

Working group : Greenhouse crops

■ Members:

Temporary animator :

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Participants:

Secretary : to be defined

Working group : Greenhouse crops

Objectives and expectations :

Better knowledge of the activities of the european institutes working in greenhouses

Permanent scientific/technical exchanges on:

- Methods for research and experiments in greenhouses

- Discussion on research results

- Common publications and communications

From the **strategic agenda** to **proposals in greenhouses** in the frame of european calls

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Main goals:

- **Build new strategies or techniques that preserve yields**
- **improve fruit quality, control energy consumption**
- **reduce the ecological footprint**

A focus on:

Cultivation techniques and management

Energy sources and energy efficiency

Plant physiology in greenhouses

Plant material and breeding



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1. Cultivation techniques and management

Precision climate management

Pest control

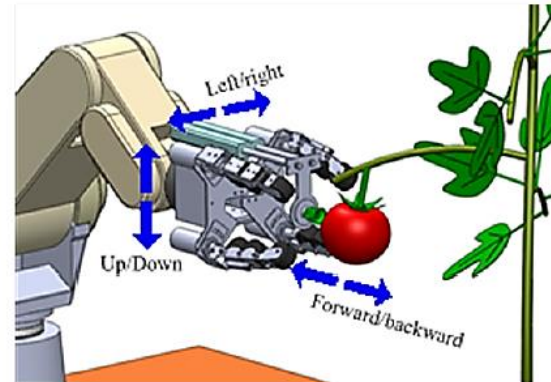
To go further:

Robotization and automation

Deleafing

Harvesting

Urban farming



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2. Energy sources and energy efficiency

Reduction of the **fuel dependency**

Sustainable energy sources (wood, biogas, geothermal heat, waste energy from factories)

Reduction of **thermal losses**

Increasing insulation (by the use of thermal screens; **energy saving: 20 to 25%**)

New cover material (ex. double plastic cover F-Clean®)

Light transmission > glass by 6 to 8 %

Energy saving: 20 %

Extra yield of 10 %

Precision climate management: an optimal micro-climate for plants facilitated by separation of all devices influencing heating, cooling and (de-)humidification

Semi-closed greenhouse optimization

Improvement of system performances (ex. heat exchangers, heat storage)



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3. Plant physiology in greenhouses

Optimization of greenhouse management based on « live » plant behaviour

Development of plant sensors

Understanding physiologic parameters related to quality establishment in pre- and post-harvest

Increasing nutritional and gustative quality by an adaptation of the greenhouse management through identification of key micro-climate parameters

Influence of pre-harvest conditions on post-harvest conservation

- **To go further:** new plant sensors to manage climate and crop operations based on image analysis
 - Associated with decision-making rules (that can be used in a commercial greenhouse) including model prediction



Working group : Greenhouse and vegetal material

4. Plant material and breeding

Breeding plant material suitable for the market

Segmentation on quality traits (H2020 : Traditom project - 16 partners – France : Inra, Ctifl)

Characterization of gustative and nutritional qualities expected by consumers

A plant material using more efficiently greenhouse supplies

→ A perfect use of supplies

Radiation Use Efficiency (UE)

Carbon dioxide UE

Temperature UE

Water and nutrients UE

Through decision making-rules identified by plant sensors, identification of hot points related to plant material that can be used by breeders

To go further: orientation of greenhouse technologies or genetic selection to go beyond these hot spots



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Founding meeting, February 1, 2016, VLEVA, Brussels

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