

Assessment of Frost Damage in Peach










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On April 18 Min recorded temp Elk Twp, South Jersey was **27°F** for **4-5** hours!!



Monitoring the weather and bud development

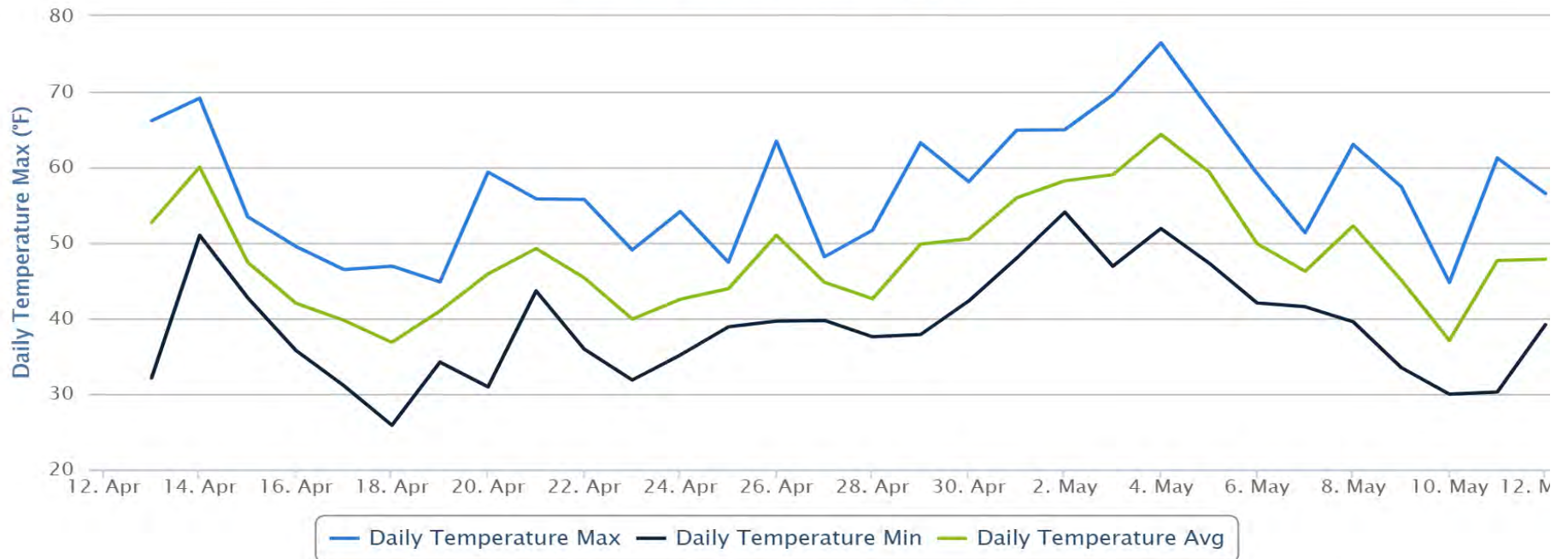
CRITICAL SPRING TEMPERATURES FOR TREE FRUIT BUD DEVELOPMENT STAGES

Pome Fruit (Apples and Pears)									
Apples									
Apples	Silver tip	Green Tip	Half inch green	Tight Cluster	First Pink	Full Pink	First Bloom	Full Bloom	Post Bloom
Old temp	16	16	22	27	27	28	28	29	29
10% kill	15	18	23	27	28	28	28	28	28
90% kill	2	10	15	21	24	25	25	25	25

Peaches									
Peaches	Swollen Bud	Calyx Green	Calyx Red	First Pink	First Bloom	Full Bloom	Post Bloom		
Old temp	23	--	--	25	--	27	30		
10% kill	18	21	23	25	26	27	28		
90% kill	1	5	9	15	21	24	25		

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Daily Temperature Max / Daily Temperature Min / Daily Temperature Avg
Pittstown, Hunterdon County, NJ (#289)



		
First Pink	First Bloom	Post Bloom
27	29	30
28	27	28
24	23	25

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Snyder Research Farm
Pittstown, NJ



*Snyder Research Farm
Pittstown, NJ*



Damage to Flower buds: Tissue browning indicates injury



Cross-sections of live (top) and dead (lower) peach flower buds showing cold injury. Photo by E. Winzeler.

Frost damage at the bloom stage



Visual observations are generally inaccurate.

