNGSTOWN

DAY DATE	FRI 14	SAT 15	SUN 16	MON 17	TUE 18	WED 19
TEMP						
MIN/MAX	41 63	51 76	54 74	51 69	45 66	44 68
WIND	6 9	7 8	7 8	6 8	6 9	6 8
PREC						
PROB 24	38	30	53	53	38	35

*** 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 Ohioline 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.](#)



[University Extension](#)

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

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