Developments in international horticultural production systems

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Rixos Downtown Hotel, Antalya, May 12th 2016

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Opportunities Turkey – Dutch Collaboration

- World-wide trends in horticulture / floriculture
- The whole chain: from Breeding towards Logistics
- Production Enhancements (examples):
  - Greenhouse construction and Climate control
  - Crop protection (IPM)
  - Substrates
  - Water management
- The Dutch Golden Triangle concept for Innovation

Horticulture trends world-wide

Food security and safety ...

Save environment: More with less ...

Local, regional and global markets

From open field towards protected horticulture

From small-scale towards large-scale

... towards a growing welfare

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Wageningen University and Research

- Faculty and staff: > 6,000
- 10.000 students
- Turnover: € 670 m
- Research: No 1 in our domains
- 25 locations in NL + Chile, China, Africa, Middle East
- 458 European projects
- Active in 90 countries world-wide
- 3 pillars: science, education, value creation

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Production chains (protected horticulture)




Breeding & Propagation

- Selection varieties
- Proper plant propagation

Greenhouse production

- Climate control
- IPM
- Crop management
- Fertigation

Post harvest

- Sorting
- Grading
- Storing

Logistics, marketing

- Branding
- Labelling
- Selling
- Distributing

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Improved labour conditions and advanced technology / supply industry

Automation internal logistics, transport, packaging, sorting, grading

100% human labour

Almost 100% automation (sorting, packaging, internal logistics

Wageningen UR - Greenhouse Horticulture

Energy and climate

Water and emissions

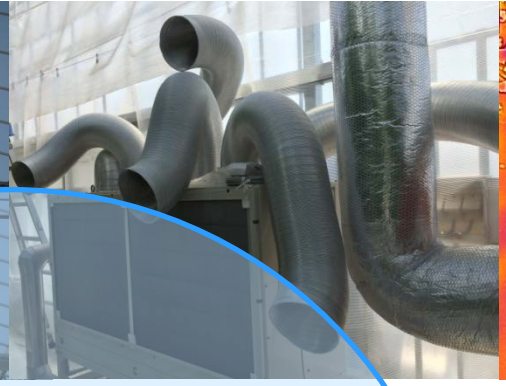
Advanced systems

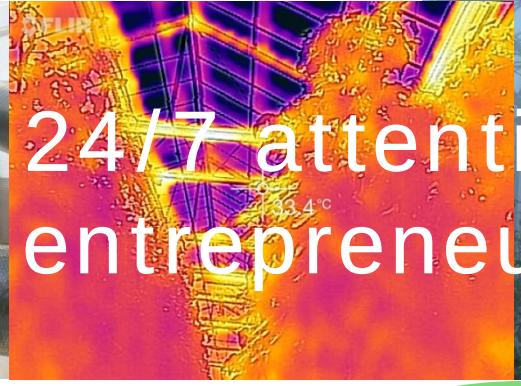
Sustainable crop protection

Quality of crop and product

Added value crops

Fundamental *Applied*





Design

24/7 attention entrepreneurship

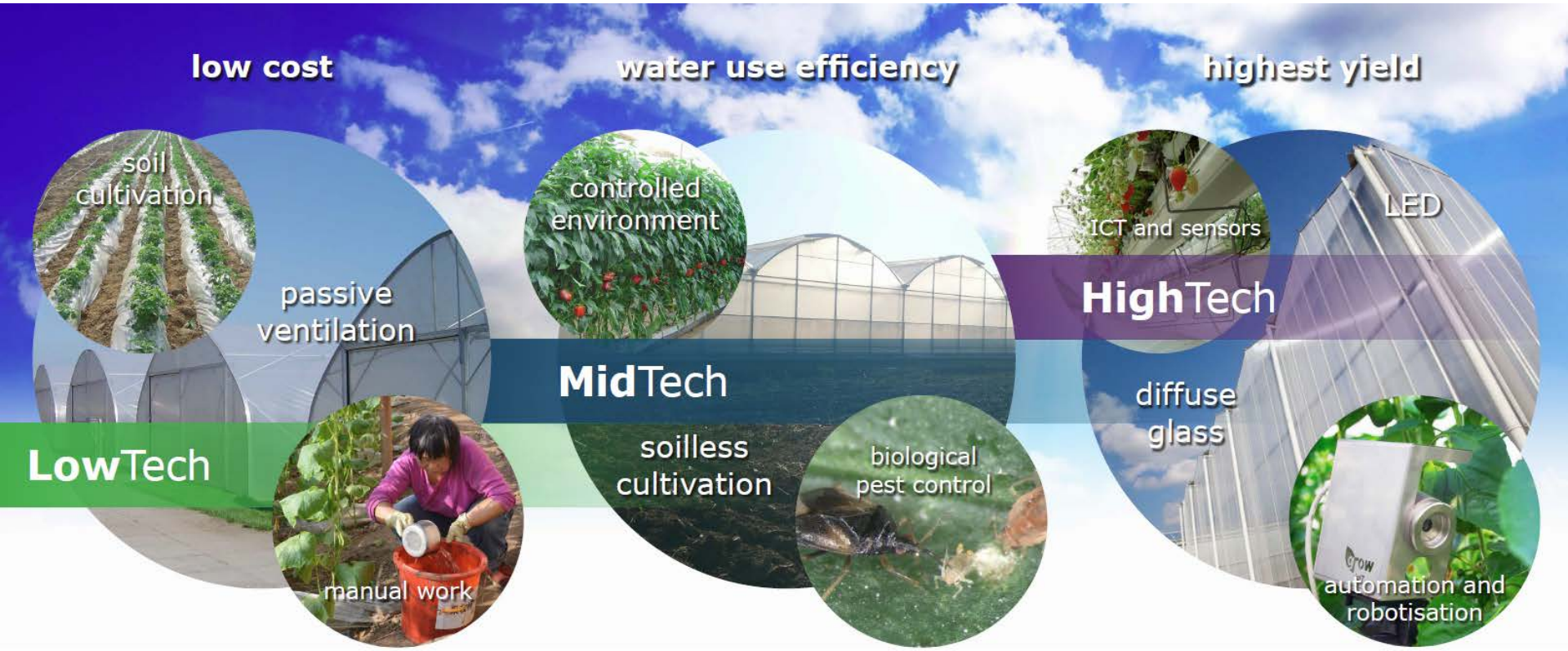
- Ventilation capacity
- Properties of the cover
- Heating/cooling
- Humidity
- CO2
- Water/nutrients

€

- Labour skills
- Fert-irrigation
- Crop management
- Climate management
- Crop protection
- Competence
- Accuracy

