SiEUGreen
Sino-European innovative green and smart cities

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Foam-Insulated Greenhouse @ NMBU Campus Ås, Norway

by seecon international gmbh

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About SiEUGreen

The Sino-European Innovative Green and Smart Cities (SiEUGreen) project, which runs from early 2018 to the end of 2022, aims at enhancing the EU-China cooperation in promoting UA for food security, resource efficiency, and smart and resilient cities. In the general context of zero-waste circular economy, the project uses existing technological tools and develops innovative resource-efficient agricultural techniques and integrated concepts to demonstrate how technological and societal innovation in UA can have a positive effect on economy, society and environment in China, Europe and elsewhere beyond the project period.

SiEUGreen brings together a multidisciplinary consortium of European and Chinese researchers, technology providers, Small and Medium Enterprises (SMEs), financiers, local and regional authorities and resident communities to facilitate the development and deployment of state-of-the-art urban agriculture models. Building on the zero-waste and circular economy model, SiEUGreen combines technological and societal innovation in promoting urban agriculture for food security, resource efficiency, and smart, resilient cities.

Showcase Campus Ås

The project prepares, deploys and evaluates five ground-breaking multidisciplinary showcases in urban and peri-urban areas in Europe and China that contribute to the future development of urban agriculture (Figure 1).

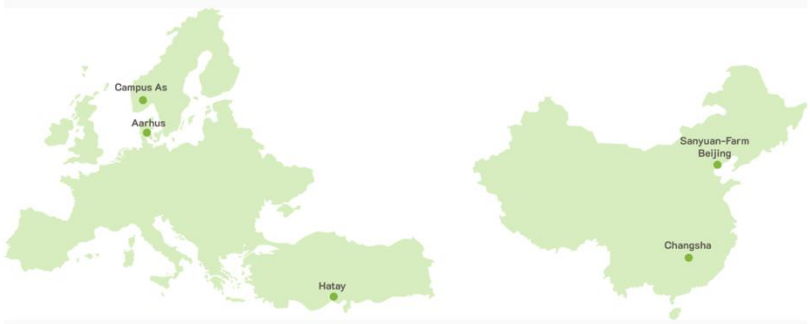

Figure 1: Map with SiEUGreen Showcases

Campus Ås of the Norwegian University of Life Sciences (NMBU) is home to Norway's largest interdisciplinary academic environment in the field of life sciences. The full-scale implementation of a GREENergy concept demonstrates that an innovative combination of known and emerging technologies, actions and planning can contribute to resilient, climate-, environment- and people-friendly urban development.

Foam-insulated greenhouse

Insulation systems, in which soap bubbles are injected into the air space between two layers of plastic covering a greenhouse, were tried more than 30 years ago but are still not widely used. Especially in Scandinavian countries like Norway, where summers are short and winters all the colder, urban farmers are turning to greenhouse production to extend the growing season and mitigate the risk of unpredictable weather conditions. As part of the SiEUGreen project, an innovative soap foam insulated greenhouse (with a footprint of 9,6 x 9,0 metres) was installed at Campus Ås (Figure 2).

Figure 2: Foam-insulated greenhouse at Campus Ås

The soap foam (Figure 3, Figure 4) insulates the greenhouse against the cold in the winter season and the summer heat thereby reducing the ecological footprint related to energy-consumption for heating in winter season and cooling in summer.

