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ECOLOGICAL FOOD PRODUCTS – NEW ROLES AND RESPONSIBILITIES FOR RETAILERS

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ABSTRACT

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More and more ecological food products are entering supermarkets, and the recent trend is to label as well the climate impact of food products. But, do ecological food products have better environmental performances than conventional ones? An Austrian, Swedish and Spanish cucumber was compared calculating the climate impact in a life cycle perspective using an actor analysis. Austrian conventional cucumbers and Spanish ecological cucumbers show similar values, while Swedish conventional cucumbers have the highest emissions. The actor analysis shows that retailers and the cooperative have most power. The introduction of Spanish ecological cucumbers shifts the environmental impact from heating of greenhouses to transport. The findings highlight the retailers' role and importance of green purchasing strategy considering the whole life cycle.

INTRODUCTION

In supermarkets retailers offer a wide range of vegetables such as potatoes, carrots, tomatoes, cucumbers, zucchini etc. all year round. On one hand consumers demand a large selection, on the other hand consumers are also looking for an organic alternative, especially for vegetables. Furthermore, food retailers come up with their own organic brand like "I love eco" by ICA and "Änglarmark" by COOP in Sweden. Beside reasons to use less pesticide and health reasons, the recent trend is to label as well the climate impact on food products. This makes the purchasing difficult for the retailers, since vegetables are not always available and they have to consider at least two environmental issues, the pesticides and climate change. When local organic production is not possible, retailers have to choose either local conventional or imported ecological products. The question for the retailers is: do ecological food products have a better carbon footprint than conventional ones, even if they are imported? This question will be answered with the example of ecological imported cucumbers from Spain and conventional cucumbers from Austria and Sweden.

This study is based on three levels to give the retailers an overview about those products and to gain important information for producers:

1st level: Environmental impacts of cucumber production (Carbon Footprint)

2nd level: Retailers' possibilities of reducing greenhouse gas emissions

3rd level: Retailers' influences on their own and other actors' actions

METHODS

Data for the comparison of ecological cucumbers from Spain and conventional cucumbers from Austria are based on field research in El Ejido in the province of Almería and in Simmering in the south of Vienna as well as on prior studies and data. The Swedish production is based on a study by Davis et al. (2011). The comparison of these products results from the diploma thesis at Johannes Kepler University Linz and an internship at Chalmers University of Technology (Raab & Brunklaus, 2012).

The method used to calculate the Carbon Footprint of cucumbers is based on the Life Cycle Assessment (LCA) guidelines according to ISO 14040 and 14044. Furthermore, this study will test the actor analysis (Brunklaus & Berlin, 2011) and the distinction of three levels, adapted from Brunklaus (2011). The actors of the cucumber chain are the (pre-)cultivators, cooperative, transport, retailer and consumer. Due to this actor analysis, the direct environmental impacts and possibilities of retailers and other actors can be shown. Furthermore, the retailers' influences on their and on the others' activities can be analyzed. Calculations are made from "cradle to grave" – from pre-cultivator to retailer including waste disposal from the period of January until end of May, when organic cucumber production is hardly possible in Austria (Bio Austria, 2010).

RESULTS

The results of the environmental impact of Spanish organic and Austrian and Swedish conventional greenhouse cucumbers (level 1) are illustrated in figure 1.

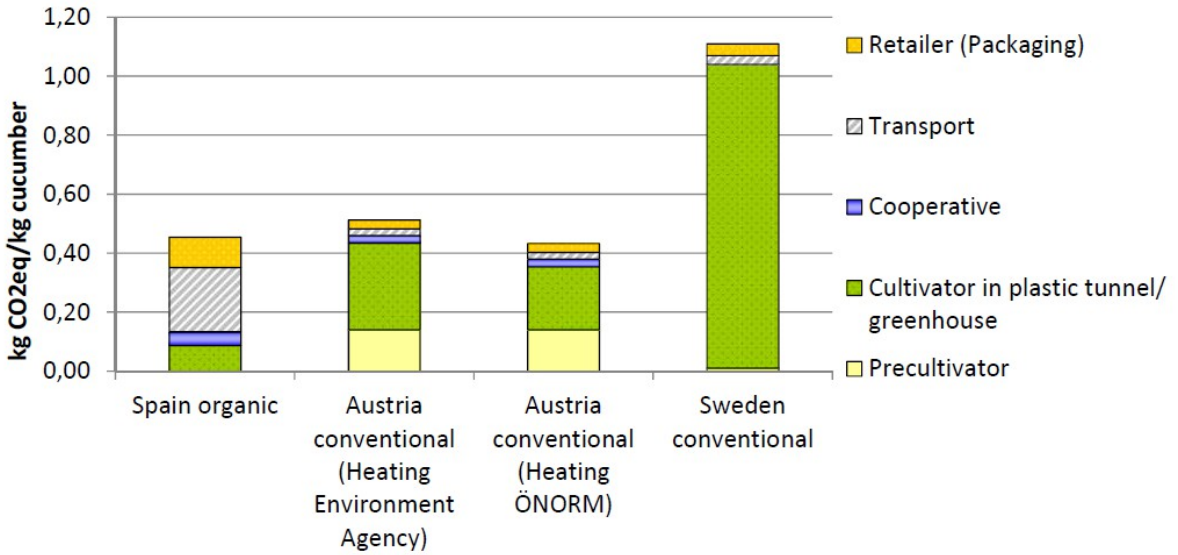

Figure 1. Greenhouse gas emissions (kg CO_2-eq) of Spanish, Austrian and Swedish cucumber production

