

IFAC World Congress 2023 - Open Invited Track Session

Session Title: Plant Factory and Urban Agriculture

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Abstract:

Two decades into the 21st century, the world is facing continued population growth and an increasing impact of climate change. This has led to rapidly expanding population centers and a rise in extreme weather events and long-lasting droughts. In order to keep the world population fed in a reliable manner, many parts of the world can no longer rely solely on open-field agricultural production. By making use of greenhouses and vertical farms, higher yields can be realized on smaller areas, while protecting crops from excessive heat, cold, or precipitation, consuming (much) less water, and radically reducing transportation miles from farm to consumer. Moreover, the closed environments in greenhouses and vertical farms allow for more control over cultivation parameters, enabling further optimization of crop yield and paving the road towards autonomous cultivation. This Special Session welcome the contribution from researchers, engineers, and industrial practitioner to present the latest advances including but not limited to:

- Efficient quality food production
- Sensor network
- Mechatronic automation
- Optimization and modeling
- Decision support system
- Circular agriculture