Abstract:

The relation between mechanical properties of tomato (Lycopersicon esculentum Mill.) and puncture injury susceptibility was investigated. Two cultivars of known and different susceptibility to puncture damage were considered: Tradiro, moderately resistant and Blitz, very susceptible. Mechanical properties were determined using a universal testing machine and an acoustic firmness sensor. The susceptibility to puncture injury was measured by a pendulum test. By means of Partial Least Squares analysis (PLS) a relationship with a coefficient of determination (R^2) of 0.78 was found between the mechanical properties and the puncture injury susceptibility of a tomato cultivar. It was found that tomatoes which were less susceptible to puncture injury require high forces to puncture the tomato with and without skin and they had a high elasticity of the fruit, a tough skin and a high acoustic firmness.