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LCM 2019

1-4 September, 2019
Poznan University of Technology
Poznan, Poland

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SESSION T1-8 Sustainability of Agri-Food Products
3rd September 2019, Tuesday 10:30 - 12:00 am

Hortifootprint: Product Environmental Footprint Category Rules for Horticulture in the making

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Goal: The demand for sustainably produced horticultural products is increasing. Consequently there is also a growing market for calculating the environmental footprints of horticultural products. While consumers and retailers want to know more about the sustainability credentials of these products, there is as yet no standard methodology for calculating them. To meet this growing demand the Hortifootprint project was recently launched to develop a uniform standard methodology that will be applicable to all horticultural products and that will be adopted across the whole horticultural value chain. The project was initiated by Royal Flora Holland, Dutch Fresh Produce Center and Wageningen Economic Research, with co-financing from the Dutch Fund for Horticulture & Propagation Materials, ABN AMRO Bank N.V., The Dutch sector organisation for greenhouse horticulture (Glastuinbouw Nederland), MPS, Rabobank, Foundation Benefits of Nature and advisory performed by Blonk Consultants and PRé Sustainability.

Method: The development of the methodology is following as much as possible the most recent Guidance for developing Product Environmental Category Rules (PEFCR) published by the European Commission. However, there are several topics that are still considered immature for horticulture in the PEFCR Guidance. So far, we identified the following: handling multifunctionality of combined heat and power systems used during cultivation; handling multifunctionality when multiple plants are grown in a protected (and heated) system; modelling of N and P emissions; impact assessment of pesticides; and modelling of capital goods. After having identified the issues, we developed and tested the proposed approaches in six screening studies, one for each representative product (RP).

The six RPs were selected with a relative high market share and a wide variety of applied technologies and origins of productions. These are:

• Apples (temperate perennial fruit with variability in energy consuming storage and global transport);

• Bananas (tropical perennial fruit with variability in energy consuming global transport);

• Phalaenopsis (ornamental plant cultivated in two stages, in substrate and in greenhouse);

• Roses (perennial plant yielding flower stems, grown in soil in a greenhouse, with and without air transport);

• Tomatoes (annual vegetable cultivated in greenhouse, on substrate);

• Tulip bulbs (annual crop in soil, grown without greenhouse protection, with ornamental function and input use during use phase).

The first draft PEFCR was released for stakeholder consultation in November 2018. Throughout the past two years, we also held various workshops with growers of horticulture products. The aim of those workshops was to involve them early on and to understand the feasibility of the data to be collected during cultivation.

Results: All six screening studies, one for each RP, were completed. Impact categories identified at least once for any of the screening studies as most relevant were: Acidification; Climate change; Eutrophication, terrestrial; Particulate matter; Photochemical ozone formation; Land use; Resource use, energy carriers; and Resource use, minerals and metals. Surprisingly, water use was not identified as most relevant impact category and land use was only identified for bananas.

The most relevant life cycle stages identified for any of the six screening studies were: Cultivation; Post-harvest handling; Packaging; Distribution; Storage; Use stage; and End-of-life. It should be noted that not all screening studies were cradle-to-gate, e.g. tulips only included cultivation and post-harvest handling. Except for retail, all other life cycle stages were identified as relevant for at least one of the studies. Cultivation was a most relevant impact category for all.

All in all, we observed that the studies were sensitive to some data and modelling choices, e.g. how to the handle multifunctionality of combined heat and power systems used during cultivation. This stresses the fact that alignment in the measurement of the environmental footprint of horticultural products is needed.