Press release

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Innovation power of start-ups, research institutes and SMEs in the future of food and biomass production

Whether for digitisation in agriculture, urban and marine farming, improved crop efficiency or the production of sustainable protein, start-ups, SMEs, and research institutes play a major role in bringing innovation into the market.

Which technologies are available today and who are the major inventors actively contributing to the development of the nine innovation areas of food industry? At the conference "Revolution in Food and Biomass Production (REFAB)" in Cologne, 1 - 2 October 2018, leading founders and researchers will share their novel products and developments to help shape the future of food production.

The digitisation of the agriculture is one of the promising fields where the number of start-ups increases, blooming with their solutions to support farmers achieving more efficiency and protecting their crops from unexpected climatic conditions. India is a great example of a thriving innovation ecosystem. **Nimbkar Agricultural Research Institute (IN)** is a representative of the digital movement in agriculture. They will present the possibilities of these technologies to shape the future of Indian farming at the REFAB conference. At the same time, European research on robotic solutions for precision farming has advanced remarkably, which will be presented by the **Centre for Robotics in Industry and Intelligent Systems (PT)** and the **Flourish (CH)** EU funded project. **Meo Carbon Solutions (DE)** with ISCC certification system is the first government-approved certification for sustainability and greenhouse gas savings that can be used gobally for all types of biomass and its derivatives.

Worldwide, the interest in the development of microorganisms as biostimulants, biocontrol agents and agricultural probiotics has grown rapidly over the last two decades. Solutions on how to use the potential of microorganisms for biostimulation purposes and their delivery onto the field will be presented by French start-ups **BIOVITIS (FR)** and **Kapsera (FR).** Integration of mycorrhizae and nano-biostimulants and challenges and opportunities of arbuscular mycorrhizal fungi applications will be presented by a well-known research institute **TERI-Deakin Nanobiotechnology Centre (IN)** and the Austrian start-up **Evologic Technologies (AT)** accordingly**.**

Home, urban and vertical farming will play a central role in the future food supply of metropolitan areas. While **Farmers Cut (DE)** and **Click & Grow (EE)** provide home gardening solutions with fully automated cultivation methods, **SPREAD (JP)** contributes to the vertical farming movement in Japan by achieving profitable

operation of their large-scale vertical farms. German leading research Institute **Fraunhofer Institut für Umwelt-, Sicherheits- und Energietechnik UMSICHT (DE)** will present their findings within the inFARMING® project.

LED lighted greenhouses, desalinization of seawater (in combination with aeroponic, hydroponic and aquaponic systems) as well as solar technologies and closed biomass cycles open up completely new areas for food production under the most extreme conditions. Several companies are already successfully commercializing these systems, such as **Teshuva Agricultural Projects (IL)**, the **Sahara Forest Project (NO)** and **SEKEM Development Foundation (EG)**, which have exhibited how food can be grown in desert. Going one step further, the **European Space Agency (NL)** and **Wageningen University & Research (NL)** will showcase their already successfully tested food production in moon and Mars soil simulant.

Improved plants are of major importance for food security in the future, where climate change will create overall harsher conditions that make it difficult for farmers to protect their crops. What are current developments of global genetically modified (GM) crop cultivation, how can improved photosynthesis result in increased crop yield and how can GM methods be applied to tree breeding and the development of vegetables? **Nova-Institut (DE)**, **Wageningen University & Research (NL)** and **SweTree Technologies (SE)** will provide answers to these questions at REFAB conference.

The proteins of the future should have reduced climate impacts. Upscaling of sustainable insects, solar proteins, artificial meat and plant-based proteins will be crucial. A number of exciting products are already on the market and science is preparing us for even more. Success stories will be presented about two different CO_2-based foods (**Solar Foods (FI)** and **Kiverdi (US)**), the famous plant-based "Impossible Burger" (**The Good Food Institute (US)**, cellular agriculture, including meat from cells (**VTT Technical Research Centre of Finland**) and the old, well known source of protein: insects (**Ynsect (FR), VITO (BE), KU Leuven (BE), AgriProtein (ZA)**).

Organic farming and smallholder production methods will greatly benefit from many of these new developments by increasing efficiency while respecting their original ideals and principles. **Dr. Bronner's Magic Soaps (US)**, **BioInnovate Africa Programme (KE)** and **Berlin-Institut für Bevölkerung und Entwicklung (DE)** will present their experiences and knowledge how smallholders and organic farming can become ready for the future worldwide.

Leaving land-based food production, the ocean has much to offer besides traditional fish farming and, as of today, we only use a fraction of its potential. New concepts of sustainable aquaculture dissolve the borders between land and ocean**. Aquaponics Iberia (PT)** and **Smart Floating Farms (ES)** develop concepts for the urban aquaponic systems while the latter integrates these with other technologies, such as hydroponics, aquaculture and solar energy as modular floating platforms for local food production. Additionally, the potential of microalgae in food and feed is a topic of large discussion and will be elaborated on by the **Wageningen University & Research (NL)**. An example of cultivation and processing of seaweeds (microalgae) up to final fabrication of food products will be presented at REFAB by **Seakura (IL)**.

Last but not least, new biotechnological and chemical processes enable biorefineries to produce proteins, flavours, fibres, chemicals and plastics sustainably and efficiently from various biomass. Biorefineries and biotechnology are the future for the production of these products. At REFAB, applied state-of-the-art technologies are shown by **Godavari Biorefineries (IN),** using waste streams from sugar and sugar cane, and **Phytowelt GreenTechnologies (DE)** will present how the production of flavours with biotechnological methods has succeeded.

These and more projects and prominent companies will be presented at the conference "Revolution in Food and Biomass Production (REFAB)", 1-2 October in Cologne, Germany. Altogether, 56 speakers and exhibitors will show the future of food and biomass production (www.refab.info/).
Already 172 participants from 22 countries are registered. **Dr. Bronner's (US)** and **BIOCOM AG (DE)** are bronze sponsors of the conference. The **Fachagentur für Nachwachsende Rohstoffe e.V. (DE)** supports the event as premium partner.

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