Training

Sustainable greenhouse production



STEPWISE TOWARDS SUSTAINABLE PRODUCTION

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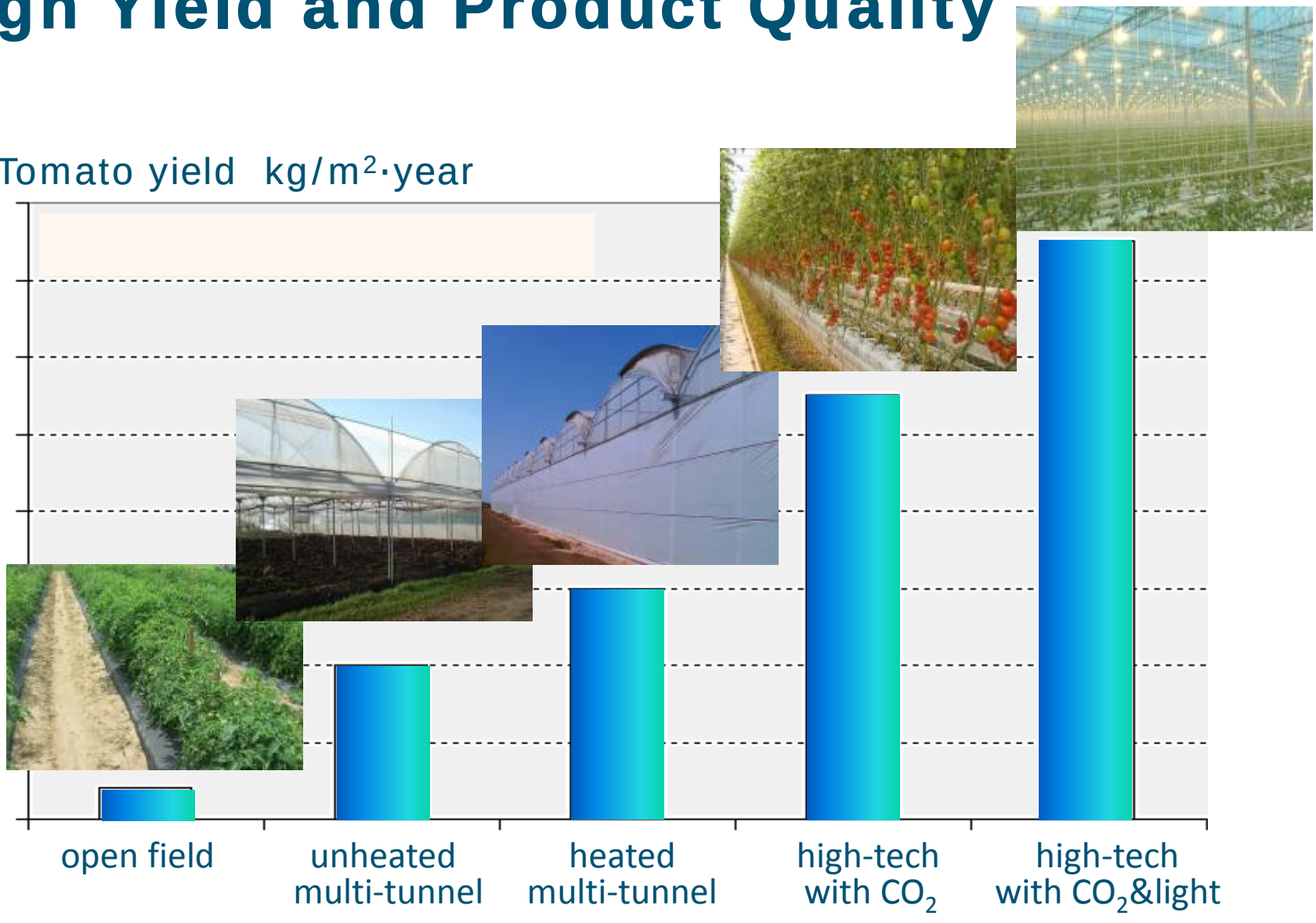
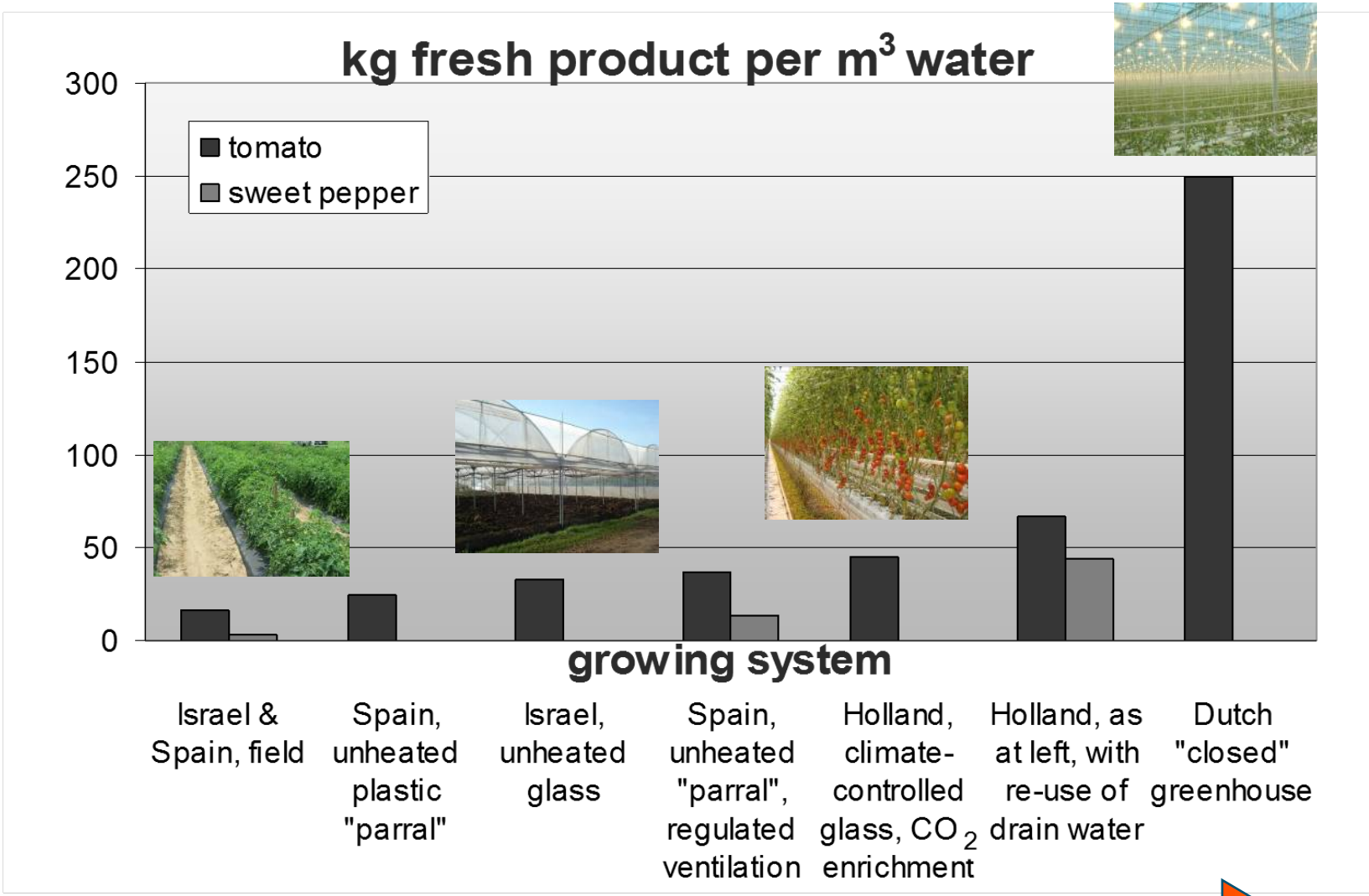
High Yield and Product Quality



