A recent SIU study funded by the Specialty Crop Block Grant Program of USDA AMS through Illinois Department of Agriculture indicates importance of using UV Cooler Trailer to improve quality and safety of strawberry.

The study examined the effect UV-LEDs, Cooling, and packaging types on post-harvest strawberry safety, quality and shelf-life. The microbial count, polyphenols, anthocyanins and sensory qualities were evaluated.

SIU study shows affordability of UV Cooler trailer using UV LED and CoolBot by small scale strawberry growers to improve safety and saleable shelf-life of locally grown strawberry in Southern Illinois.

UV treated Strawberries have less food safety risk with higher antioxidants and longer shelf-life.
**BACKGROUND**

In Illinois and other neighboring states, strawberries are predominantly picked for immediate local sale. While strawberries picked and sold locally have more desirable flavor, they may have a shorter shelf life and prone to contamination with human pathogens as they are picked when fully ripe. Due to a lack of any washing or sanitizing step before packing them in clamshells, strawberries could easily become carrier of food pathogens. Therefore, cost effective surface decontamination method designed specifically for strawberries using UV light and cooling was developed for enhancing food safety of local and fresh strawberries. A 6x10 cargo trailer was insulated and retrofitted with a low cost window AC and programmed with CoolBot technology to cool the trailer below 40°F. The UV Fresh Trailer was fitted with UV LED lights emitting UV lights to disinfect strawberries while kept in cool temperature to effectively disinfect strawberries and thus enhance safety and shelf life of strawberries.

**RESULTS**

Strawberries harvested form local farms in Southern Illinois were surface inoculated with E.coli W1485 and UV treated for 1, 1.5 and 2 min in a lab scale UV tunnel emitting UV-C light of 318 µW/cm².

The treated strawberries were evaluated for residual E.coli as well as the quality parameters: polyphenols, anthocyanin, and total antioxidants capacity.

The strawberries treated with 2 min UV exposure had E.coli reduction by 99% (2Log CFU/g).

Moreover, total polyphenol and anthocyanin retention in UV treated strawberries after 2 weeks storage were 20% and 75% higher than untreated strawberries. The strawberries treated in UV LED had similar results by UV treatment with only 1 minute exposure. The UV LEDs deliver narrow band UV light at 275 nm , which was more responsible for germicide effect in shorter time compared to the UV tunnel emitting broad band light at 254 nm

**OUTCOME**

The UV Cooler Trailer can help small growers reduce food safety risk from fresh strawberries and enhance their shelf-life and quality with higher retention of antioxidants.

**FURTHER INFORMATION**

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Local strawberries are rich in flavor and polyphenol antioxidants