The environmental impact of vegan drinks compared to whole milk

ESU-services
fair consulting in sustainability

Paula Wenzel, Niels Jungbluth

ESU-services Ltd., CH-8800 Schaffhausen
www.esu-services.ch, jungbluth@esu-services.ch

Goal

The aim of this study is to examine and compare the environmental impact of the following drinks per litre at the supermarket: (a) almond drink, (b) oat drink, (c) rice drink, (d) soy drink and (e) whole milk. This study is conducted as part of an internship.

Method and Data

The inventory data for this study are taken from the ESU-services database [1]. The data include the entire life cycle from agricultural production to supermarket taking food losses into account. The environmental impact is determined by means of the Ecological Scarcity Method 2013 [2]. According to this, the environmental impact is summarised to ecological scarcity points (UBP-2013).

The study is based on the following assumptions: in each case the drink production takes place in Switzerland. Sunflower oil is used to produce oat and rice drink. No added enzymes are considered. As main ingredient almonds, oat flour, rice grain or soy beans are used for the vegan drinks. Almonds and rice come from the US. Soy beans are partly from the US, Brazil and Switzerland and the oat grains for the oat flour comes from Switzerland. The transport by freight ship or lorry is included for a global or Swiss average, respectively. No chilling is included except for whole milk.

Results

The results of this study are shown in Fig. 1. The whole environmental impact of each vegan drink is subdivided into different sources of the impact. For example, the contribution of the cultivation to the overall impact is depicted separately.

The assumptions listed above lead to the result that vegan drinks are connected to a smaller environmental impact than whole milk. Most of the impact of the whole milk is made by the raw milk. Contrary to vegan drinks, the chilling is necessary and makes an additional impact on the environment.

Regarding the vegan alternatives, the almond drink causes slightly higher environmental impacts. The first reason is the fact that, regarding each of the evaluated vegan drinks, the largest share of the environmental impact is caused by the cultivation of the different plants, and that the impact of the almond cultivation per litre drink is comparatively high. Secondly, the transport is a relevant factor, which is another reason for the higher overall impact of almond drink as well as for the impact of rice drink.

Besides, oat and rice drink processing make a larger environmental impact than the other two drinks.

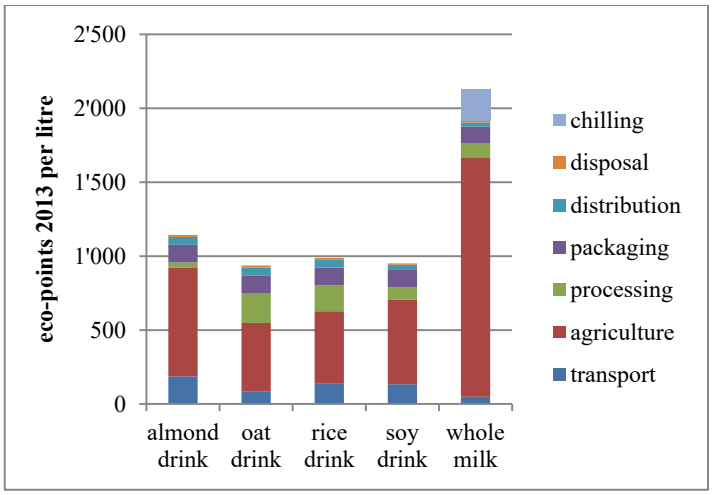

Fig. 1: Environmental impact of different vegan drinks per litre at the supermarket compared to whole milk (eco-points 2013 per litre).

Discussion

The high environmental impact of whole milk is mostly caused by producing the raw milk which means it is caused by the livestock farming, for example, because of the cattle emitting methane.

Since packaging, distribution and disposal are similar for each vegan drink the relevant factors are mostly the cultivation of the plants, the processing and the transport.

One reason for the higher impact of the agricultural production of almonds is the larger mass which is necessary to produce one litre of almond drink compared to the other vegan drinks. Furthermore, many vegan drinks are certified with an eco-seal for organic farming. This can be an option to lower the environmental impact of all kinds of vegan drinks compared to these from conventional farming which are analysed in this study.

Due to the assumption that almonds and rice are imported from the US the impact of the transport is higher than the transport of soy and oat. Using almonds and rice growing in smaller distance would decrease the environmental impact of these drinks. Since it is assumed that the oat and raw milk come from Switzerland the impact of the transport categories of these two are the smallest compared to that one of the other vegan drinks.

Regarding the processing, sunflower oil is used to produce oat and rice drink which results in a higher impact of the processing of both.

In summary it can be said that consuming vegan drinks instead of whole milk cuts the environmental impact in half, approximately.

Literature

1. Jungbluth N, Meili C, Keller R, Eggenberger S, et al., *Life cycle inventory database on demand: EcoSpold LCI database of ESU-services*. 2017, ESU-services Ltd.: Schaffhausen, CH. Retrieved from www.esu-services.ch/data/data-on-demand/.
2. Frischknecht R, Büsser Knöpfel S, Flury K, & Stucki M, *Ökofaktoren Schweiz 2013 gemäss der Methode der ökologischen Knappheit: Methodische Grundlagen und Anwendung auf die Schweiz*. 2013, Umwelt-Wissen Nr. 1330, treeze und ESU-services GmbH im Auftrag des Bundesamt für Umwelt (BAFU): Bern. Retrieved from www.bafu.admin.ch/uw-1330-d.