Control of production factors

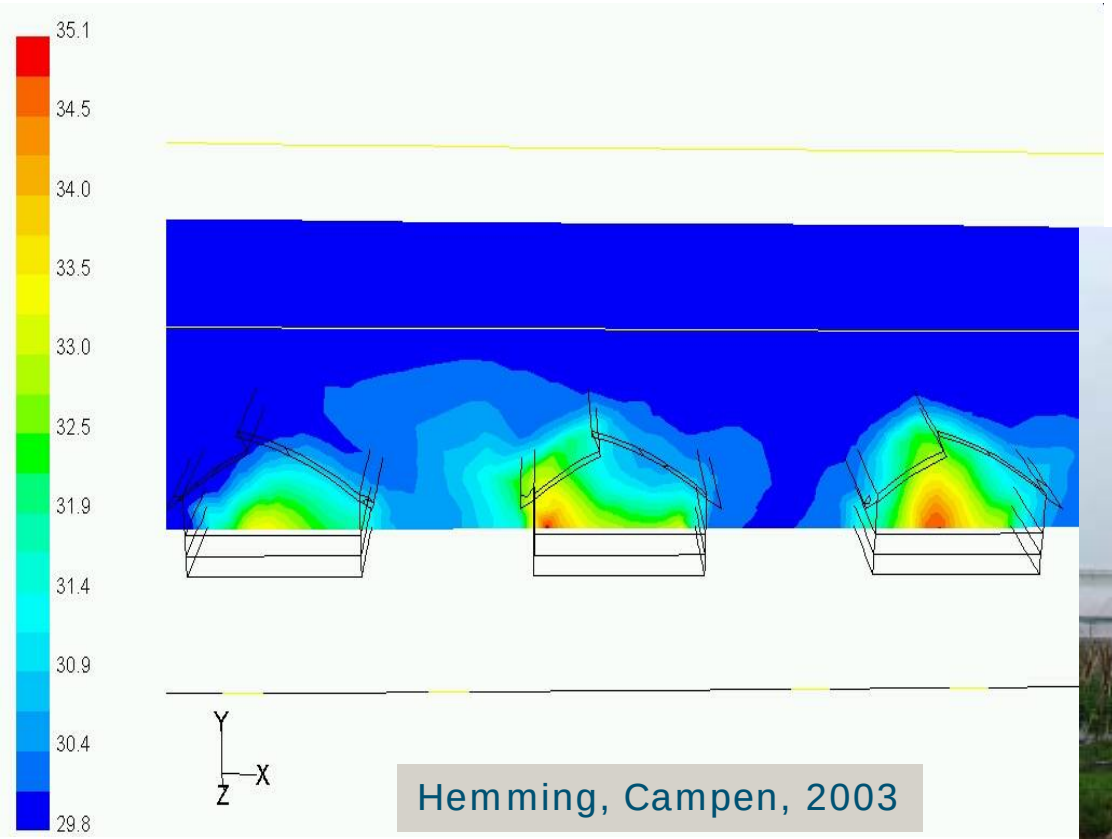
High Resource Use Effciency



Control of production factors

Greenhouses in tropical lowland

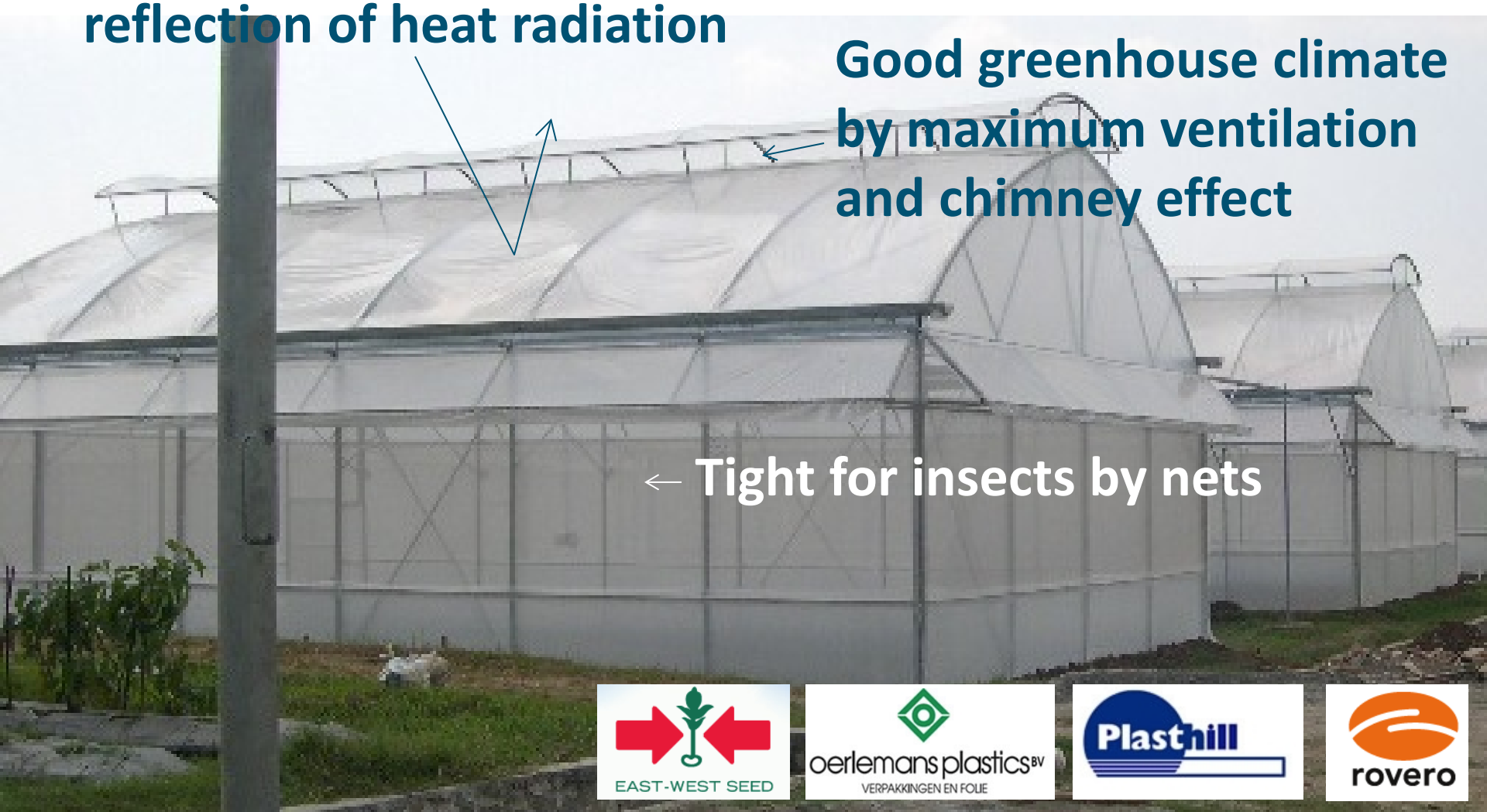
Goal: Introduce a passive, low-cost, passive, greenhouse concept suitable for lowland tropical climate condition



