

Figure 10. Top view of 40 x 30 cm MUM container showing vent hole alignment when containers are cross-stacked (end to side).

The side with the exposed pallet surface should be placed so that the exposed surface is inside the forced-air cooling tunnel. MUM-type containers can reduce this problem because they cover 90% or more of the pallet surface [7].

For efficient precooling, packinghouse personnel must be properly trained and supervised to insure that pallets are tightly placed and aligned when forming the cooling tunnels.

Static pressure measurement

The importance of sealing the openings under the pallets is illustrated [9] by measurement of the static pressure drop across the pallets (outside to inside of the cooling tunnel), at the center of each pallet and at the end of the tunnel away from the fan. With plastic added, the pressure drop was nearly doubled. Since the pressure varies with the square of the velocity, doubling the pressure would result in a 40% increase (square root of 2) in the velocity.

The packinghouse manager should routinely check the static-pressure drop for each cooling tunnel at the beginning of a cooling cycle to insure proper fan operation. This is particularly important when the forced-air precoolers employ more than one exhaust fan for each precooling tunnel. Twice during pressure drop checks at one packinghouse [9], one tunnel's pressure drop was much less than the others. A check of the two fans revealed that only one was operating because a circuit breaker had tripped on the other. Visual observation of the two fans was insufficient to determine whether one or two fans were operating since both were turning at the same apparent speed and some suction was evident when moving the canvas. Air was coming in through

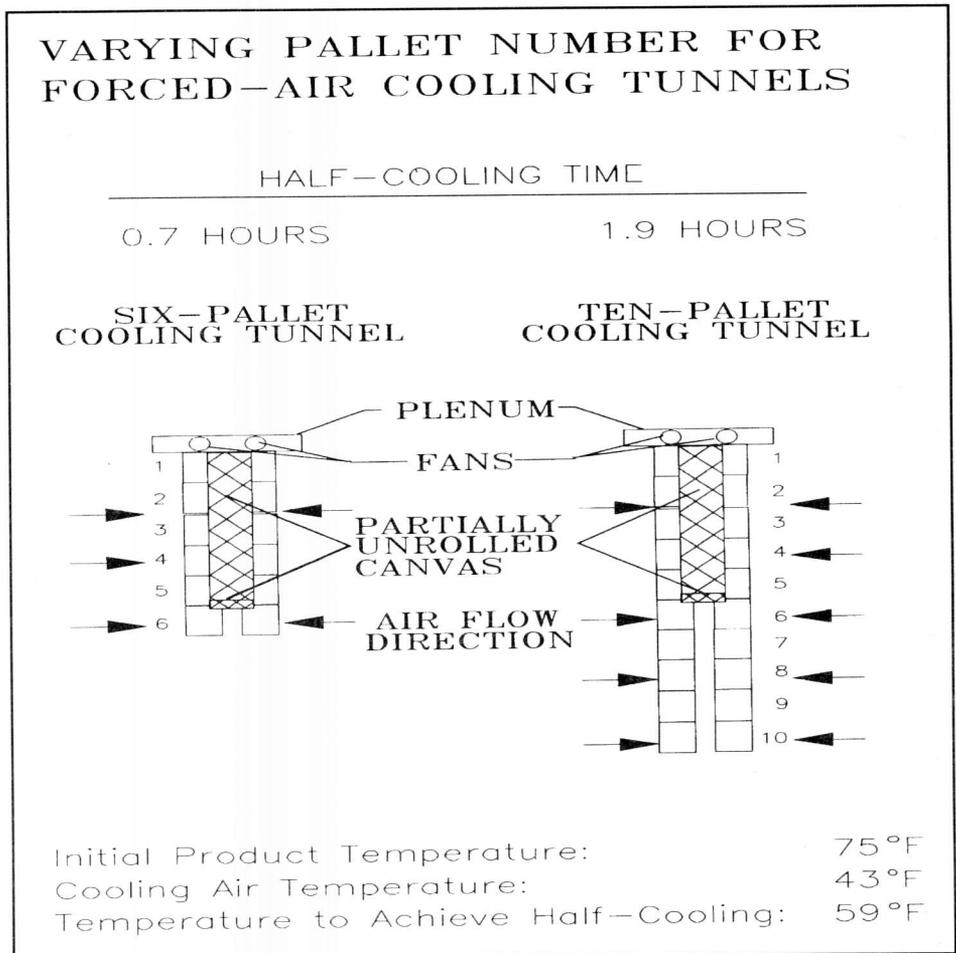


Figure 11. Example of reduced cooling time by reducing the forced-air cooling tunnel length.