One kilogram of Spanish organic cucumbers (1st column) shows in total 0,45 kg CO_2-eq and half of them are caused by transports. The second and third column indicates the Austrian conventional cucumber production. There are two scenarios, because of different calculation methods of district heating. The second column (0,51 kg CO_2-eq/kg cucumber) is according to the Environment Agency Austria (Umweltbundesamt) by Pölz (2007) and the third one (0,43 kg CO_2-eq/kg cucumber) according to the standardized method ÖNORM EN 15316-4-5 of the Austrian Energy Agency. The Swedish conventional cucumber shows the highest emissions (1,11 kg CO_2-eq/kg cucumber) in column four. Reasons for that are a high heating amount and a predominant share of fossil fuels. Both conventional cucumbers have their hotspots in cultivation in the greenhouse.

The retailers' possibilities of reducing greenhouse gas emissions are low while other actors have larger possibilities (2nd level). Those are: transport for Spanish ecological cucumbers; CO_2-gas and nitrogen fertilization for Austrian conventional cucumbers at cultivator; and heating and use of fossil fuels for Swedish conventional cucumbers at cultivator.

The retailers' influence (3rd level) on other actors can be direct or indirect. In this case the retailer can influence the consumer, as well as the cooperative and the transport directly, while the cultivator can be influenced indirectly (figure 2). Direct influence means also more power. Indirect influence is evident with all actors and it's the matter (figure 2, dotted line), which keeps the production chain together (Raab & Brunklaus, 2012).

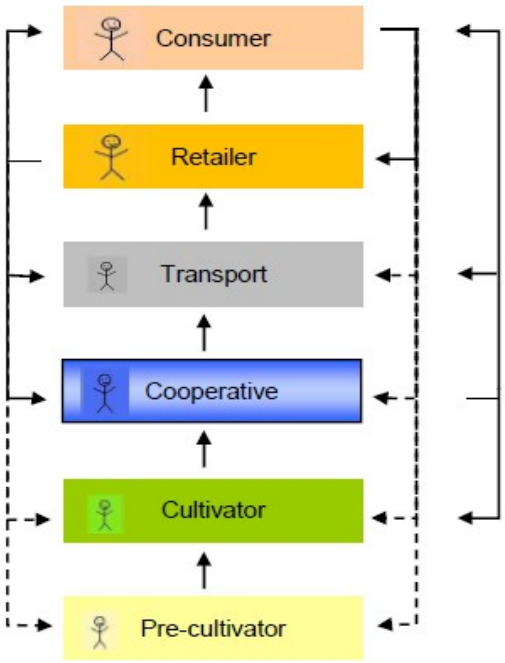

Figure 2. Actors' influences in the cucumber production

Together, the retailers' low possibilities and high influence on other actors, gives another picture of retailers' role and responsibilities. Retailers can influence transports directly and cultivators indirectly. The introduction of Spanish ecological cucumbers shifts the indirect influence in heating of greenhouses to direct influence of transport.

DISCUSSION

The distinction of three analysis levels in combination with the Carbon Footprint works well. Important information could be gained especially for producers and retailers. For retailers and consumers the Carbon Footprint is a start to raise awareness of environmental issues in cucumber production, but it is just the beginning. Other environmental and social impacts based on Life Cycle Assessment, such as water footprint and social LCA might be important as well. The Swedish production was difficult to compare with the Austrian one, because some information was missing or inexact. In case of heating the greenhouses Swedish producers still mostly heat with fossil fuels, which might be changed in the coming years (Höhne et. al, 2011). The introduction of Spanish ecological cucumbers shifts the environmental impact from heating of greenhouses to transport, which means larger possibilities for retailers.

CONCLUSIONS

For retailers green purchasing strategy, decisions on imported organic or local conventional cucumbers are important. As shown in figure 1 (column 1-3) it is difficult for retailers in Austria, while for retailers in Sweden, the imported cucumbers from Spain have a better Carbon Footprint. Nevertheless, the actor analysis of Carbon Footprints can be a significant tool for retailers and other actors. The cucumber's life cycle can be structured in its single production steps, the actors can analyze the hotspots out of it and strive for ecological improvements. Apart from improvements in the cultivators' greenhouse, retailers can contribute a lot to environmentally responsible decisions. Retailers can improve the transport especially from Spain by using green cargo. Furthermore, they decide about packaging material (plastic film wrap, trays) and can reduce cucumber wastage with good conditions of storing, cooling and high product circulation. Retailers have direct contact to consumers and with precise product information they could raise consumer awareness of the cucumber production. Overall, the retailers' role and importance of environmentally responsible decisions is evident throughout the whole life cycle.

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