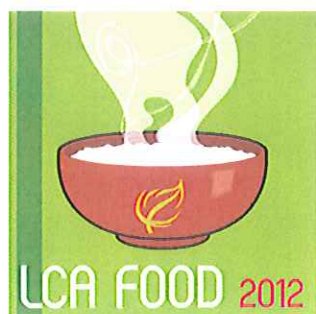


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8TH INTERNATIONAL CONFERENCE ON

LIFE CYCLE ASSESSMENT IN THE AGRI-FOOD SECTOR



OCTOBER 1-4
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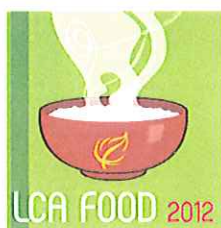
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EDITORS

Michael S. Corson,
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Please cite this publication as:

Corson, M.S., van der Werf, H.M.G. (Eds.), 2012. Proceedings of the 8th International Conference on Life Cycle Assessment in the Agri-Food Sector (LCA Food 2012), 1-4 October 2012, Saint Malo, France. INRA, Rennes, France.

Please cite a paper or abstract in this publication as:

Proust, V.L.G.E.M., 2012. In search of lost time, in: Corson, M.S., van der Werf, H.M.G. (Eds.), Proceedings of the 8th International Conference on Life Cycle Assessment in the Agri-Food Sector (LCA Food 2012), 1-4 October 2012, Saint Malo, France. INRA, Rennes, France, p. 20-25.

ISBN 978-2-7466-5740-3



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128. Industrial ecology and agri-food sector. Perspectives of implementation in an Italian regional cluster

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Over the last fifty years, the development of the agri-food sector has been characterised, in many developed countries, by significant structural, technological and organisational changes, which have led to the involvement and integration, in traditional food production chains, of a number of activities, such as: food processing, manufacturing of technical equipment, packaging industry, transportation, storage, distribution, marketing, catering. The spontaneous agglomeration of agricultural activities in favorable geographic areas, has often led to the development of clusters of SMEs, recognised as agri-food clusters. Agri-food clusters are characterised by typical environmental impacts, such as: land use, CO₂ emission, energy and water consumption, use of agricultural inputs such as fertilisers, pesticides, feed additives and irrigation water. However, the involvement of agro-industrial activity in the same area highlights other significant sources of waste related to auxiliary materials and different types of packaging used during agricultural activities and food processing (materials such as polystyrene, polyethylene, polypropylene, wood, paper). Industrial Ecology, through a more efficient management of material and energy flows, helps to reduce loads and environmental impacts of production activities without compromising their competitiveness. Major applications of Industrial Ecology principles in the agri-food sector, concern the valorisation of animal and vegetable by-products, leading to the implementation of so-called Agro-Eco-Industrial Parks. The purpose of an Agro-Eco-Industrial Park is to provide a base for companies and service organisation in achieving a transition to sustainable farming, improving the value of their output and gaining market channels. In an agri-food cluster, alternative and effective solutions can be also implemented to manage waste flows deriving from auxiliary materials used in agro-industrial activities, through the adoption of closed loop approaches, especially considering technical features of such flows: high volumes, high percentage of non-hazardous materials, homogeneity in composition, and regular (or cyclic) flows. This paper presents a preliminary analysis of one of the most representative agri-industrial clusters in the production of horticultural products, the area of Fucino in Abruzzo Region (Italy). The cluster covers an area about 15,000 ha, for a total of 3,700 small and micro-sized enterprises that produce mainly carrots, potatoes, endive and lettuce (Fig. 1). The study aims to analyse the main vegetable and not vegetable waste flows to propose alternative options for managing them in the perspective of an Agro-Eco-Industrial Park. The preliminary qualitative analysis shows that efficient solutions can be potentially implemented through recycling, recovery and repair activities, materials substitution and alternative energy production, exploiting synergies of the existing cluster (Fig. 2).

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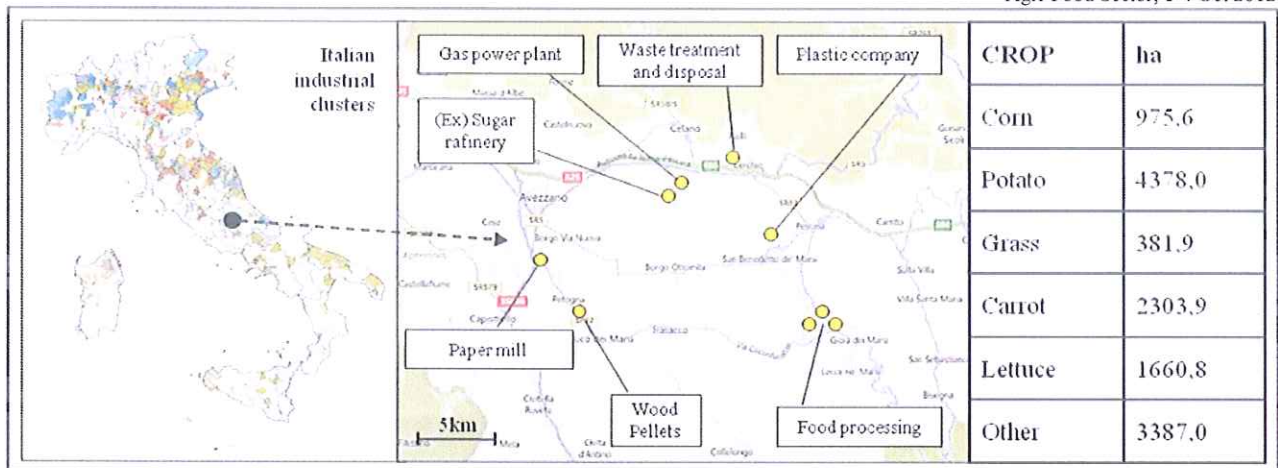


