

Create a model to calculate the CO₂ footprint of greenhouse crops.

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Abstract

The object of this paper is the struggle to create a broad accepted method to calculate the CO₂ footprint of crops grown in the open air and in greenhouses. The Dutch Horticultural Board and the ministry of Agriculture, Nature and Food safety recognized the increasing interest of the community in the environmental impact of the Dutch horticulture, especially the CO₂ footprint. They decided to start a pilot project to build a model to calculate the CO₂ footprint.

Following the methodology of the Life Cycle Assessment (LCA) and the instructions of PAS2050 of the British Standard Institute, there are a lot of situations in the greenhouse horticulture not described.

Faced to these not described situations we start to describe these specific protected crop growing situations into Best Practises. As one of the BP's the tomato crop is worked out. For the Dutch situation is a crop with and a crop without the use of cogeneration for heating the greenhouses. The main problem in this case is the question how to calculate the emission due to the extra electricity production as co product the heating system of the tomato crop. Which emissions are normal for the electricity production? Is this constant during the day and year and are there differences between the countries? What is the impact of cogeneration? Has the time of the day and week influence on this impact? Which kind of electricity production plan will be replaced by the production by cogeneration? This blind spot is described and filled in.

The way to tackle this problem will be a guide to solve other similar problems, such as: heat deleverage to neighbours, greenhouse growers as well as houses or other buildings; CO₂ deleverage from the industry to the greenhouses; sharing a earth-heat well with the neighbours etc..