

COST Action BioGreenhouse

Overview and results

Rob Meijer Wageningen UR Greenhouse Horticulture

28th January 2016, Organic Producers Conference Bristol (UK)



Organic greenhouse horticulture in Europe



Organic Greenhouse horticulture in Europe

(2009)

<i>Country</i>	<i>ha</i>	<i>ha heated or frost free</i>
Belgium	32	20
France	500	0
Germany	150	50
Italy	1000	0
Nordic	46	46
Netherlands	100	85
Spain	1500	0
Switzerland	57	25
United Kingdom	80	30
Total Europe	3700	256
Israel	500	?
Canada, USA, Mexico	1050	?

Greenhouse Horticulture in Europe

(Sources: Eurostat 2007, Inventory 2009 and 2010)

Greenhouses vegetables Europe	100,000 ha
Organic greenhouses vegetables Europe	3,700 ha
Greenhouses vegetables Europe (2007)	100,000 ha
Greenhouses World (2010)	400,000 ha
Greenhouses World (2015)	470,000 ha

Spanish organic greenhouse vegetable acreage growing too fast?

Organic is booming, and Spanish greenhouse growers have also gotten word of this. Andalusia is the region with the biggest organic acreage in Europe. But the natural pastures and extensive productions like tomatoes are also counted among this 700,000 hectare organic acreage. From the total greenhouse acreage its estimated that around 4% is organic in Spain.

Organic 'on the side'

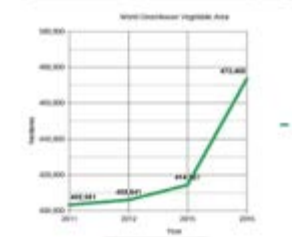
More and more cooperatives, like Unica, Vicasol and Canalex do organic 'on the side'. There are also large specialized companies, like Bisabor (170 ha) with a revenue of 20 million Euro. The company realizes an annual revenue increase of 25%. But smaller growers are also switching. For instance, Spanish grower



Global greenhouse vegetable area increased 14% over 2015

Over the past year dozens of new research and census reports have been released covering the global greenhouse vegetable industry. These reports are now summarized and referenced in a newly revised publication- [2016 World Greenhouse Vegetable Production Statistics](#).

World Greenhouse Vegetable Statistics- January 2016



Crops, Chains and Markets



Alleengroentepakket
← inhoud week →

€ 16,95 /week

kies je voordeel →



Situation O(G)H in EU

- Limited acreage but increasing
- Growing demand fresh vegetables
- Limited R and D efforts; no joint R&D agenda
- Limited exchange of knowledge
- Weak network Organic (Greenhouse) Horticulture
- *Improvement needed in:*
 - sustainability (energy, fertilisation, leaching, crop protection, water use),
 - productivity and
 - production



Building collaboration

- 2008: Modena : 16th IFOAM Congress



- 2009 Cologne



- 2010 Bleiswijk 1st Symposium



Within the framework of COST



COST Action FA1105

“Towards a sustainable and productive EU Organic greenhouse horticulture”

