

#### Abstract:

Generalised linear mixed models for multilevel responses were applied to study the effect of a UV-C treatment on the sepal quality of strawberries. It is illustrated that this technique works well to analyse repeated quality measures over time on the same subject. The inclusion of random intercepts and slopes (or random time evolution), allowed to describe statistically the biological variability inherently present in batches of fruits. The models were adapted for multilevel response according to the threshold concept. It was found that UV-C treatment retards the quality decay of the sepals for doses up to 0.1 J/cm<sup>2</sup>, but when higher doses were applied the treatment became destructive and the sepals dehydrated and discoloured brown. Since the fungal growth on the strawberry fruit flesh is retarded significantly starting from a dose of 0.05 J/cm<sup>2</sup>, an optimal dose of 0.1 J/cm<sup>2</sup> is recommended to improve the quality retention of the strawberry including the visual aspect of the sepals.