Challenges and opportunities in greenhouses and polytunnels for UK growers

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• AHDB Horticulture

• A view of the UK industry

• Opportunities

• Grower views
AHDB Horticulture

A Division of the Agriculture and Horticulture Development Board (AHDB)

Non-Departmental Public Body, funded through statutory levies.

Purpose:
To enable UK agriculture (incl. Horticulture) to become more competitive, productive, resilient and sustainable.

Focus for Horticulture:
Near-market research & development increasing emphasis on knowledge exchange

www.horticulture.ahdb.org.uk
Our Levy Payers

Growers across GB

8 crop sectors

Total income £7.02 million (2013/14)
  £6.539 million (93%) is levy
  £0.535 million non-levy

Levy is 0.5% of sales*
Threshold of £60k
*After deductions
Crop Sectors

- Soft Fruit: 35%
- Protected Edibles: 20%
- Tree Fruit: 8%
- Mushrooms: 8%
- Protected Ornamentals: 8%
- Bulbs and Outdoor Flws: 3%
- Field Vegetables: 8%
- Hardy Nursery Stock: 14%
Crop Sectors with *some* protected production

- Hardy Nursery Stock: 20%
- Mushrooms: 8%
- Protected Ornamentals: 8%
- Protected Edibles: 14%
- Soft Fruit: 8%
- Tree Fruit: 3%
A view of the industry

- Protected production estimated\(^1\) at 2000 ha
  - Protected Edibles – 818 ha
  - Protected Ornamentals\(^2\) – 821 ha
  - Soft Fruit – 222 ha
- Multi-crop use of space in many systems

\(^1\)– Rural Farm Business Survey 2013/14, \(^2\) – 2007 latest data Defra, BHS
## Protected cf outdoor production

<table>
<thead>
<tr>
<th></th>
<th>Area (ha)</th>
<th>Value</th>
<th>(£K/Ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Vegetables</td>
<td>130,089</td>
<td>1,009</td>
<td>8</td>
</tr>
<tr>
<td>Protected Vegetables</td>
<td>818</td>
<td>319</td>
<td>390</td>
</tr>
<tr>
<td>Outdoor Fruit</td>
<td>28,782</td>
<td>513</td>
<td>18</td>
</tr>
<tr>
<td>Protected Fruit</td>
<td>222</td>
<td>55</td>
<td>248</td>
</tr>
</tbody>
</table>
Location?

• UK wide

• Some clusters
  • Benefits of coastal light
  • Source of waste heat
  • Planning

* 2011 data
What do we have?
What do we have?

Diversity of structures and growing systems
Technology options - energy

Energy

Combined Heat and Power
Hot water for heating
CO$_2$ from flue gas (after cleaning)
Buffer tanks
Electricity …. Lights

Grower and energy manager
Technology options - energy

Biomass
  Incentives (RHI)
  Reduced fossil fuel use

Grower *and* energy manager
  Fuel supply
  Claiming RHI
  RHI compliance
  Maintenance
  Integration with existing system

Others
  Gas, Coal, Anaerobic digestion, Heat pumps, Waste heat…
Technology options CO$_2$ from biomass
Technology options automating tasks
Technology options  lighting
Technology options coating/cladding

Diffusing light
Scatter
Increased interception

Shading ‘whitewash’

Filtering light e.g.
Red/Far-Red
Blue / UV
Infra-red
Technology options

Environment

Screens

Air movement
Technology options measuring and monitoring

Air temperature
Humidity
$\text{CO}_2$

Plant temperature
Plant health
Volatiles
Disease spores
Summary

• Diversity of businesses in UK protected crop production

• Talented and technically competent sector

• Dutch lead innovation but adaptation often needed

• Labour, energy, light, smart technology, refining crop protection methodology………..