RUTGERS HIGH TUNNEL RESEARCH UPDATE (2004)

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The second year of tomato trials in our high tunnels (17 by 36 feet) was a mixed success. An early season trial with the commercial varieties SunBright and SunShine was started at both the New Brunswick (Hort Farm 3, New Brunswick) and Centerton (Rutgers Agricultural Research and Extension Center) locations. At both locations two identical tunnels were used for this trial. At each location, one of the tunnels was outfitted with a manually operated energy curtain that was pulled at the end of the day in an attempt to reduce the heat loss to the outside environment. This curtain was then opened in the morning to allow as much light as possible to reach the crop. Curtain operation was stopped when minimum nighttime temperatures exceeded 50-55°F.

Seedlings were planted in the tunnels on March 26. Each of the four beds in each tunnel was covered with a differently colored plastic mulch (black, clear, green, and red). Each bed was planted with stretches of nine plants of each cultivar, separated by a guard plant. Two more guard plants were planted at the end of each bed. Plants were scouted for insects and disease weekly and treated when necessary. Plant growth was vigorous, particularly at the New Brunswick location, possibly as a result of 1) an inadvertent double strength fertilizer dose, and 2) the management strategy of the ventilation system (in New Brunswick, the tunnels were kept closed longer in an attempt to maintain higher internal air temperatures; a strategy that also resulting in higher humidity levels). Unfortunately, the trial at the New Brunswick location developed a severe case of stem rot (caused by the fungus *Sclerotinia sclerotiorum*) and the entire crop was lost. The trial at Centerton was completed at the end of August and results will be presented (Figure 1). As a result of the late end date of this trial, no time remained to conduct a fall trial at the Centerton location.

After removal of the spring crop and an attempt at solarization of the soil in the tunnels in New Brunswick, a fall trial was started on August 4. The same protocol as followed as for the spring trial, with two exceptions: 1) all of the beds were covered with black plastic mulch, and 2) the roll-up sides on one of the tunnels were motorized and operated using a thermostat (the same tunnel was also outfitted with a manually operated energy curtain). The final harvest occurred on November 15. No stem rot was found during the fall trial. Results of the fall trial will also be presented (Figure 2).

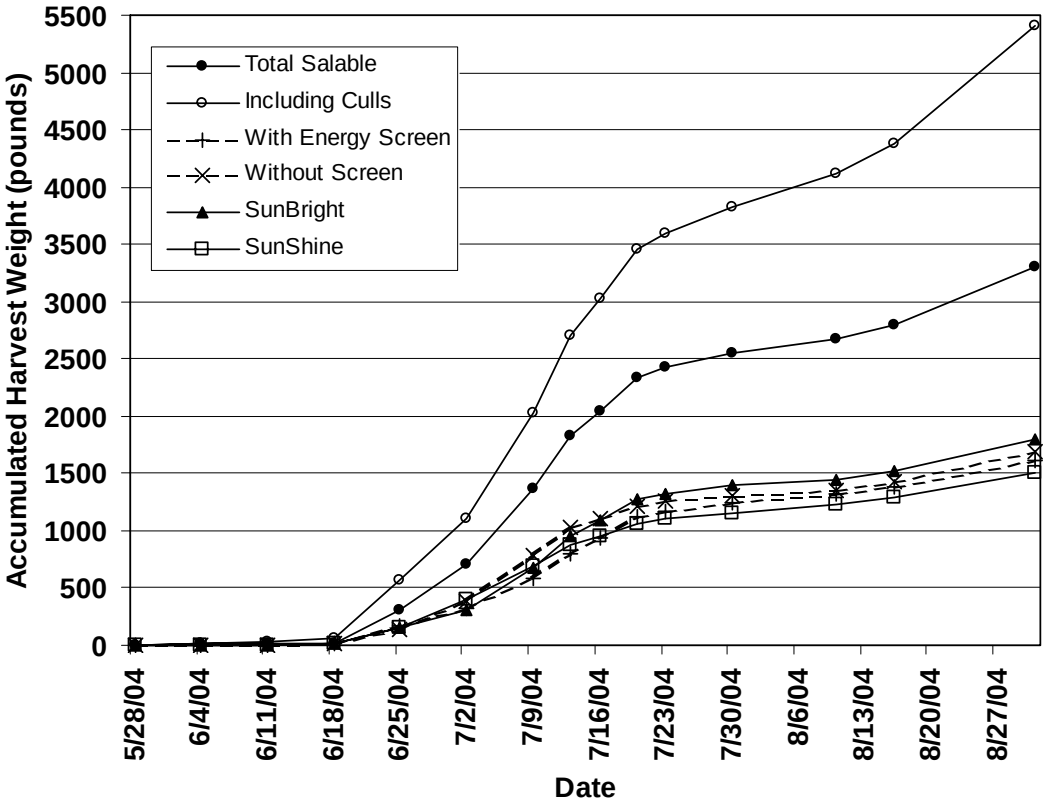

Figure 1. Accumulated tomato fruit weight for the spring trial at RAREC.

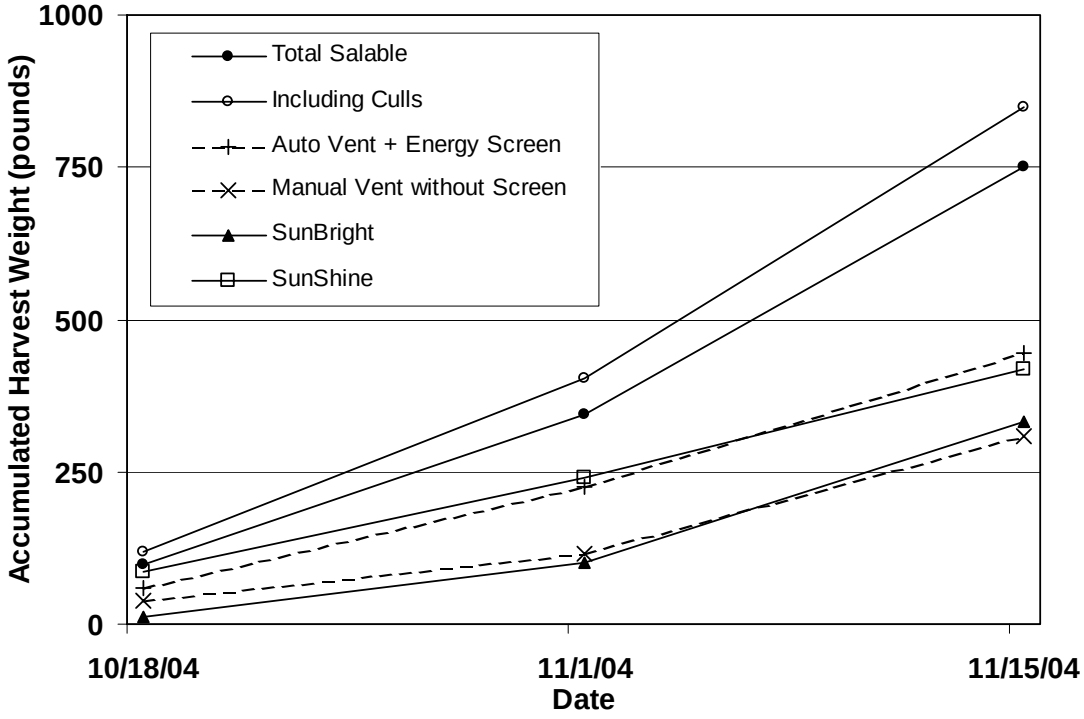

Figure 2. Accumulated tomato fruit weight for the fall trial at Hort Farm 3.