

## MODELLING AND CONTROL OF POTATOES IN STORAGE FACILITIES

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To overcome the seasonality in the production of potatoes, the product should be stored. During the storage process the quality of potatoes is deteriorating. The product quality can, to some extent, be preserved by decreasing storage losses or improving pre-processing conditions for enhanced industrial processing (Grubben and Keesman, 2015). Storage losses are typically caused by rot, aging, retarding ripening and sprouting, microbial spoilage, respiration and evaporation. The pre-processing conditions are largely determined by the industrial processing purpose.

Traditionally, the indoor climate is controlled to maintain a good product quality. The climate in- and around the storage facility does have effect on the product quality at the end of the storage period. A good climate however, does not guarantee a good product quality. In the past decades the design of storage facilities and corresponding climate control strategies have been improved. These improvements are only noticeable after a short while, this due to a wide range of tuber varieties, growing season varieties, and changing wheatear conditions during storage.

Modern modelling and simulation techniques can help to improve storage facilities, maintaining a better climate and product quality. The modelling of the relevant physical (Lukasse et al., 2007) and physiological processes (Hertog et al., 1997) should provide more insight in the spatially and time distribution of the product quality. The resulting mathematical models are a basis for dynamic simulation and Computational Fluid Dynamics (CFD) analysis. Take for instance Verboven et al. (2006) and Chourasia and Goswami (2007). CFD techniques visualise the interaction between climate and product. Calibrated and validated CFD models are therefore the first steps towards a better understanding of product quality change during storage. Once the product quality change, due to the climate, is better understood, only then more advanced control and storage strategies can be applied.

### References

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