

### Abstract:

Simulation of the colour of tomato fruits assists in more accurate prediction of harvest time of individual fruits, and provides the possibility to link a crop growth model with a post-harvest model that uses fruit colour as dominant decision variable, enabling the application in agri-chain management. Dates of anthesis and colour development were recorded on 12 plants over a period of 7 weeks. Temperature sums were derived, and quantitative relations with fruit colour were derived per 2 fruits within a truss. These relations were validated against observations on a commercial planting. Simulated colour stages were in general slightly lower than observed colour stages. However, considering the fact that part of the green tomatoes had been removed before observation, the under-estimation could be considerably reduced. Colour observations show a more stable pattern than simulated colour stages. This can be explained by the fact that the model does not simulate variation among plants, but considers all plants identical. The described model for physiological development of tomato fruits appears suitable in production planning and management. In addition, fruit colour provides the possibility to link such a pre-harvest model to a post-harvest (storage) model that may contain fruit colour as essential character.