BioGreenhouse

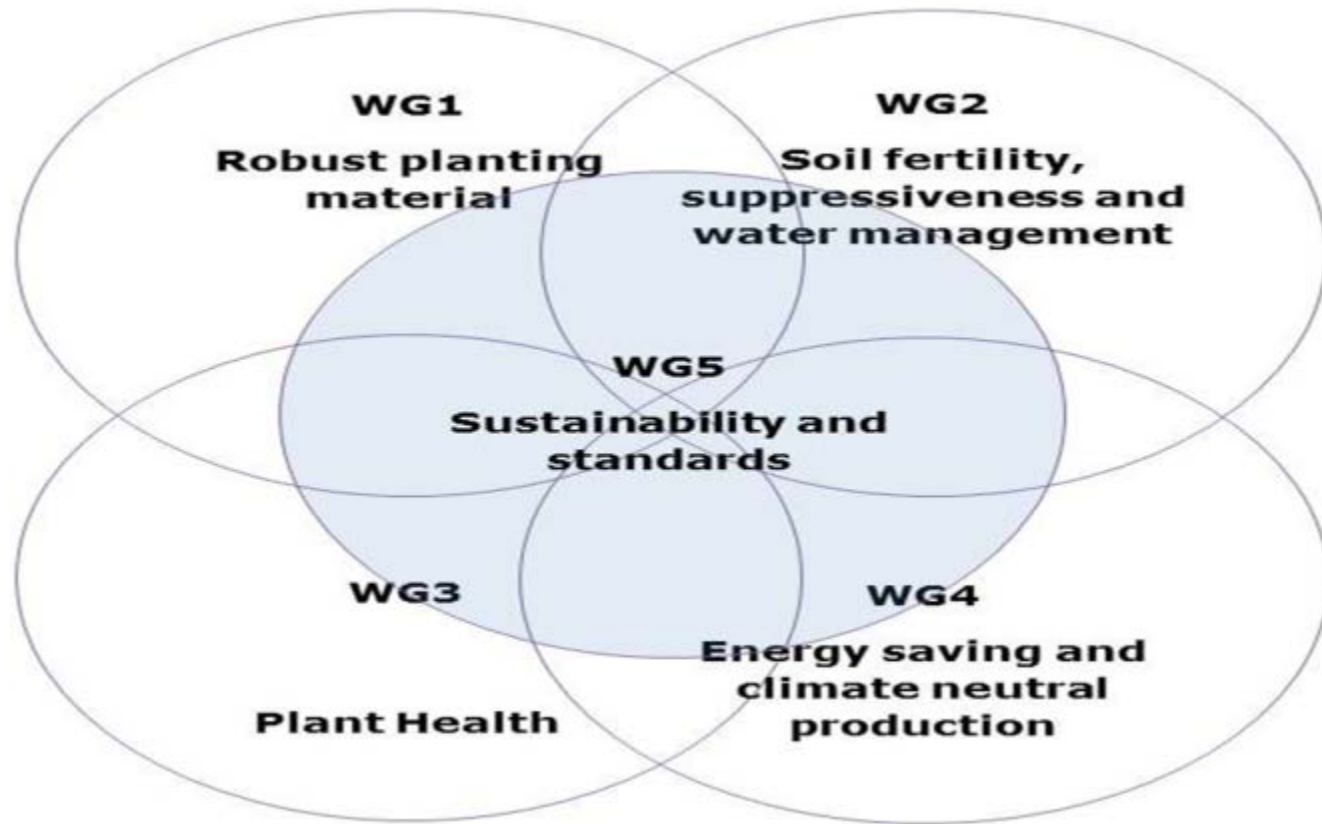
April 2012-2016

Network of 27 COST countries; 270 people

Action is Vehicle for strong network to/for

- Coordinating existing research for OGH
- Linking experts in an integrated approach
- Develop a common agenda
- Improve availability and access to knowledge
- Support the EU in standards development
- Submission of proposals

Topic areas in a integrated approach



Activities and Products

- Website: www.biogreenhouse.org and www.cost.eu/COST_Actions/fa/FA1105
- Conferences, Symposia in *Bucharest (2012)*, *Darmstadt (2013)*, *Avignon (2013)*, *Vienna (2014)*, *Izmir (2016)*
- Training Schools
 - Applied methods in plant physiology;*
 - Soil fertility, Suppressiveness & Water management strategies;*
 - Vegetable diseases, diagnosis and control*
 - Biological control of greenhouse pests*
- Exchange of students and scientists
- Contribution to R&D agenda: *TP Organics strategic agenda, Meetings Brussels and Milan for Horizon2020*
- Contribution to EU standards: *EGTOP report on organic greenhouse production*
Final Report On Greenhouse Production (Protected Cropping)
- Books, scientific articles/reviews, leaflets



HORIZON 2020

The EU Framework Programme for Research and Innovation

Scientific reviews and articles

- Conservation biocontrol (Biocontrol, 2014)
- Biobased resistance inducers (Biotechnology advances, 2015)
- Induced plant responses and role in pest management in GH (2016)
- Minerals and botanicals as biopesticides (2016)
- Alternatives of peat, their properties and use in the production of transplants (2016)
- Microbials: current status and prospective (2016)
- Seed treatment technologies for organic vegetable seeds (2016)
- Potential food hazards from OGH (2016)



