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Agricultural sustainability through agrifood system management

The increasing demand for agricultural products under the constraints imposed by the limited resources and the prevention on negative environmental impacts requires an improved knowledge on farm management and on the related technologies and methods. Besides, the concern on the human participation in the production systems, in a myriad of roles such as workers, consumers, suppliers, investors and society, highlights this theme to be approached. For this wide range of issues and possible point-of-views is why this special issue has been conducted trying to provide indicative instances of a multidisciplinary scientific effort towards sustainable agrifood systems management.

This special issue contains extended peer reviewed selected papers from the 35th CIOSTA Conference held in Billund, Denmark in July 2013. CIOSTA (Commission Internationale de l'Organisation Scientifique du Travail en Agriculture, Founded in Paris, 1950) conferences focus on the optimisation of bio-production management and work organisation based on system engineering approaches and innovative technologies. Themes addressed in CIOSTA conferences include decision support systems for the whole range of planning levels, sustainability assessments of management approaches, evaluation of accident risks associated with agricultural operations, information management systems, precision farming based operations planning, agri-food and biomass supply chains, farm logistics, etc.

An essential managerial task in agricultural production management is the task time analysis. An example of this process is presented in the paper by Heitkämper et al. (Working time requirement for different field irrigation methods). This paper specifically deals with the task time analysis of various irrigation systems. The working hours and the influencing variables were statistically analysed and integrated in a model calculation system. The paper by Quendler et al. (Comparative incident analysis of pressure cleaner injuries among employees on Austrian farms) lies within the topic of evaluation of accident risks associated with agricultural operations aiming to identify the risk factors that may cause an accident during the human-machine interaction. The issue of the development and implementation of new technologies in the agrifood product processes in order to cope with the increasing demand for traceable products under food quality and safety requirements, is

covered in paper by Bechar and Vinter (Development of a weight-based technique for 'packages labelled by count' of agricultural products) in which authors developed an innovative weighing procedure of 'packages labelled by count' based on a mathematical model which reduces the variability in package sizes. The development and adoption of such technologies and in general of advanced ICTs in agricultural production systems is the topic of the next paper by Wermeille et al. (Stakeholders involvement on establishing public-private partnerships through innovation in agricultural mechanisation: a case study) in which authors present and analyse an experimental Public-Private Partnerships Action launched at the European level aimed at gathering together all stakeholders involved crop protection and to boost among them concrete innovation in ICT. Agricultural production management includes also the management of the related supply chains. As logistics is a substantial part of any production system, the identification of any involved processes is of crucial importance for achieving the business goals, design appropriate measures and allocate sufficient resources for their improvement. The paper by Folinas et al. (Logistics process prioritization in the agrifood sector) proposes a methodological framework and a corresponding mathematical model for the identification, categorization and prioritization of logistics processes in the agrifood sector. Finally, the paper by Mantoam et al. (Material and energy demand in actual and suggested maintenance of sugarcane harvesters) covers the issue of sustainability in agricultural production systems. The presented study evaluates material and energy demand in the maintenance of sugarcane harvesters as a prerequisite for an accurate energy balance estimation for the case of biomass production used for bio-energy generation.

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