Figure 1. The Fucino agri-food cluster and its main productions (2011).

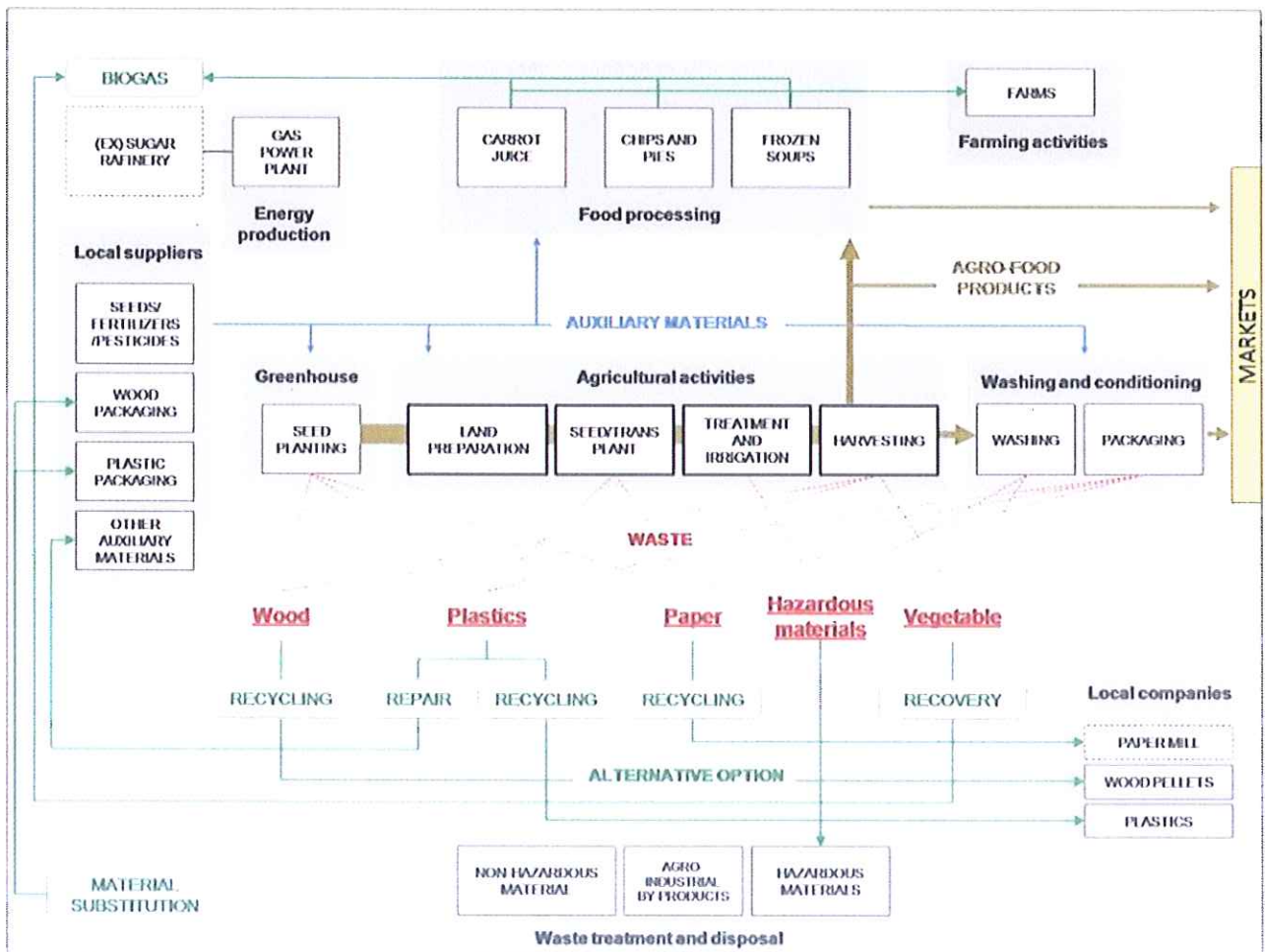


Figure 2. Potential solutions in the Fucino agri-food cluster.