Closed flower
Brown Pistil



Open flower
Brown Pistil

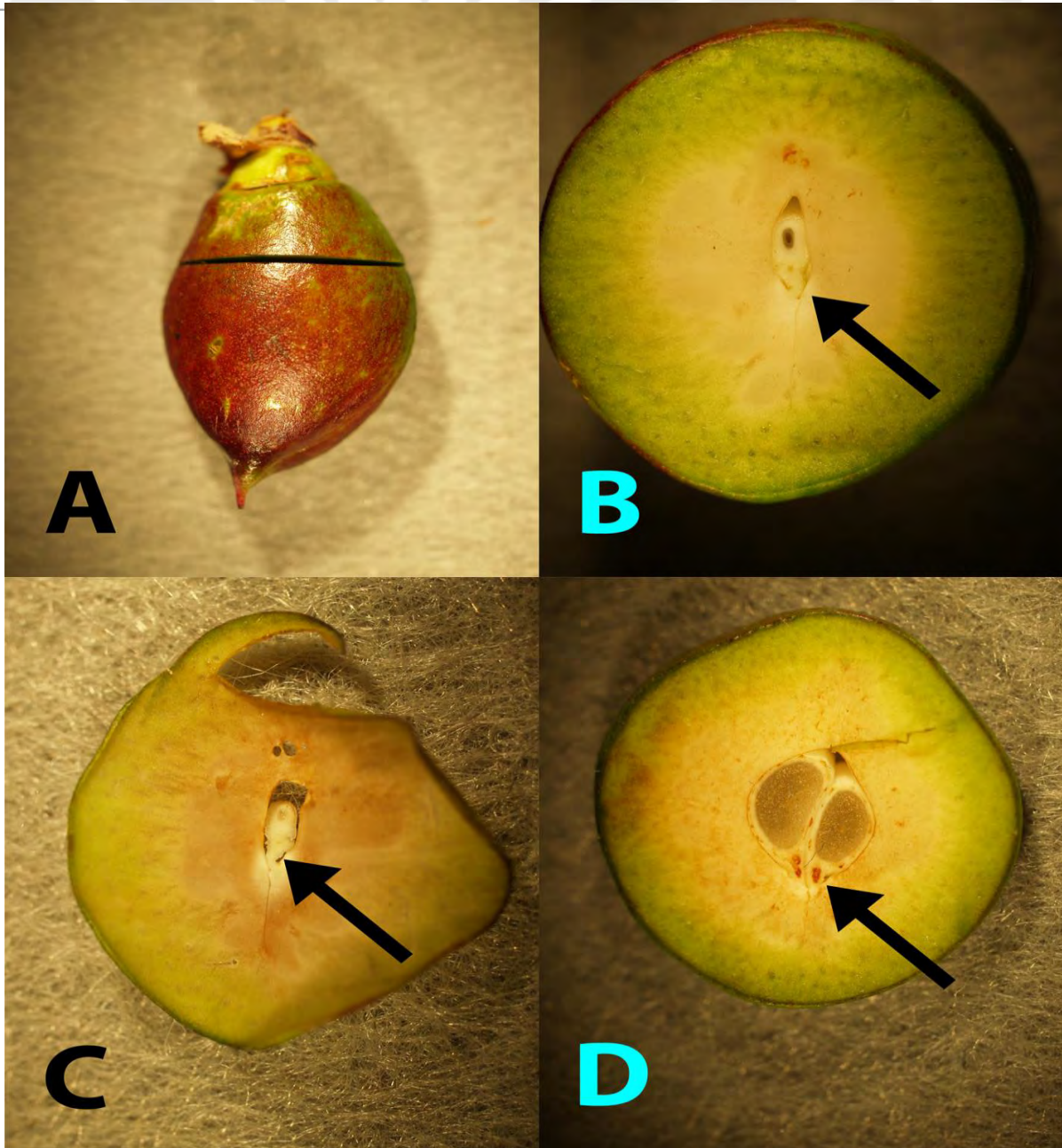


Open flower
Green Pistil



Photo, Hemant Gohil,
April 5, 2016

Cold-injury to fruitlets



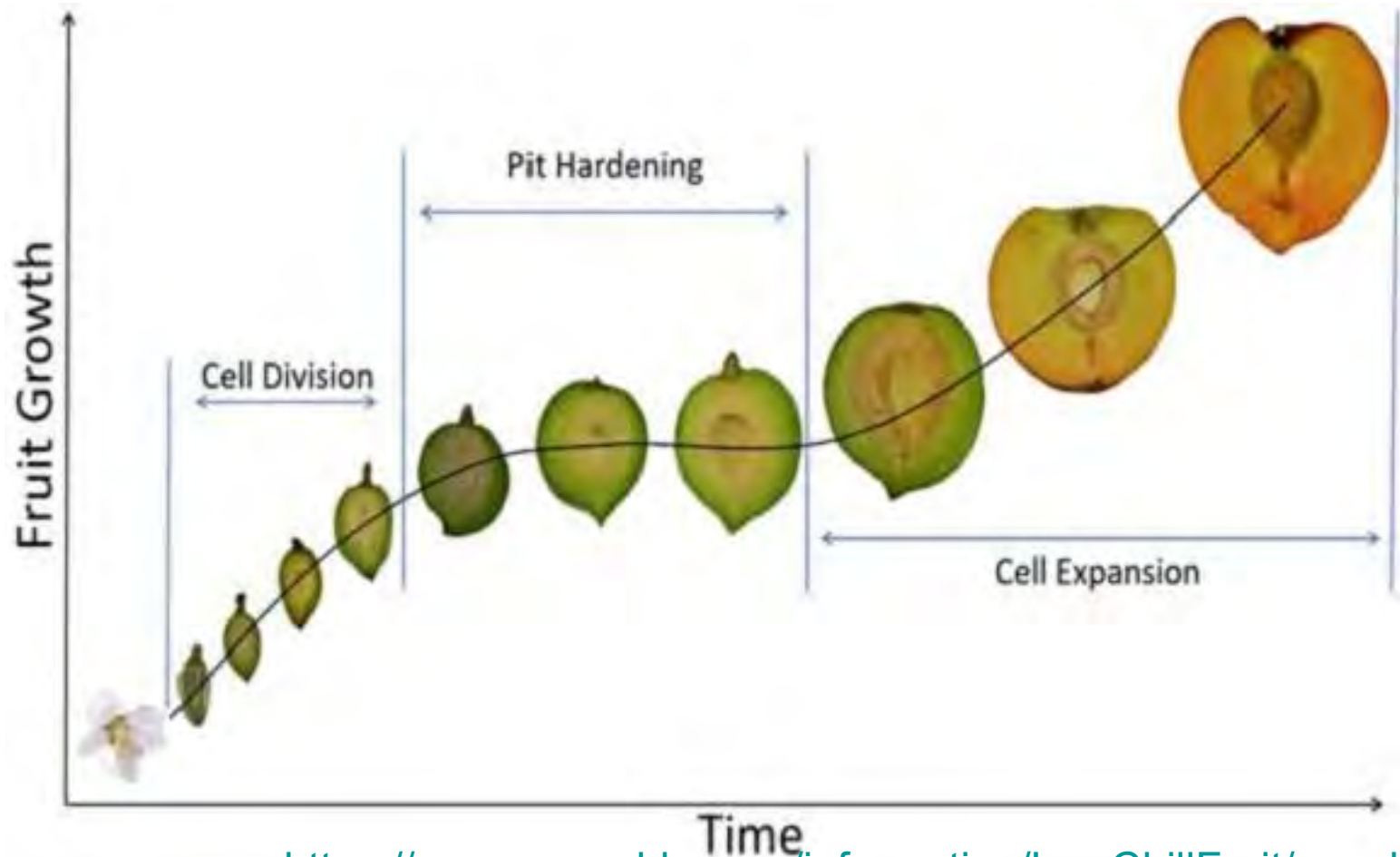
Young nectarine cut to show embryo attachment (**funiculus**, arrows) to the fruit tissue. A. Cut orientation and location. B. Young embryo with undamaged funiculus. C. Thin section to emphasize embryo and undamaged funiculus). D. Twin embryos with damage within each funiculus; note the brown discoloration. (Photos by H.J. Larsen.)

Late Freezes can cause button peaches,



Photo by Hemant Gohil

Multiple frost events = damage at all stages



<https://www.growables.org/information/LowChillFruit/peach.htm>

Should you be fruit thinning this year?

- You should be in a hurry to fruit thin this year! Wait, only if you see some fruits have stopped getting bigger and distinctively smaller then maybe you want to thin.
- You may have to be with crew members, as one grower puts -” it will be a weird thinning this year”.

Reflections..

- Best passive frost protection tool – Site selection.
- Late blooming varieties tend to survive frost more than other varieties. There are few notable varieties like Gloria – which is not only late blooming, but has extended bloom and it is heavy bloomer.
- Most of varieties from Rutgers Tree Fruit Breeding program are late blooming compared to varieties from other breeding program.

Reflections..

- Flower survival was best on trees carrying light crops and trees that were bloom-thinned the previous season (Ross and Marini, Virginia Tech).
- The fall application of ethephon to increase flower bud cold tolerance and slightly delay bloom was reported by some to reduce damage.
- Drip irrigation, in combination with a weed-free strip under a tree, raised the temperature of the orchard floor by 3-5°F (Snyder and de Melo-Abreu, 2005).

Educational material on Frost Protection

- FROST PROTECTION IN ORCHARD – METHODS

<https://njaes.rutgers.edu/peach/orchard/pdf/Frost-Protection-in-Orchards-Methods,-Updates-and-Costs.pdf>

- FROST PROTECTION: TIPS AND TECHNIQUES

<https://cpb-us-e1.wpmucdn.com/blogs.cornell.edu/dist/0/7265/files/2017/01/frost-protection-tips-techniques-1qelzi6.pdf>

Thank you

Good luck for 2020!