Research review paper

Booklets, Books and Leaflets

Publications at the ISHS-BioGreenhouse Symposium
April 11-14 in Izmir (Tr)

- Handbook for composting and compost use in OH
- Soil fertility management in OGH
- Water management in OGH
- Factsheets on IPM instruments
- Factsheet on potential food hazards from OGH
- Sensible use of primary energy in OGH
- Guidelines for organic greenhouse experimentation
- Indicator toolkit for sustainability in OGH

Content 'Handbook on composting and compost use in OH'

- *Compost for organic greenhouses and nurseries*
- *Composting including compost types*
- *Microbiology and composting process*
- *Management of the composting process*
- *Hygienic aspects of composting*
- *Disease suppressiveness*
- *Compost versus digestate*
- *Compost for growing media*
- *How growers can assess compost quality and use*



Content 'Soil fertility management in OGH'

- Protected cropping and organic farming principles
- Soil fertility management tools
regulatory frame work, crop rotation, agroecological service providing crops, fertilizer requirements of crops and implications
- Main characteristics of protected cropping systems in Europe
Mediterranean less intensive systems, Mediterranean intensive systems, Northern and Central European high intensive systems, Northern and Central European less intensive systems
- Soil fertility management criteria: constraints
- Knowledge gaps and research needs

Content 'Water management in OGH'

- Water flows
- Water quality requirements
- Water resources
- Crop water demand
- Irrigation technology
- Irrigation management
- Interaction between irrigation, crop development and product quality
- Sustainability and irrigation water
- Knowledge gaps



Factsheet on potential food hazards from OGH

Considers

- *Safe vegetables and fruits*
- *Human health*
- *Animal Health*
- *Environment*
- *And physical, microbial and chemical hazards to OGH and highlights approaches for mitigating them*

Factsheets about IPM instruments in OGH

- Food sprays for predatory mites
- Food sprays for predatory bugs
- Bankerplants for aphid parasitoids and Aphidoletes
- Bankerplants for Entomophthora
- Companion plants for predatory bugs (mirids and anthocorids)
- Omnivore predators



**Omnivore predators
for biological pest control in greenhouse crops**

Factsheets on IPM instruments in OGH

- Conservation of lacewings in and around greenhouses
- Side-effects of pesticides
- Vegetation diversity in greenhouse surroundings
- How to integrate biopesticides in organic growing systems
- Semiochemicals, Lure & retain natural enemies
- Adapting climate and light for enhance biocontrol and products
- Induced plant responses and natural enemies
- Conservation of Coccinellidae in greenhouses
- Potential use current enemies against invasive species



Content 'Sensible use of primary energy in OGH'

- Regulations on energy use in OGH
- Energy use for heating
NW European/high tech, Eastern and Southern Europe
- Energy use for humidity control
- Reduction of energy requirement for climatisation
maximising solar collection function of greenhouse, increasing productivity of energy
- Indirect use of energy
- Replace fossil energy use by renewable energy
solar, wind, biomass, biogas, geothermic



Content 'Guidelines for experimentation in OGH'

- Trials in OH



- Key types of Experiments

Crop variety, Fertilisation, Container growing media, weed control, plant protection, economic evaluation, participative/on farm

- Guidelines for selected crops

Fruit vegetables, Leafy vegetables, Transplants, Herbs, Perennial fruits, Ornamentals

Content 'Indicator toolkit for sustainability in OGH'

- Life Cycle Assessment (LCA)
- Social Life Cycle Assessment (S-LCA)
- Public Goods Tool (PG)
- Social Impact Assessment
- Carbon Footprint Calculator
- Social Return on Investment Methodology (SROI)



Welcome to Izmir: see <http://www.oghsymposium2016.org/en/>

3rd INTERNATIONAL SYMPOSIUM ON ORGANIC GREENHOUSE HORTICULTURE
11-14 APRIL 2016 IZMIR, TURKEY



- For publications out of first hand
- To participate in the workshops in the technical program:
Market and food safety, Energy use, Soil fertility, Water management, Compost, Management of pests and diseases, Seed quality, Resilient growing systems, Innovations and Sustainability
- To exchange views with colleagues, experts, suppliers

Thanks and join
us in.....

*the organic
greenhouse event in
IZMIR*