Hemming, Campen, 2003

Plastic tunnels in tropical lowland

New plastic films:
high light transmission, diffuse,
reflection of heat radiation



Good greenhouse climate by maximum ventilation and chimney effect

← Tight for insects by nets

EAST-WEST SEED

oerlemans plastics BV
VERPAKKINGEN EN FOLIE

Plasthill

rovero

Scaling-up in tropical lowland (Malaysia)

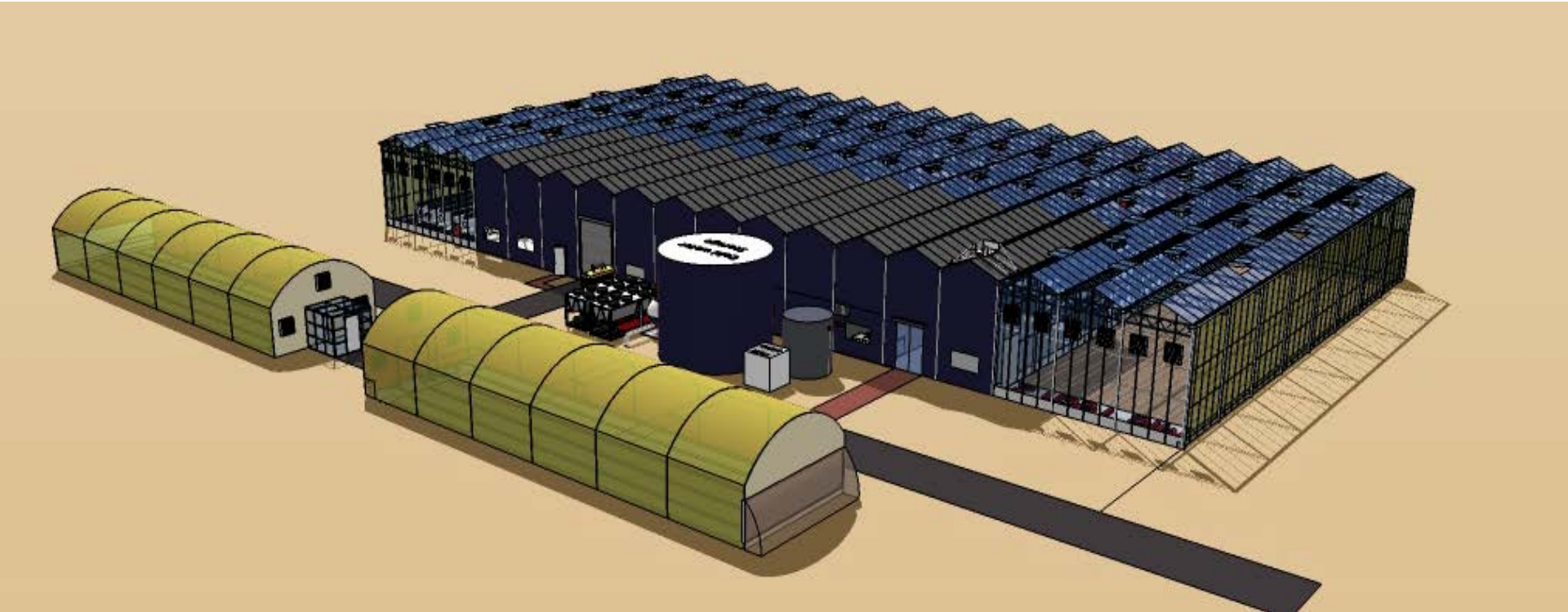
Goal: upscale production system to multi-span greenhouse

