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ECOLOGICAL FOOD WASTE – COMPARING SMALL AND LARGE FOOD RETAILERS

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ABSTRACT

Green efforts and collaboration in the food chain vary as well as how retailers handle ecological products. The ongoing study shows that small retailers care for their products and inform consumers specifically about each individual product: the season, the quality and how to handle each individual product, to reduce waste. Large retailers inform the consumer generally on products and how the retailer is handling waste e.g. food to needy. The question is: does the “caring” handling and communicating of ecological food products lead to less waste and environmental impacts? Further observational studies on waste and handling of food products at retailers will be made and combined with an environmental assessment, LCA. This new interdisciplinary methodology is called actor based LCA.

INTRODUCTION

Previous studies of organic food show that agriculture dominates the environmental impact in the life cycle (~ 90% for animal origin, both conventional and ecological (Carlson et al 2009), and ~ 35% for vegetables such as tomatoes (Högberg 2010)). Notable is that farming and transport matters for vegetables such as imported tomatoes contribute more than three times than local ones (Högberg 2010). However, environmental impacts related to agriculture may be reduced not only by farmers. But also by actors further down-stream, the food industry, retailers and consumers, each of them through reducing the wastage of food. Recent studies on wastage showed that food producers and distributors are contributing 1/3 due to lack of coordination, as well as retailers and consumers are contributing 1/3 each due to inefficient purchasing and meal planning (Gustavsson 2010, Sonesson et al 2010).

The results of this paper lies within the project “Actor-based Life Cycle Assessment – towards green food chains for eco-products” within Formas Organic Production Program 2010-2012 (Brunklaus 2011, Brunklaus & Berlin 2010). This paper describes and compares small and large organic product chains. The organic food chains have been described with its main actors: agricultural actor, industrial actor, retailer and consumer. Following questions are answered within the study:

- What kind of green efforts are made by actors in the organic food chains?
- What characterises small product chains of organic food in Sweden?
- What characterises large product chains of organic food in Sweden?
- What are the impacts on waste and environmental impacts?

METHODS

When describing actors and actions in the product chains the distinction of companies' environmental efforts and effects have been used based on environmental management perspective. In order to describe green efforts, a short review of existing literature was performed in 2010 (Floren et al 2005, Carlson et al 2009, Gustavsson 2010, Sonesson et al 2010, Högberg 2010). In order to identify and characterise small and large product chains, general literature on the retailing sector was complemented with specific information on retailers, including annual reports, websites and telephone communications during 2010 and 2012 (Table 1).

Table1: actor and source of information in organic food chains

Actor in the food chain	Green efforts	Source of information
Agricultural actors	Fuel consumption and use of nitrogen fertilisers.	Environmental studies (Högberg 2010, Gustavsson 2010, Sonesson et al 2010)
Industrial actors	Effective production, distribution and transports, such as green lean production	Food industrial sector organisation, webpage 2010 Environmental studies (Gustavsson 2010, Sonesson et al 2010)
Retailers	Transport, such as "green cargo", and energy for storing, such as fridge/freezer/lightning	Retailer "COOP" sustainability report and telephone communication 2010, webpage 2012. Retailer "Arstiderna" and "Ekoladan" webpage 2010/2012, email 2010. Retail sector organisation "Svensk Dagligvaruhandel", webpage 2010.
Consumers	Purchasing local and ecological products	Newspaper "Camino" consumer association 2009. Region Western Sweden (Floren et al 2005)

RESULTS

The results of the study on green efforts and actors in the food chain are presented in table 1, (Brunklau 2011). Agricultural challenge and efforts lie within fuel consumption and use of nitrogen fertilisers (Sonesson et al 2010). The food industries green efforts lie within effective production, distribution and transports, such as green lean production, to reduce energy and climate change (Li 2010). Retailers green efforts lie within transport, such as "green cargo", and energy for storing, such as fridge/freezer/lightning and the environmental challenge is still food waste reduction (Coop 2010, Gustavsson 2010, Sonesson et al 2010), and storing (Coop 2010, Carlsson and Sonesson 2001). According to the branch organisation (Svensk Dagligvaruhandel 2010), retailers have solved their climate challenge with logistics. Consumers green efforts lie within purchasing local and ecological products (Floren et al 2005) and the environmental challenge is still food purchasing, planning, storage and waste (Sonesson et al 2010, Camino 2009).



Within the organic food project small and large food chains have been described. For the small, the demand is rising, and the challenge lies in keeping the good contact, logistics and quality (Li 2010). Interesting small food chains are the new organisational trends of “organic food boxes transported directly to the consumers”. These organisations have good local contact with consumers and farmers, they have good logistics, especially for vegetables and fruits (Arstiderna 2010, Ekoladan 2010). Both retailers care for the quality of food products and inform the consumer about best storing behaviour (Arstiderna 2012, Ekoladan 2012). For the large, the challenge lies in the complexity of chains, and the consumers contact is low (Li 2010). Interesting are the large food chains, such as the retailer COOP, which has the broadest variety of ecological food products, but less information to consumers on storing and quality (COOP, 2012).

DISCUSSION

When describing actors and actions in the product chains the distinction of companies' environmental efforts based on environmental management perspective have been useful. The description of organic product chains with help of retailers' way of communicating with consumers has been useful as well. More important information can be gained in the link between farmer, retailer, and consumer, like in a similar study on environmental information and practice in the food supply chain (Soler et al 2010).

The ongoing study shows that small retailers care for their products and inform consumers specifically about each individual product: the season, the quality and how to handle each individual product, to reduce waste. Large retailers inform the consumer generally on products and how the retailer is handling waste e.g. food to needy. The question is: does the “caring” handling and communicating of ecological food products lead to less waste and environmental impacts? To answer that questions further observational studies on waste and handling of food products at retailers will be made and combined with an environmental assessment, LCA. This new interdisciplinary methodology is called actor based LCA.

CONCLUSIONS

Comparing the green efforts within the food chain shows that actors have solved the production and transport issues, while the food waste is still a challenge.

Comparing the small and the large product chains of organic food in Sweden indicates that organising of short and local chains might not only reduce transport, but also reduce waste due to the caring handling of vegetables within the chains. This means less environmental impacts overall.

So far initial work has been performed (literature review, webpage, telephone and mail contact). The next step will be study visits with observations and interviews with the above organic food retailers. Observations will focus on describing and comparing collaboration and logistics between actors in the chain, and how these can be improved. Observations will especially focus on routines for storing, transport and waste for both organic and non organic products and how these routines effect the environmental. Environmental impacts will be calculated according to LCA methodology. Suggestions for improvements will be made, as in



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the previous actor-based food study on dairy products (Berlin et al 2008), which led to actions regarding waste reduction within industry.

Future studies will be on global organic food chains for examples handling of fruits, where the actor methodology helps to describe responsible product chains. Results will be strategies for retailers and consumers on how to handle products such as fruits.

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