

Wageningen UR Greenhouse Horticulture

Research and innovation: networking with knowledge

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Location: Bleiswijk

- 85 greenhouse compartments
 - normal ventilation, cooling, complete airco
 - artificial light
 - soil, substrates, tables
 - Insect breeding
- Crop protection laboratories
- Test facility taste of products




Location Wageningen

- Specific laboratories (e.g. robotics, light measurements)
- 2 Experimental greenhouses




Research topics

- Energy and climate
- Water and emissions
- Advanced production systems
- Sustainable crop protection
- Quality of crop and product




Research 2010/11

- Sustainable and energy saving greenhouses
 - Innovation and Demonstration Centrum:
 - Sunergy greenhouse
 - VenlowEnergy greenhouse
 - Climate neutral greenhouse with controllable daylight system
 - PV on ZonWindKas
 - Electricity delivering greenhouses (Elkas II, Fresnel greenhouse)
 - EU Project EUPHOROS: Minimum use of resources for sustainable greenhouse systems in Europe
 - New (sustainable) greenhouse regions





Research 2010/11



- Water and emissions
 - EU-Project Flow-Aid: control and prediction of irrigation/fertigation (booklet published)
 - Chips & sensors (WET-sensor, WGM-meter, E-sense)
 - Recirculation roses without emissions
 - Emissions from chrysanthemum on substrates
 - Emission management of soil grown crops
 - Tool emission effects crop protection chemicals to water (CTGB)
 - Emission from protected cultivation systems to air (EFSA)




Research 2010/11



- **Advanced crop- and productionsystems**
 - PhD student: Bert "Design methodology for sustainable automated growing systems"
 - PhD student: Wouter "Development of a sweet peeter harvesting robot"
 - EU-project Clever Robots for Crops
 - Automated weedcontrol for open field application (Steketee)
 - Mushroom production of the future
 - Work is gaming, working in horticulture in 2026

Research 2010/11



- **Sensortechnology for quality of crops and products**
 - Detection plant stress, pests and diseases (MIPS robot, MIPS camera, x-y table, Plant Facility)
 - Detection of long-horn beetle in wood by x-ray
 - Detection of fusarium oxysporum in tulip, phytophthora in potato, xantomonas in strawberry
 - Detection of leave necrosis hortensia
 - GFP in cabbage
 - Detection of seed germination and quality




Research 2010/11



- **International**
 - PhD student : Bram "A systematic integral greenhouse design"
 - Sustainable innovation centre in Turkey (2g@there, BOCI)
 - Sustainable horticultural research centre in UAE (Env. Agency Abu Dhabi)
 - Greenhouse design for tropical lowland in Malaysia (BOCI)
 - Co-operation subtropical greenhouses in Taiwan (BOCI)
 - Improvement horticulture produce in Algeria (2g@there)
 - Triple P in Egyptian Horticulture (BOCI)
 - GreenFarming East Africa (Kenya & Ethiopia) (EVD)
 - IPM in Ethiopia (BOCI)
 - Vegetable production & consumption in Kenya (BOCI)
 - Market assessment Mexico (BOCI)
 - Energy saving in greenhouses in Norway (Veksthus)



Sustainable innovation centre in Turkey



- **Role WUR: Design study sustainable greenhouse centre in Turkey (BOCI)**
- **Centre built in 2011 at Turkish geothermal energy company by consortium Dutch companies**
- **SeraCulture (2g@there) to increase horticultural co-operation Turkey - The Netherlands**






Sustainable horticultural research centre (VAE)

Goal: Making protected horticulture in Abu Dhabi

- > sustainable on water resources
- > increase of food safety and food security
- > Capacity building
- > Demonstration of technology







Malaysia: a greenhouse for lowland tropics

- **Introduce a greenhouse suitable for lowland tropical climate conditions**
- **Stakeholders**
 - Department of Agriculture
 - Growers
 - Asian Perlite Industries
 - Wageningen UR Greenhouse Horticulture
 - Centre for Development and Innovation








Co-operation subtropical greenhouses in Taiwan





- Goal: promote a sustainable Taiwanese greenhouse horticulture following a public-private approach involving business, research and government from the Netherlands and Taiwan
 - platform for networking for research, industry and government
 - developing a vision on sustainable horticulture in Taiwan, in particular for the orchid sector
 - designing roadmap for a public-private based innovation and demonstration centre in Taiwan





Improvement horticulture produce in Algeria


- Improvement of the existing horticulture sector and horticulture products in order to meet the rapidly growing income, population and demands of Algeria of horticultural products
- Project partners:
 - Vrian projects
 - Naktuinbouw
 - Wageningen UR Greenhouse Horticulture
 - PTC+
- The Netherlands Ministry of Economic Affairs, Agriculture and Innovation and the Ministère de l'Agriculture et du Développement Rural de l'Algérie (G2G)

Triple P in Egyptian Horticulture

- Increase the sustainability of the horticultural production in Egypt
- Entry points
 - water, nutrients, crop protection, post-harvest, quality
 - People, planet, profit
 - Realize incentives to change behaviour and obtain certain effects
 - Integrate over the value chain






GreenFarming East Africa (Kenya & Ethiopia)

- Provide solutions for profitable and sustainable business results
- 2g@there financed
- Stakeholders
 - 20 Dutch companies
 - Growers in Africa
 - AVAG, DLV
 - WUR
 - Min. of EA&I
- Themes:
 - Water management
 - Crop Management
 - Climate and Energy
 - Post Harvest & Logistics
 - Research and knowledge transfer
- 2010 - 2013





IPM in Ethiopia




- Ethiopia Netherlands Horticulture Partnership Programme
- Roses
 - red spider mite.
 - On-farm trials from 2007 onwards.
 - up-scaling to more than 60 ha at various altitudes; more anticipated
- Herbs: thrips
- Future plans: Tomato & white fly, pointsetta & shore fly, up-scaling crops, acreage, outdoor crops
- Training of staff and management
- Public – private partnerships






Vegetable production & consumption in Kenya

- Background:
 - Vegetable consumption in the Nariobi metropolitan region is low.
 - negative impact on the nutritional condition of the population, and on the production by smallholders.
- Objectives with regards to consumption and production:
 - Analyze the reasons for low levels
 - Determine the potentials
 - Define strategies to stimulate



Market assessment Mexico

- Objectives:
 - Description of the Mexican horticultural sector
 - Analysis of the technological levels and expected developments.
 - SWOT analyses of the Dutch supply industry and export competitiveness, also in comparison to other suppliers.
- Mission coming May
- WUR:
 - Wageningen UR Greenhouse Horticulture
 - LEI




Metropolitan Agriculture

- Objectives
 - **China** (Wuhan metropolis): Describe the role of agriculture, nature and landscape as park element between the increasing cities in an urban agglomeration and the possibility to use the open space in a metropolitan region for food production.
 - **Africa** (Addis Ababa metropolis): Map the effects of urbanization and the abandonment of the rural area population regarding food security. Deliver policy recommendations towards development cooperation.

Energy saving in greenhouses in Norway (Veksthus)

- Exchange knowledge between research, extension service and practice between Norway – The Netherlands
- Research on energy saving:
 - Make use natural light: energy saving greenhouse concepts
 - Make use of light quality: LED lighting, spectral selective greenhouse coverings
 - Improve pest management by modern light and temperature regimes






Wageningen UR Glastuinbouw

Innovaties vóór en mét de glastuinbouw

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