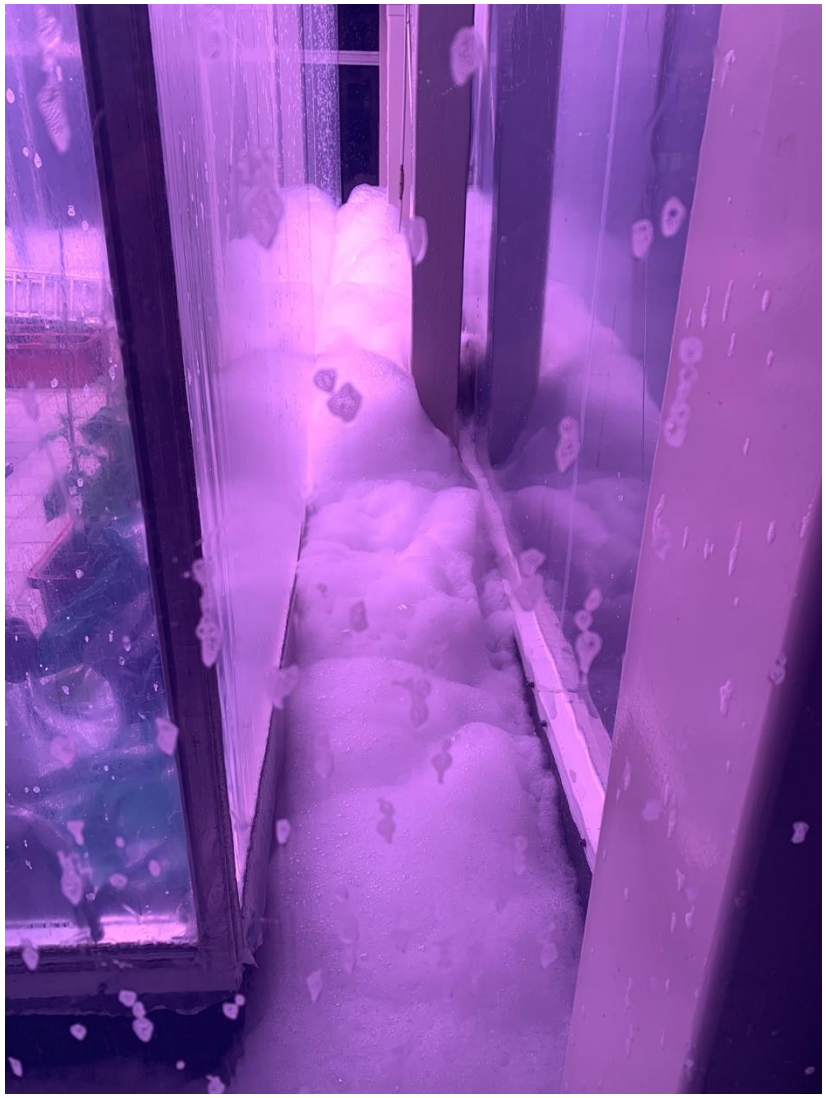

Figure 3: Soap foam in the air space between two layers of plastic (walls)

Figure 4: Soap foam in the air space between two layers of plastic (roof)

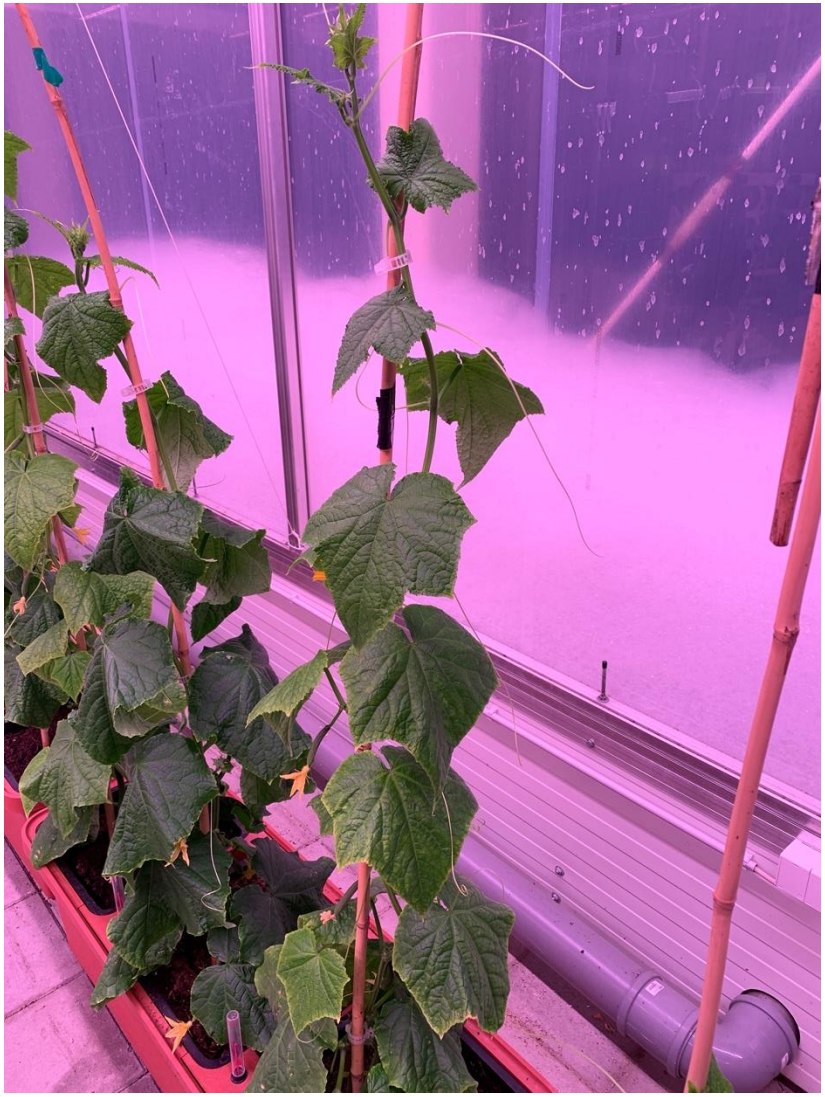

Figure 5: Cucumbers grown in the greenhouse

Partners

Norwegian University of Life Sciences (NMBU)

Norwegian Institute of Bioeconomy Research (NIBIO)

The Institute of Vegetables and Flowers, Chinese Academy of Agricultural Sciences (CAAS)

Nordregio

Emetris S.A.

Aarhus Kommune (AAKS)

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Scandinavian Water Technology AS (ScanWater)

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