

Abstract:

An electronically-based model system was designed and constructed using a peltier (semiconductor technology) for inducing the expression of chilling injury in fruit and vegetables. The purpose of the model was to provide a method for inducing chilling injury on the surface of fruit or vegetable tissues while maintaining an accurate temperature treatment ($\pm 0.2^{\circ}\text{C}$). This would allow for scientific and commercial comparisons to be made on the relative susceptibility of fruit and vegetables to expressing symptoms of chilling injury, and thus, provide information on appropriate cold storage handling protocols. Trials on citrus fruit successfully produced symptoms of chilling injury on treatment zones after a 21 day application of 1°C . Navel orange 'Lloyd A' was determined to be more sensitive to chilling injury than 'Leng' Navel, with 88% versus 81% of fruit, respectively, expressing symptoms on the treatment zone.