Horticultural research centres Middle East

Location: Abu Dhabi

Goal: Water saving, food security

Approach: Different compartments low-tech, mid-tech, high-tech



Abu Dhabi: starting up…









Research center in Riyadh: Design

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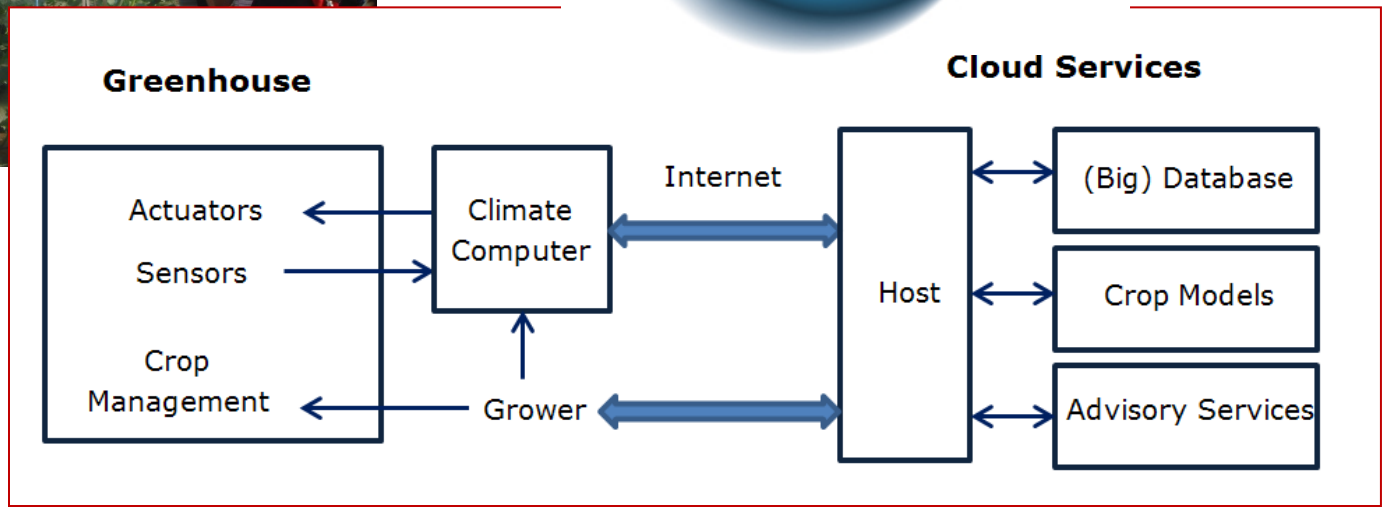
Bom Group
Greenhouses - Screening - Climate - Turnkey

sabic

High-Tech Artificial Intelligence for Low-Tech Growing Applications: "**Remote Horticulture**"



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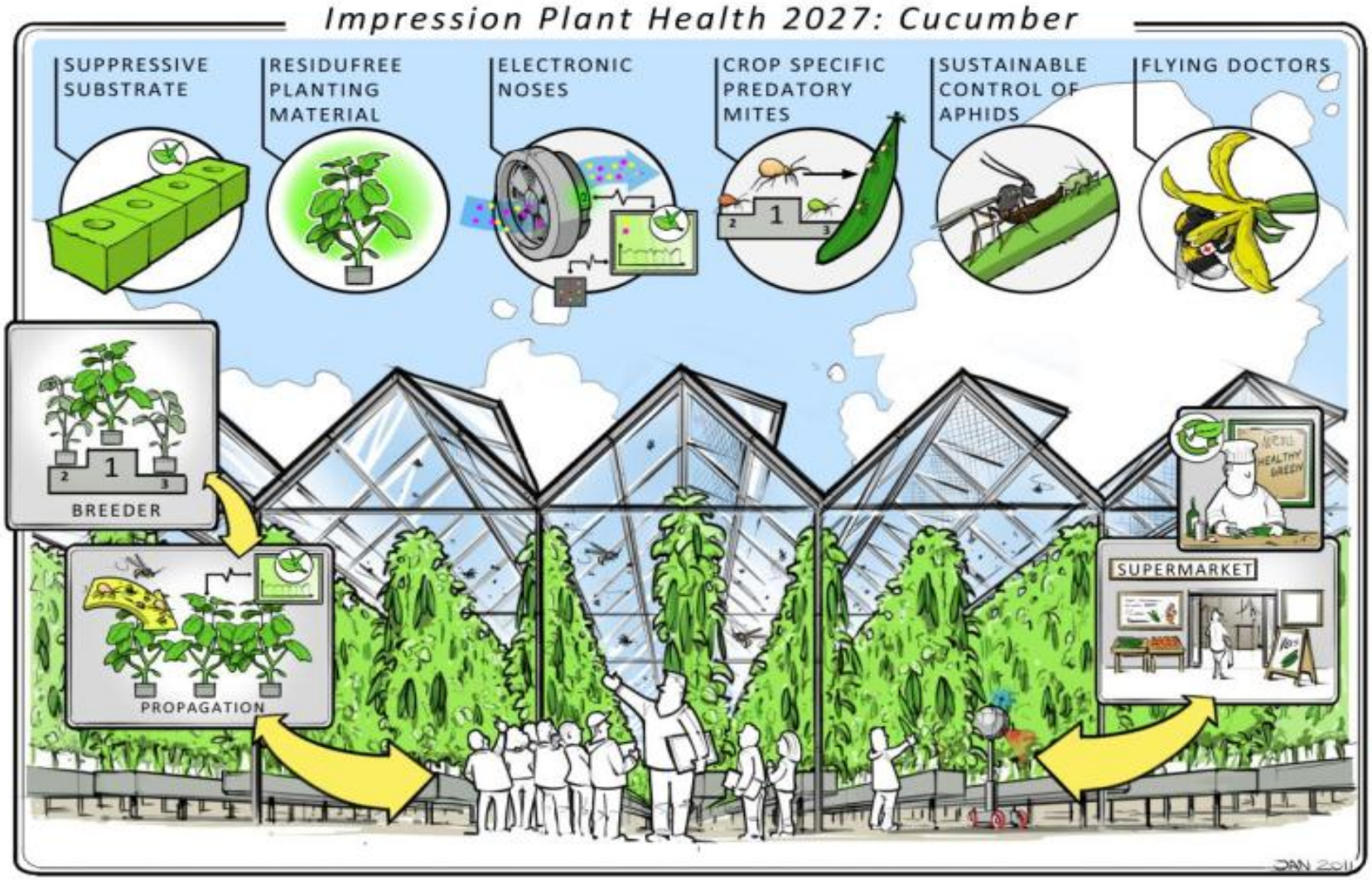
Better pest and disease management

Optimal pest and disease management increases production level and product quality with less use of chemicals

100% Integrated pest management

Chemical crop protection

Options for sustainable integrated crop protection



Integrated Pest Management (Ethiopia)

- Pesticide used must be minimized
- Identification of local predators
- Study on biology
- Implementation of technology
- Training

