

Research needs of the horticulture and potato sectors

Resource Use Efficiency

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AHDB Corporate Business Plan 2011/14

There are a number of key cross-sector themes which emerge in this Corporate Business Plan:

Key Themes

The need to help producers and growers deliver greater environmental sustainability through efficient resource management of water, soils, fertilisers, pesticides, energy and waste, together with a greater understanding of measures that will reduce emissions of greenhouse gases and enable adaptation to climate change

Main Strategies

The core strategic work programmes are as follows:

Help levy payers produce in an environmental, social and economically sustainable way, focusing on water, soils, fertilisers, pesticides, waste and greenhouse gases.















Percentage of total irrigated area and irrigation water use in England by crop category (Weatherhead 2007)

Crop category	Irrigated area (%)	Water use (%)
Early potatoes	6	7
Maincrop potatoes	37	49
Sugar beet	7	4
Vegetables	28	27
Small fruit (soft fruit)	2	3
Orchard fruit	1	1
Grass	3	2
Cereals	9	3
Other outdoor crops and trees	6	5





BPEX









Annual water use - EA regions in England (M m3 a-1).

The proportion of the total contributed by the three largest sector categories of field irrigation, all livestock and glasshouse and nursery crops, are shown.



Land and water resource



In the future, higher summer temperatures and elevated CO2 levels should provide more favourable growing conditions. But reduced summer rainfall, coupled with an increased frequency of extreme events and higher energy and fertiliser costs, will inevitably threaten rainfed and irrigated yields. and Suitabilit Well 2010 Moderate Marginal Unsuited 2050 Adult Moderate Marginal

Source: PCL/Cranfield University















An example carbon footprint for processing potato production,

The energy component includes diesel used in the field and electricity for storage.







Nitrogen use on maincrop potatoes grown in Britain between 1990 and 2009.

Phosphate use on major arable crops grown in Britain between 1983 and 2006.

Source: BSFP







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N rate decision flowchart



Pesticide average inputs per crop in GB

(kg active substance applied per crop)



Estimated yield losses threatened by EU 91.414 impact on insecticides

















SCEPTRE Sustainable Crop & Environment Protection – Targeted Research for Edibles



HortLINK project (2010-14)

- Aim to assess the potential of existing and new pesticides and bio-pesticides to fill crop protection gaps arising from changes in EU pesticide legislation
- Targets high priority disease, pest and weed problems in economically important fruit and vegetable crops
- Underpinning for new product Approvals and development of integrated pest management (IPM) programmes
- Spin-off opportunities for ornamental crops























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CROP GENETICS





















- Fertilisers
- Diagnostics
- Monitoring

• Threats -> legislation e.g. SUD (IPM), WFD

•Pest and disease response e.g. to strobilurin, azoles



• Targeting -> waste reduction















Summary points

Marketable Yield - Land – Water – PPP's are key resource concerns

Productivity, profitability and sustainability are correlated; measuring sustainability is complicated – we need more reliable data and better metrics

□ There is need to recognise and value soil as a "non-renewable" resource

□ There are of "trade-offs" between different sustainability attributes – e.g. water use or biodiversity may "trump" GHG emissions (and *vice versa*)

Producing as efficiently as possible on the smallest footprint of land capable of delivering market requirements is the "greenest" way to deliver food

Genetic/genomic technologies are making a significant contribution to sustainable crop production











