Cucumber (*Cucumis sativus*)

Summary of models (Table 2) and analysis led by Nick Andrews, Hiedi Noordijk, and Len Coop, OSU.

Methods: Using events monitored in the field, the lowest C.V. (coefficient of variation) was used to determine lower and upper threshold values based on, depending on variety, between 5 and 11 site-years, all from the Willamette Valley of Western Oregon (2013-2015). Sites included the OSU Vegetable Farm (near Corvallis, OR), the OSU NWREC research farm (near Aurora, OR), Gathering Together Farm (near Philomath, OR), and other farms depending on variety and year. Degree-day values calculated by the default method (Baskerville-Emin single sine formula) using the online calculator at uspest.org.

The main model interval used to determine thresholds for most varieties was from direct seeding to first harvest (for slicing cucumber, the the date when longest fruit on median plant is 8" in fruit length, and for pickling cucumber, the date when longest fruit on median plant is 5" in fruit length) (Table 2).

Results: The final cucumber phenology models all were determine by lowest C.V. (Table 1) to use lower thresholds of 50F (10C), upper thresholds of 90F (32.2C), and single-sine degree-day calculation with a horizontal upper cutoff method. Degree-day models for the 6 direct seeded and one transplant varieties had lowest C.V. values between 2.8 and 5.4, versus models using average number of days with C.V. values between 6.3 and 15.2. The mean absolute deviations (MAD) using average DDs ranged from 0.8 to 2.7 days. Models summarized in Table 2 are available at the website http://uspest.org/dd/model (select nearest weather station using Google map; select "CROPTIME models" at "Model Category" (first) pulldown menu; select any of the listed cucumber models using the "Model:" pulldown menu). Enter up to 4 start dates (planting date or transplant date depending on model selected), end date, and forecast type. Use either model preview on same page or click on button for full model output. Other options available (not described here).

Table 1. Lowest Coefficient of Variation (C.V.) model summaries for several slicing and pickling cucumber varieties grown in Western Oregon, 2013-2015.

DDs for direct seeded (DS) and transplanted (TP) cucumber varieties
50/90F SSHCO (50 lower thresh, 90 upper thresh, single sine, horiz. cutoff DDs)

Variety	Type	Data sets (site – years)	First harvest avg DD	First harvest DDs %CV	First harvest avg days	First harvest Days %CV	Planting to first harvest Mean Abs. Dev. (MAD) (days)
Marketmore 76 (DS)	Slicing	8	1211	2.8	67	10.4	1.1
Cobra (DS)	Slicing	11	964	5.4	57	14.5	2.5
Marketmore 76 (TP)	Slicing	7	805	4.7	46	13.4	1.9
Dasher II (DS)	Slicing	5	1060	5.4	55	6.3	1.8
Zapata (DS)	Pickling	6	984	5.1	59	15.2	2.7
Extreme (DS)	Pickling	5	946	3.3	50	9.5	1.2
Supremo (DS)	Pickling	5	981	3.7	52	8.3	0.8

Table 2. Model summaries for 6 varieties of cucumber (direct seeded) and 1 variety of cucumber (transplant at 2 true leaf stage) grown in W. Oregon, 2013-2015.

Lower temp threshold:	50 F	10.0 C	
Upper temp threshold:	90 F	32.2 C	
Calculation method:	Single sine		
Upper Threshold cutoff method:	Horizontal		

Transplant is at 2 true leaves
Slicing cucumber first harvest when longest fruit on median plant = 8" fruit length
Pickling cucumber first harvest when longest fruit on median plant = 5" fruit length

Variety	Type	2 true leaves DD F	Early flowering DD F	First harvest DD F	2 true leaves DD C	Early flowering DD C	First harvest DD C	Model abbrev.
Marketmore 76 (DS)	Slicing	364	784	1211	202	436	673	cmds
Cobra (DS)	Slicing	339	665	964	188	369	536	cuco
Marketmore 76 (TP)	Slicing	na	344	805	na	191	447	cmtp
Dasher II (DS)	Slicing	365	731	1060	203	406	589	cuda
Zapata (DS)	Pickling	380	688	984	211	382	547	cuza
Extreme (DS)	Pickling	366	692	946	203	384	526	cuex
Supremo (DS)	Pickling	366	677	981	203	376	545	cusu