

Using a Digital Thermometer to Guide Your Decisions in Frost and Freeze Events

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Whether you rely on overhead sprinkler irrigation or floating row covers to protect your strawberries, you will find one instrument as indispensable as a good weather forecast -- a hand-held digital thermometer.

A digital thermometer can help you make critical decisions about protecting your strawberries from frost and freezing weather – by accurately measuring blossom temperature. A digital thermometer also can help you manage occasional “warm days” in April and May that can cause strawberry blossoms to abort. The thermometer can help you decide when you need blossom evaporative cooling, using sprinkler irrigation on those very warm spring days that reach the mid-80s or higher.

A digital thermometer with thermocouple will help improve your decision-making by:

- 1) Providing the actual temperature of the blossom, which can differ from the air temperature around the blossom.
- 2) Telling you when to start irrigation.
- 3) Telling you when to stop irrigation in the morning.

Even if you use row covers, rather than sprinkling, as your primary method of frost, the digital thermometer remains an indispensable tool for extra chilly nights when you may need supplemental heating, using irrigation on top of the row cover.

When to start irrigation in a freeze?

If you use only sprinkler irrigation for cold protection, be sure to start irrigating as soon as the digital thermometer indicates the blossom temperature is 31/32 F. The air temperature may still be as high as 38 F if the air is dry.

If you combine irrigation and row covers, we suggest starting irrigation on top of the covers as soon as blossom temperatures beneath the covers fall to 28 F.

Monitoring system performance during irrigation

The digital thermometer is an excellent tool for monitoring the success of your protection. If the blossom dips below 31 F, you need to step up your irrigation rate!

When to shut down?

The digital thermometer helps to eliminate guessing when to stop irrigation in the morning. On very cold mornings with wind, you may need to keep running well past sunrise. When blossoms provide a reading of 32 F or higher on the thermometer, you can safely stop irrigating. Again, the blossom temperature differs greatly from

the air temperature, and you want to keep irrigating until the blossom temperature reaches at least 32 F.

Additional information about the digital thermometer and thermocouple shown in this video:

Manufacturer: Omega Engineering Inc., 1-800-826-6342

Model and components required:

1. Handheld digital thermometer Model HH 21 (a quality unit that can handle Type T thermocouple wire), about \$165.
2. Miniature connectors, SMPW-T-M, \$1.75 each (Get 5 or 10 of these, depending on how many blossoms you wish to sample.)
3. Type T teflon-coated thermocouple wire (Allow about 10 feet for each blossom sampled. Ten blossoms require 100 feet of wire.)
 - ~ TT-T-24-50 -- \$34 for 50 feet of 24-gauge wire.
 - ~ TT-T-20-100 -- \$67 for 100 feet of 20-gauge wire.

Updated to 2012

Analysis of Digital Thermometer Purchase

		Retail	Discounted
	Omega Digital		
1	HH 21A Thermometers	\$185.00	\$159.10
10	SMPW-T-M Sub-mini connectors w/ window, blue	\$19.50	\$16.50
100	feet of TT-T-20-100 Insulated Thermocouple Wire	\$80.00	\$46.60
		\$284.50	\$222.30