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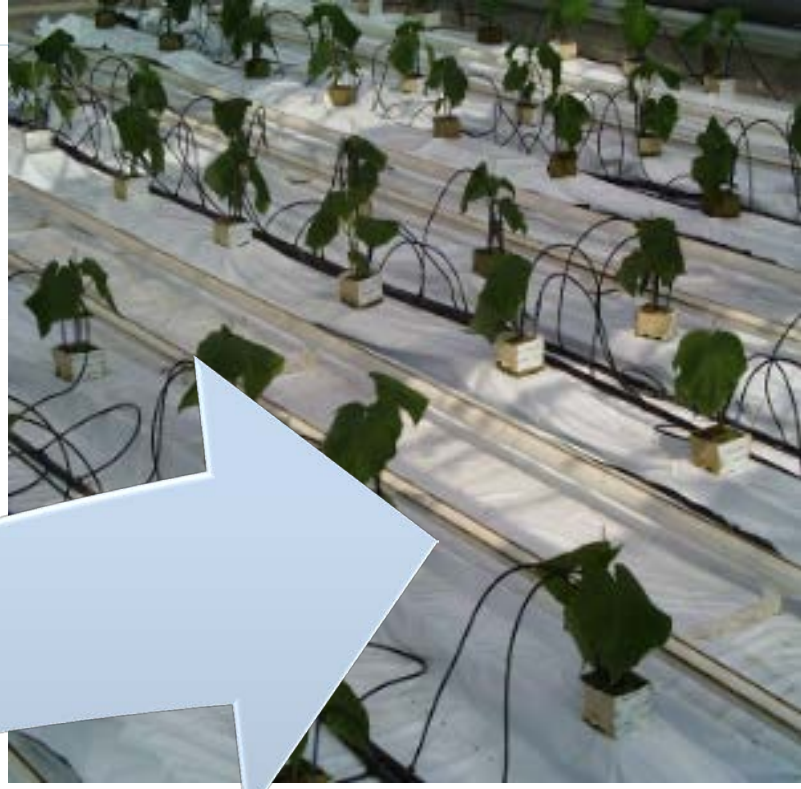
Improved Fertigation and irrigation



Increase productivity and quality

Substrates with automatic irrigation and fertigation and re-cycling

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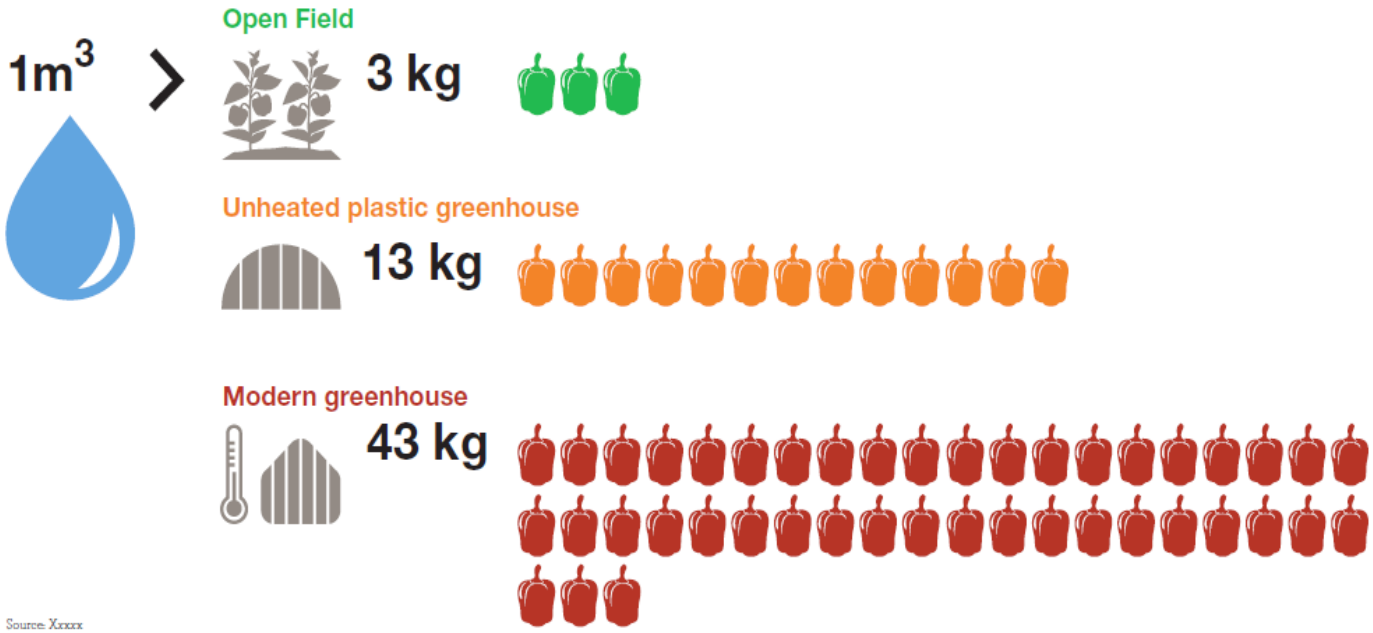
Protected Horticulture: resource efficiency up to 15 times better



Source: Xxxx

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Water recycling in substrate grown crops

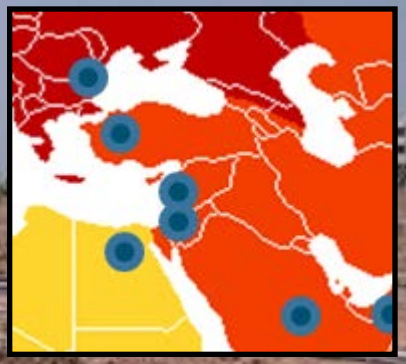
Water saving potential of closed hydroponics in %

	Water	Nutrients
Cucumber	21	80
Roses	28	42
Chrysanthemum	15	64

Soilless cultivation saves water (Jordan)

The Jordan Hydroponic Green Farming Project

Soil moisture sensor controlled irrigation



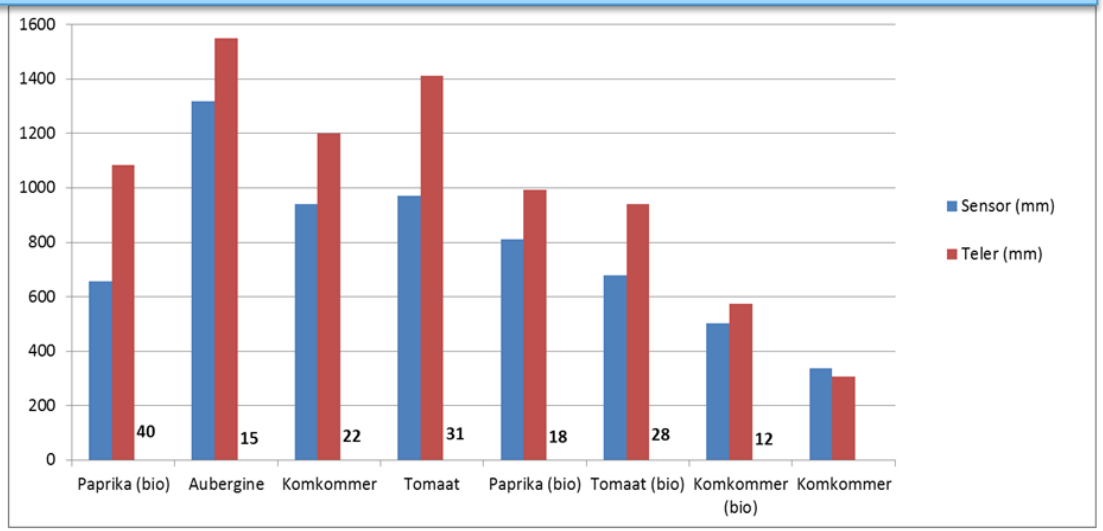
FLOW AID

Collaboration with companies and research organisations in Turkey, Lebanon, Jordan, Italy, Spain, Greece, UK, and The Netherlands

