

Organisation & Directions

Veranstaltungsort/Venue

Zentrales Hörsaalgebäude (ZHG)
 Maximus-von-Imhof-Forum 6
 85354 Freising-Weihenstephan
 Deutschland

Veranstalter/Host

World Agricultural Systems Center
 Hans Eisenmann-Forum für Agrarwissenschaften
 der Technischen Universität München
 Liesel-Beckmann-Straße 2
 85354 Freising-Weihenstephan
 Germany
 Tel: +49 8161 71 3464
 Fax: +49 8161 71 2899

Please register via E-Mail at
hans-eisenmann-forum@tum.de

and indicate whether you would like to attend

- a) on-site or virtually
- b) day 1, day 2 or both days.

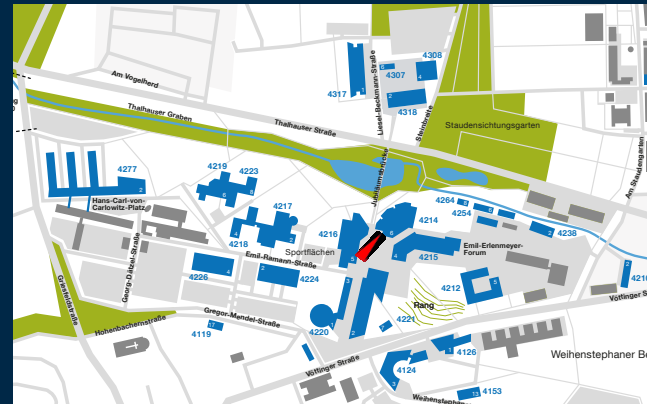
Day 1 in English
 Tag 2 in German/Deutsch

Please note that the attendance on-site is limited.
 Therefore, early registration is recommended.

The event is open to all interested parties
 and is free of charge.

Redaktion
 C.R. Luksch
 Hans Eisenmann-Forum/TUM
 Grafik: ediundsepp

Veranstaltungsort/Venue:



ZHG | Maximus-von-Imhof-Forum 6 | 85354 Freising

Arriving by public transport

From Munich airport: Take the bus 635 to Freising train station.
 From Munich main station: Take the train or the S-Bahn (S1) to Freising train station.
 From Freising train station busline 639 will take you to the campus.

Arriving by car:

From the autobahn A9 exit "Allershausen" or from the autobahn A92 exit "Freising Mitte" and follow the signs to Freising. In Freising, follow directions to Weihenstephan/Universität.

Parking is available at Liesel-Beckmann-Straße.

Technische Universität München

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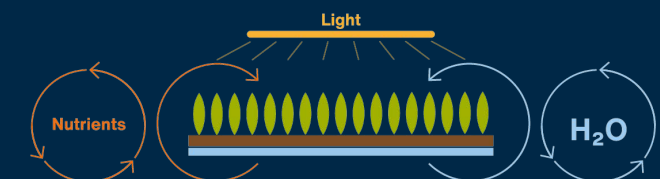
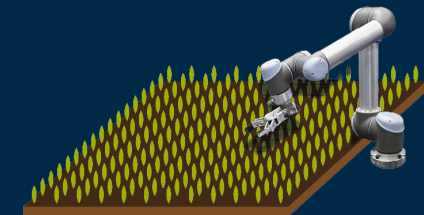
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www.hef.tum.de

Hans Eisenmann-Forum

12. HEF Symposium

September 23 & 24, 2021

The Limits of Food Production - Vertical Farming



The Limits of Food Production - Vertical Farming

Program September 23/24

While food demand continues to increase with a growing global population, climate change and soil degradation have made it already difficult to ensure food security in some regions. Hence, producing more food in a more sustainable way constitutes a central agricultural challenge.

An alternative for growing crops in the field has emerged in recent years with vertical farming. With LEDs becoming affordable and more efficient, the economics of indoor and vertical farming are redefined.

