

EUROPEAN BIOPLASTICS RESEARCH NETWORK 2nd VIRTUAL MEETING: “2 nd & 3rd Generation Feedstock for Bio-based and Biodegradable Plastics”

KEYNOTE SPEAKERS:

1. How far in the industrial development are second generation feedstock?

In correspondence with Speaker Claudia Wellenreuther

The vast majority of bio-based plastics on the market are made from first-generation feedstocks. The industrial production of bio-based plastics from second-generation feedstocks, such as corn stover, is quite mature compared to third-generation feedstocks. But the market share of these materials is rather negligible. The market is dominated by materials based on first-generation feedstocks such as corn or sugar cane.

2. Regarding the ELCA of various feedstocks: was the final product(s) taken into account (ie. biofuel vs. materials)

In correspondence with Speaker Claudia Wellenreuther

The different ELCA studies have set different system boundaries. While some of the studies analyze the entire life cycle from the cultivation of the feedstock to the end of the final plastic product's life cycle (from cradle to grave), other studies only examine the life cycle stages from cultivation to production of the plastic polymer (from cradle to gate) and leave out all subsequent stages of the life cycle of the final product. When making the choice between different feedstocks for producing one and the same polymer, the subsequent final production stage does not make a difference. For this reason, most of the ELCA studies dedicated to the feedstock issue are of the cradle-to-gate type.

PANELISTS:

1. What is the PHB yield projection for the CO2USE process?

In correspondence with Speaker Ines Fritz

There are two types of yield. At first, ca. 60-80% of the CO₂ introduced to the photobioreactor is converted into biomass by the cyanobacteria. The exact number depends on the proportion of light to dark (day length), because during night some of the built organic carbon is consumed for energy production. The second yield is the fraction of PHB of the total biomass. In contrast to heterotrophic bacteria (fed on sugars), cyanobacteria accumulate rarely more than ca. 20-25% of biomass as PHB, in bigger scale it is around 15-20% when purely phototrophically grown. Btw, cyanobacteria can accumulate ca. 60-70% PHB when grown on sugars – but, you guess right, that's not the idea of using algae or cyanobacteria.