Sensors can save water and prevent environmental pollution in soil-grown crops

Saving water in small-scale farms

AquaTag – a **low-cost** moisture sensor: Saving up to **40 %** water



E.Ü. ZİRAAT FAKÜLTESİ 1955

sensor SOLUTIONS BV aqua TAG

TARTES

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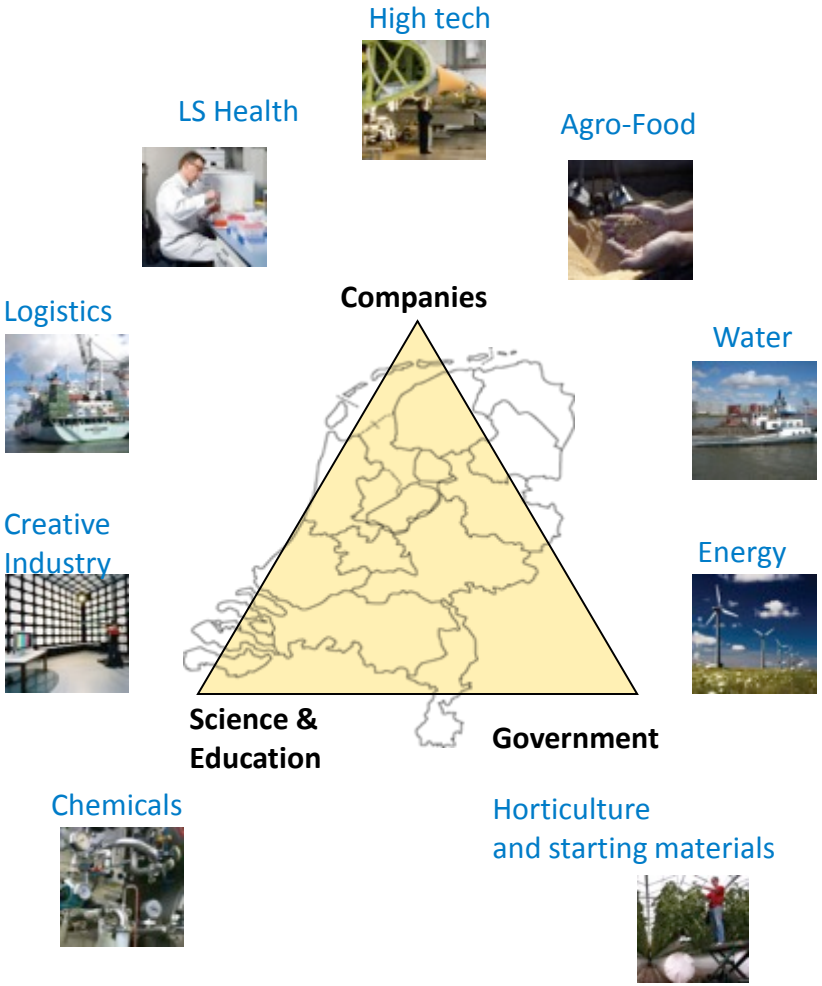
Innovation in the Netherlands: Top sector policy



- 9 Top Sectors, important for the Dutch Economy
- Governmental policy and support
- More focus on public investment in research and innovation
- Open innovation and cooperation (knowledge exchange)
- Per sector action plan for internationalization, human capital and innovation
- Roadmap designed by government, industry and science: "**Golden Triangle**"

