PHAntastic Cress

Publieke samenvatting / Public summary

Aanleiding

The horticultural sector heavily relies on the use of plastic cultivation aids as they pose clear advantages in crop cultivation. However, as with the majority of plastic products, these plastic materials are derived from fossil resources, difficult to recycle and as they are often used in direct contact with open environment they contribute heavily to the pollution of agricultural soils and compost streams. An interesting product in this respect is the cultivation tray from Koppert Cress, which is used to grow cresses (edible seedlings or microgreens) in greenhouse horticulture. Cresses are grown in these cultivation trays on a biobased substrate. Once the cresses are fully grown, they are transported with the cultivation tray to professional kitchens and consumers around the globe. Given the limited control over how (home) chefs manage their waste—and the significant variation in waste processing standards across countries—it is essential to develop a biobased cultivation tray that supports multiple end-of-life (EOL) scenarios, including composting and biodegradation in diverse environments, asides from conventional mechanical recycling.

Doelstelling

This project aims to make a substantial step forward in the field of industrial sheet extrusion and thermoforming of PHAs by demonstrating the feasibility of producing PHBH cress cultivation trays on industrial lines. In doing so, the project aligns completely with the 'Circulair ontwerpen van producten en halffabrikaten' theme of the EKOO Biobased Circular call. This project directly aligns

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Algemene informatie / General information

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Division Q B.V.

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with the EKOO Biobased Circular D3 theme, “Circular design of applications and products.” Its main objective is to develop an industrially scalable, fully biobased and biodegradable alternative to the current PET-based single-use cress cultivation tray, by developing compounds of the biopolyester PHBH that are tailored for thermoforming.

Korte omschrijving

In the project Division Q (the innovation subsidiary of Koppert Cress) and Wageningen Food & Biobased Research (WFBR) will collectively target the most prominent bottlenecks for the cultivation trays during its industrial-scale production, use and EOL. WFBR will investigate some of the most prominent challenges with respect to PHBH product development, including crystallization, programmed biodegradation and recyclability. This knowledge will be used to develop compounds at 100 kg scale which will allow for the production of PHBH cultivation trays. The project will perform industrial sheet extrusion and thermoforming trials at the facilities of Koppert Cress' industrial partner ANL Packaging in Belgium. ANL Packaging is an industrial converter of plastics, and produces the current PET cultivation trays for Koppert Cress. As a result, a thin thermoformed cultivation tray that is designed to offer an improved carbon footprint as well as multiple EOL routes will be developed for the first time. Division Q will subsequently test the cultivation of cresses in the PHBH based trays and perform an in-house market analysis.

Resultaat

This project will deliver the following project results: - A first application of a PHBH-based cress cultivation tray produced via industrial thermoforming. - An assessment of the functionality during cultivation and use of PHBH cress trays, which will be translated into a popular scientific article. - Public dissemination of project results via research papers, popular scientific papers and conference presentations. In general, the project will reinforce the knowledge position of the Netherlands within the field of biobased and biodegradable plastic product development. However, the largest

contribution to the Dutch knowledge position will come after completion of the project when Koppert Cress will (partially) transition from fossil based PET trays to biobased PHA trays that no longer contribute to (micro)plastic pollution. As a strong, globally oriented, Dutch brand their new products will profile the Netherlands as one of the frontrunners on biobased polyester product development, which fully aligns with the mission of the Biobased Circular growth fund.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.
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