

# Accepted Manuscript

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Jochem Jonkman, Jacqueline M. Bloemhof, Jack G.A.J. van der Vorst, Albert van der Padt



PII: S0260-8774(16)30339-9

DOI: [10.1016/j.jfoodeng.2016.09.015](https://doi.org/10.1016/j.jfoodeng.2016.09.015)

Reference: JFOE 8660

To appear in: *Journal of Food Engineering*

Received Date: 11 May 2016

Revised Date: 12 September 2016

Accepted Date: 17 September 2016

Please cite this article as: Jonkman, J., Bloemhof, J.M., van der Vorst, J.G.A.J., van der Padt, A., Selecting food process designs from a supply chain perspective, *Journal of Food Engineering* (2016), doi: 10.1016/j.jfoodeng.2016.09.015.

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## Selecting food process designs from a supply chain perspective

Jochem Jonkman<sup>a,\*</sup>, Jacqueline M. Bloemhof<sup>a</sup>, Jack G.A.J. van der Vorst<sup>a</sup>,  
Albert van der Padt<sup>b,c</sup>

<sup>a</sup>*Operations Research & Logistics Group, Wageningen University, PO Box 8130, 6700 EW, Wageningen, The Netherlands*

<sup>b</sup>*Food Process Engineering Group, Wageningen University, PO Box 8129, 6700 EV, Wageningen, The Netherlands*

<sup>c</sup>*FrieslandCampina, Stationsplein 4, 3818LE, Amersfoort, The Netherlands*

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### Abstract

The food industry can convert agro-materials into products using many alternative process designs. To remain competitive, companies have to select the design leading to the best supply chain performance. These designs differ in the technologies used and the product portfolio produced. Additionally, characteristics, such as seasonal production and quality decay of food products, lead to specific requirements regarding processing, transportation and storage. The importance of these characteristics of the food industry on process design selection is investigated using sugar beet processing as an illustrative case. The characteristics are included in a multi-period, multi-product location-allocation model. The model shows that a supply chain perspective leads to changes in process design selection. The design with the best portfolio value and processing costs does not lead to the best supply chain performance. This shows the importance of a chain perspective to avoid sub-optimization in food process design selection.

*Keywords:* Food industry, Product portfolio, Process design, Facility location, Supply chain configuration, Optimization

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\*Corresponding author. E-mail address: jochem.jonkman@wur.nl

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