

### Abstract:

Machine learning techniques were applied to the problem of predicting at harvest which *Actinidia chinensis* cv. Hort16A fruit are most susceptible to developing physiological pit disorder. Prediction was based on various measurements made on samples of fruit assessed at maturity clearance and information that describes the geographic location and general information about the orchard where the fruit were grown. As a classification problem, the importance of variables and predictive accuracy was assessed using a range of machine learning algorithms. The various analysis techniques used tended to agree that the collection date when an orchard line was cleared for harvest, orchard locational attributes, fruit dry matter content and fruit firmness measurements were the variables most useful in formulating predictions about development physiological pit disorder during storage. Estimation of the achievable prediction accuracy demonstrated that fruit lines susceptible to physiological pit could be identified by applying machine learning techniques to industry databases, and that a 30% improvement in predictability over chance was possible.