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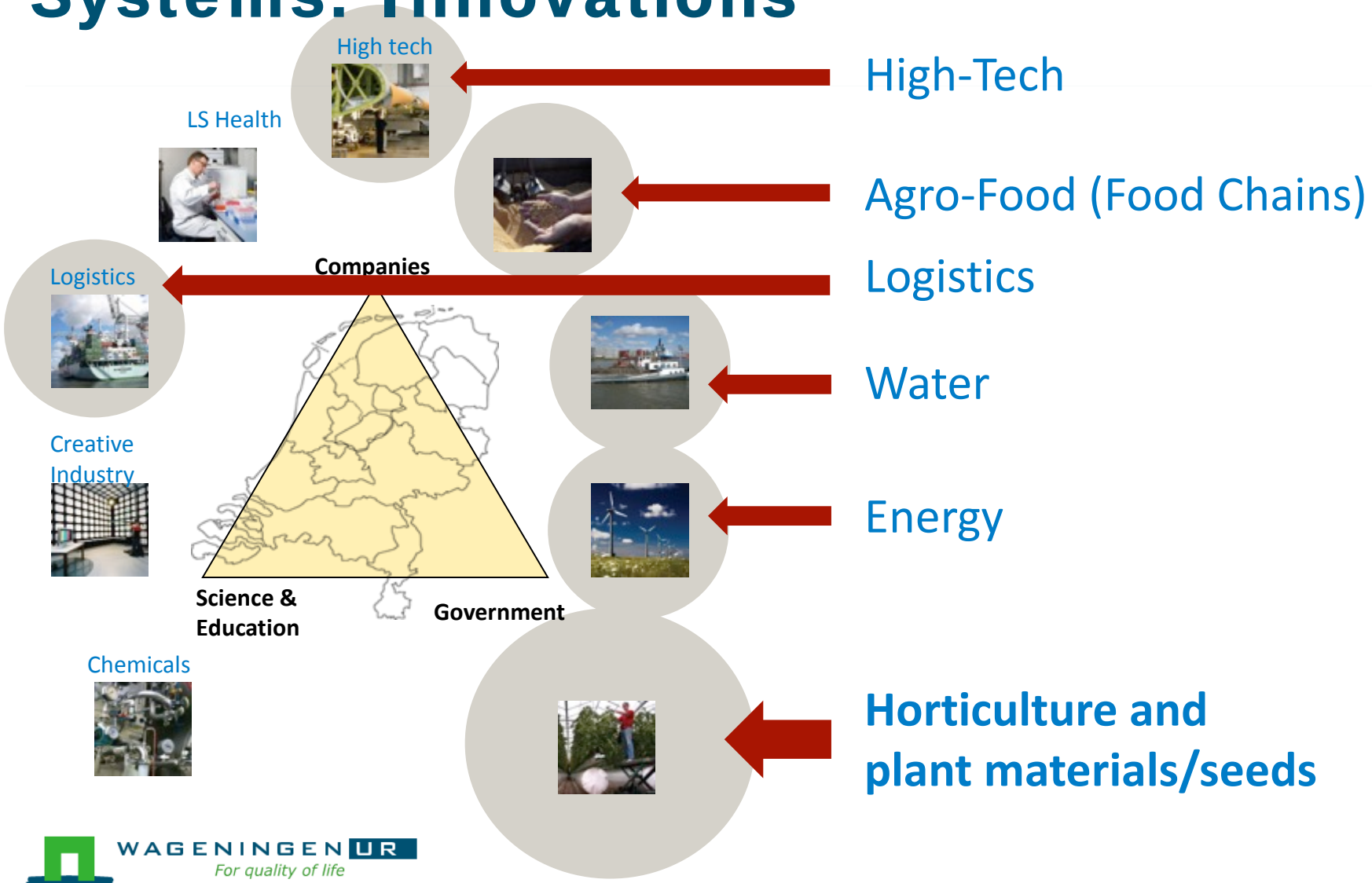
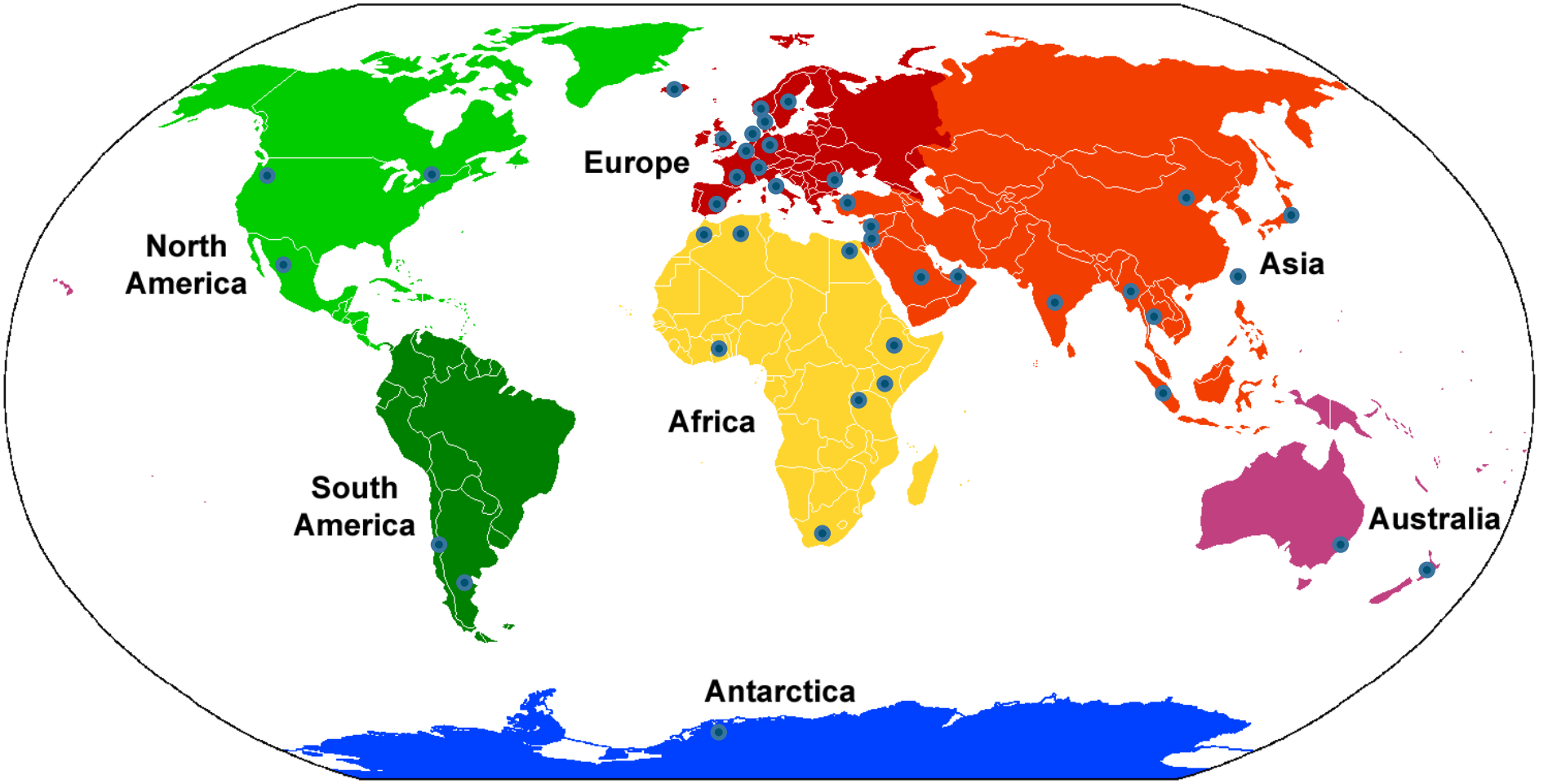
International Horticultural Production Systems: Innovations



WUR@International active in projects in all regions of the world



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WUR@International
different collaboration partners

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Training program Protected Horticulture

Summer school

Summer School on Protected Horticulture

Wageningen University and Research centre is the "knowledge heart" of the Dutch Greenhouse Horticulture, which is the most advanced and productive in the world. After the huge success of the first "Summer School on Protected Horticulture", Wageningen UR scientists will share again their unique knowledge with international students and researchers during 2016 Summer School on Protected Horticulture that will be held in Wageningen, The Netherlands, from August, 22nd through September 2nd, 2016

Organised by	Wageningen Academy, Wageningen UR Greenhouse Horticulture, Leerstoelgroep Tuinbouw en Product Fysiologie
Date	Mon 22 August 2016 until Fri 2 September 2016
Venue	Wageningen Campus

Contact

ir. SM (Sanne) van Deursen

Contact form

Sign up for this course

Practical Information

https://www.wageningenur.nl/en/activity/Summer-School-on-Protected-Horticulture-2.htm

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Summary

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WageningenUR Greenhouse Horticulture

Innovations for the horticultural sector

Ministerie van Economische Zaken

Ministerie van Buitenlandse Zaken

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Kingdom of the Netherlands