Cornell University
Cooperative Extension

Lake Ontario Fruit Program

in Wayne, Orleans, Niagara, Monroe, and Oswego Counties

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Forced-Air Cooling to Improve Berry Quality & Shelf-Life

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Berries are an extremely perishable crop, mainly due their brittle nature and high respiration rates. This is especially true of raspberries and strawberries, while blueberries, currants, and gooseberries are somewhat hardier. For every one hour delay in cooling of fruit after harvest, it is estimated that your produce will lose one day of shelf-life. Therefore it is critical to remove field heat from your fruit as quickly and efficiently as possible. If you put a pallet of strawberries in a 33 F cooler right after harvest, it will take approximately 9 hours for the temperature to get within 3 F of your cooler temperature. If you set up an inexpensive forced-air cooling unit (Figure 1), that same pallet of fruit will be cooled in around 90 minutes.

Figure 1. An inexpensive, home -made, forced-air cooling set up.

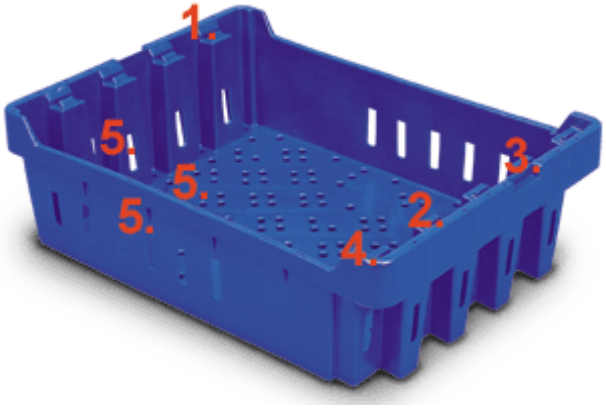

Figure 2. A container for use in forced-air cooling. Note adequate air holes on all sides, and nesting ability.

There are a few key considerations in the use of forced-air cooling. You should use containers that have adequate air holes in them to allow good air flow (Figure 2). You need to maintain high humidity (90-95% RH). You should have a temperature probe that can be inserted into the fruit flesh to monitor temperature. Turn off fan(s) when temperature is within 3-5 F of cooler. The last few degrees take too long to justify leaving the fan(s) on, and will to dry out your berries. It is also critical that the air be pulled **through** the product, not across it. Cover top and any air spaces below product. You want to force as much air through the actual product as possible. If you are doing this on a small scale, you may tinker with large fans such as that in Figure 1. If you are looking at large, multiple pallets of fruit and different kinds of berries, you may want to contract a local refrigeration company. They can design a unit with the right air flow capacity to meet your needs. If your fan is too small, it may stall. A fan that is too large will dry out your fruit. A larger custom unit is only in the $500 dollar range. Grower testimonials remark that they have seen a definite increase in quality and shelf-life.

For growers interested in more information on how to set up an inexpensive forced-air cooling system for berries and many other types of perishable produce, including additional resources, such as do-it-yourself plans and refrigeration company contacts, please contact Craig Kahlke at 585-735-5448, or email at cjk37@cornell.edu.