In vertical farms, all growth factors including light, temperature, humidity, CO₂ level, ventilation, water and nutrients can be controlled and optimized. Simultaneously, weeds, pests and diseases can be excluded, and the use of water and fertilizer can be drastically reduced.

The aim of this conference is to discuss the current state of science in controlled-environment crop growth and yield, and to determine the limits of food production in vertical farms.

DAY 1 - September 23 (in English)

09:00 - 09:10

Prof. Dr. Senthoid Asseng & Claudia Luksch

Hans Eisenmann-Forum, Technical University Munich

Welcome, Organizational remarks

09:10 - 09:20

Prof. Dr. Thomas Hofmann

President Technical University of Munich

Opening Words

09:20 - 10:05

Prof. Dr. Leo Marcelis *Wageningen University*

Vertical Farm: The sky is the limit?

10:05 - 10:35

Prof. Dr. Tracy Lawson *University of Essex*

The effect of light quality and intensity on photosynthetic processes

DAY 1 - September 23 (cont., in English)

10:35- 11:05

Prof. Dr. Erik Runkle *Michigan State University*

Light properties regulate yield and quality of plants grown in vertical farms.

11:05- 11:35 Coffee break

11:35- 12:05

Prof. Dr. Eva Rosenqvist *University of Copenhagen*

Temperature effects at different light levels and CO₂ concentrations

12:05- 12:35

Prof. Dr. Hans Lambers *University of Western Australia*

Will increasing plant productivity make nutrient uptake the next limiting step?

12:35- 13:05

Prof. Dr. Dean Kopsell *University of Florida*

Management of light quality to maximize specialty crop phytonutrient concentrations in vertical farms

13:05- 14:05 Lunch break

14:05- 14:35

Prof. Dr. Murat Kacira *University of Arizona*

Sensing and automation in vertical farms

14:35- 15:05

Dr. Morgan Pattison *Solid State Lighting Services Inc.*

LED Technology for Vertical Farming

15:05- 15:35

Prof. Dr. Francesco Orsini *University of Bologna*

Vertical Farms, are they sustainable? An insight into water, land, and energy use efficiency for reduced emissions in indoor farming systems

15:35- 16:00 Coffee break

16:00 - 16:30

Prof. Dr. Kathy Steppe *University of Ghent*

Visions for Vertical Farming: dessert, megacities, space travel

16:30- 17:10

Panel discussion with all speakers

17:10 Closing words, Networking with Beer & Snacks

DAY 2 - September 24 (in german language)

9:00

Begrüßung

9:05 - 09:15

Prof. Dr. Thomas Becker

Dekan der TUM School of Life Sciences

Technische Universität München

Eröffnung

9:15 - 09:30

Prof. Senthoid Asseng & Claudia Luksch

Hans Eisenmann-Forum, TUM

Zusammenfassung vom Vortag

09:30 - 10:15

Prof. Dr. Christian Ulrichs *Humboldt Universität Berlin*

Vertical Farming in Deutschland - ein Überblick

10:15- 10:45

Dr. Simon Vogel *Fraunhofer Institut IME*

Vertical Farming 2.0 - neue Bausteine einer nachhaltigen Agrarproduktion

10:45- 11:05

Prof. Dr. Thomas Hamacher

Technische Universität München

Vertical Farming: Die Frage der Energie

11:05- 11:35 Coffee break

11:35 - 11:50

Christine Lössl-Zimmermann *Association Vertical Farming*

Vernetzung der Akteure im Vertical Farming

11:50- 12:10

Prof. Dr. Heike Mempel

Hochschule Weihenstephan Triesdorf

Container Indoor Farming - Potentiale und Grenzen

12:10- 12:30

Jochen Haubner *Haubner Gemüse - SalaJoe*

Erfahrungsbericht aus der Praxis

12:30 - 13:00

Dr. Daniel Schubert

Deutsches Zentrum für Luft- und Raumfahrt

EDEN ISS Greenhouse System -

Von der Antarktis in den Weltraum und zurück

13:00 - 13:20 Diskussion

13:20 - 15:00 Vernetzung bei Bier & Snacks