

SUMMARY

A recent SIU study funded by the Specialty Crop Block Grant Program of USDA AMS through Illinois Department of Agriculture compared room AC unit and evaporative cooling methods to extend produce shelf life by at least one week.

The following table indicates whether the cooling methods were successful in extending shelf life by 1 week for each of the produce tested.

Produce	Evaporative	AC
Blueberry	Yes	Yes
Strawberry	No	Yes
Lettuce	Yes	Yes
Tomato	Yes	Yes
Green pepper	Yes	Yes
Cucumber	Yes	Yes
Spinach	-	Yes

This study recommends using a room AC unit with a controller that allows the AC unit to cool into the mid 30s °F. At this low temperature, relative humidity is usually 80-90%.

FOR MORE INFORMATION

Dr. Dennis G. Watson
Department of Plant, Soil and Agricultural Systems
1205 Lincoln Drive, Room 176
Phone: 618-453-6979
E-mail: dwatson@siu.edu

SIU SPECIALTY CROP RESEARCH

COOLING TO EXTEND PRODUCE SHELF-LIFE

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SIU SPECIALTY CROP
GRANT ON HYBRID
COOLING TECHNOLOGY TO
EXTEND SALABLE SHELF-
LIFE OF PERISHABLE
SPECIALTY CROPS IN
ILLINOIS

COOLING TECHNOLOGY TO EXTEND SALEABLE SHELF-LIFE OF PERISHABLE SPECIALTY CROPS

COOLING SYSTEMS

Farmers markets and farm stands are a source of locally grown fresh specialty crops. Although farmers make every effort to keep produce cool, the shelf-life of produce on a hot day can be measured in hours. The amount of produce a farmer can sell at market is limited by quantity sold before quality deteriorates.

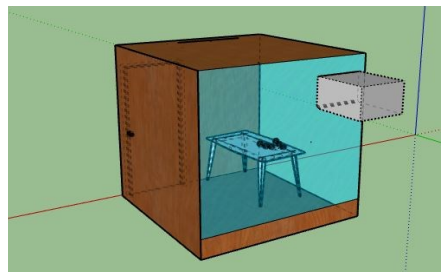
Produce farmers need on-farm cooling to extend the saleable shelf life of their crops. Commercial coolers are generally considered too expensive. Some farmers use air conditioned space but these systems do not provide the high humidity needed for most produce. Common evaporative cooling systems work by adding humidity to the air and can readily meet the recommended high relative humidity levels, but may not meet the cooling needs.

COOLER ROOM

An existing 8 ft x 8 ft cooler room (already equipped with window AC) was modified to add an indirect-direct evaporative cooling system. The window AC unit was controlled by a CoolBot allowing room temperature to drop to the mid 30s °F. Comparative studies of specialty crop shelf life under AC and indirect-direct evaporative cooling were compared with no cooling, with the goal of increasing saleable shelf-life by at least one week (for another Farmers Market).

PRODUCE TESTED

Produce used in the study included strawberries, blueberries, lettuce, spinach, tomato, green pepper, and cucumber.



Cooler room for produce shelf-life testing, equipped with room AC unit.

PRODUCE EVALUATION

Produce was harvested and stored in the cooler room and in an unconditioned farm building. Produce was then evaluated daily for salability using two methods. The first method used a 9-point scale based on visual observation of produce for mold, firmness, color and visual appeal. On this scale, 9 was excellent and 1 was extremely poor. Produce was considered unsaleable once it dropped below 5. The second method monitored weight loss of the produce. Allowable weight loss varied from 2-12% depending on the produce. The shelf-life of the cooled produce was compared with non-cooled produce to determine if shelf-life was extended by at least one week.

FURTHER INFORMATION

Dr Dennis G. Watson
Department of Plant, Soil and Agricultural
Systems
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Phone: 618-453-6979
E-mail: dwatson@siu.edu