



Horticultural
Development
Company

Grower summary

CP 64

Development of a water
strategy for horticulture

Final Report 2009

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Further information

If you would like a copy of the full report, please email the HDC office (hdc@hdc.org.uk), quoting your HDC number, alternatively contact the HDC at the address below.

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Headline

This project produced a water strategy for the HDC to identify future research and communications requirements for growers in water application, scheduling and resource management.

Background and expected deliverables

(i) Context and project rationale

Water is an essential component of most horticultural production systems, and serves to deliver continuous supplies of premium quality produce to the major multiples. Horticultural irrigation represents only a small component of total water abstraction nationally, but is concentrated in the driest parts of the country at the driest times of the year when resources are scarcest. However, the demand for water is rising and yet many catchments in England are over-abstracted. The Environment Agency is addressing this through its Restoring Sustainable Abstraction Programme (RSAP) and Review of Consents (RoC) under the Habitats Directive. However, these actions represent only the tip of a growing conflict between water for horticulture, the environment and other users. The longer term threat of climate change, with hotter, drier summers, will exacerbate the problem. Growers will also need to deal with greater variability and magnitude of extreme events, including both water shortage (increased likelihood of droughts) and water excess (localised flooding, and crop damage associated with intense, short heavy rainfall events).

(ii) Expected project outputs

The expected deliverable from this study was a water strategy for horticulture that would define the key priorities and actions at both grower and industry levels, and the actions required (i.e. research, communication, and knowledge transfer) over the next 5 years to ensure horticulture receives a fair share of available water resources and uses it in a more efficient and sustainable manner.

Summary of the project and main conclusions

(i) Project objectives and approaches

The project combined desk-based research, structured interviews with key informants, farm visits, computer modelling and GIS mapping. The specific objectives of the project were:

Objective 1: To identify the key 'grower' water related priorities and actions, and to review and assess the extent to which each priority was relevant to each crop sector panel.

The **grower focus** concentrated on three questions relevant at farm and field levels:

1. What are the main application equipment and technology issues?
2. What are the in-field soil and water management (scheduling) issues?
3. What are the water resource (quality and quantity) issues?

A matrix was produced for each crop sector identifying the key priorities and actions. The individual matrices were then combined and used to rank the relative importance of each priority across the sectors, to identify opportunities for cross-sector collaboration.

Objective 2: To identify the key 'industry' issues, focussing on initiatives to improve water management, raise the profile of horticultural water resources to external stakeholders, promote collaboration and develop a knowledge base for water.

The **industry focus** concentrated on three different questions:

1. What specific actions should the HDC undertake to promote water efficiency (e.g. communication and knowledge transfer activities)? These actions focus on 'looking downwards' towards the grower base;
2. What specific actions should the HDC undertake to raise the profile of water for horticulture outside the industry, helping inform government, the public, regulatory agencies, and others (stakeholder engagement, public relations, profile raising)? These actions focus on 'looking upwards' beyond the horticultural industry;
3. What specific actions should the HDC undertake to develop a more extensive industry knowledge base on water management (e.g. professional development, training, technology transfer, education needs)? These actions help businesses improve resource efficiency and maintain competitiveness by raising the level of skills, knowledge and understanding of water and water management within the industry.

This involved a review of initiatives taken by other organisations and consultation with industry experts, particularly those involved in water-related research on how best the HDC could engage with the relevant stakeholders to promote better water management within horticulture.

(ii) Project conclusions

Key issues at grower level

A detailed review and assessment of the key priorities and research actions needed for each of the seven HDC sector panels has been completed. A summary matrix of R&D priorities has been produced (Table 1). All sectors, except mushrooms, registered significant water research needs of varying priority. As expected, the matrix shows some R&D priorities are common to several crop sectors creating opportunities for cross-panel collaborative work and economies of scale for the HDC. The most common priorities include addressing concerns about diffuse pollution, water harvesting and re-use, scheduling, and understanding the impacts of water regulation. The mushroom sector, although not a major water user, also registered diffuse pollution and water harvesting as important areas for further research. The role of benchmarking water use within key crop sectors (e.g. soft fruit) should also be considered as a highly beneficial tool for improving water efficiency and productivity.

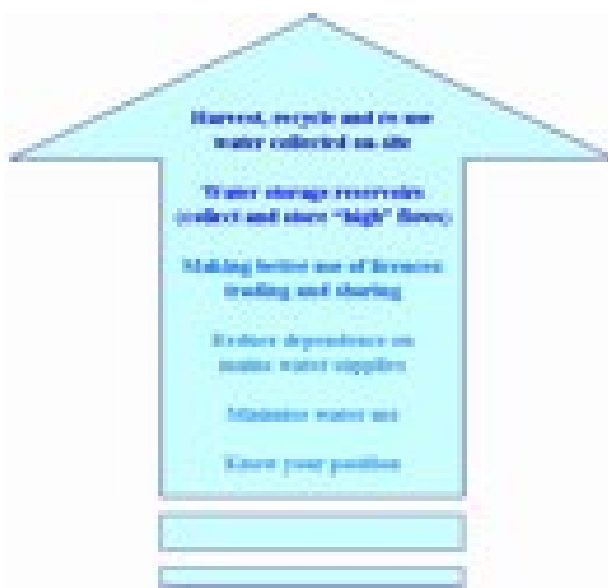
It is also vital that holdings make best use of all the water resources available to them. This reduces water needs, minimises the impacts of water abstraction on others, and helps retain existing licences and justify new applications. The ideal is that businesses should become "self sufficient" in their water consumption. Growers should base their best management practices for irrigation on a 'hierarchy of water resource actions' (Figure 1). Further details on each of the 6 key actions that relate to this hierarchy is given in the Science section.

Key issues at industry level

At an industry level, the HDC needs to ensure that all horticultural holdings in England and Wales have access to adequate, reliable water supplies, which cause minimal environmental impact, and which are used efficiently and effectively. To achieve

this, the HDC needs to broaden its traditional “downward look” towards its grower base and begin to “look upwards” to better represent the horticulture industry in the ongoing debate over how limited water resources will be allocated in the future. Looking ‘downwards’ requires focusing on three themes of which R&D is a part. The first is ‘*making best use of available water*’ – following the ‘hierarchy of water resource actions’ to reduce water needs, minimise impacts of water abstraction on others, and working to retain existing licences and justify new applications (Figure 1).

Figure 1 Hierarchy of water resource actions for horticultural growers.



The second theme is ‘*developing a knowledge base*’. Growers need access to the latest information to remain competitive, not just R&D developed in the UK but also the wealth of knowledge available internationally. Growers should not reinvent the wheel unnecessarily. The final theme is ‘*working together*’. Some growers in water short catchments have already formed Water Abstractors Groups (WAGs) to protect their water rights and improve dialogue with the Environment Agency and other regulatory agencies. Others are being encouraged to do so. As competition for resources increases the need for more WAGs to form will become more obvious, and the HDC should help facilitate this process.

Looking ‘upwards’ beyond the horticultural industry cannot be ignored. The HDC, on behalf of its growers, will need to fight its corner to make a strong, coordinated case for a fair share of the nation’s water resource for horticulture. It will need to raise the profile of water for horticulture outside the industry – informing government, the public, regulatory agencies, and other stakeholders of how important and valuable water is for horticultural production. This is a substantial task as the ‘voice’ of water for agriculture and horticulture is barely audible above those of water companies and environmental organisations. The public perception of food and farming is of an industry that typically wastes water. There seems to be little public appreciation of how water underpins this high value industry, how well it is regulated, how efficiently it uses water, and how important it is to securing food production and rural livelihoods in England and Wales. The HDC therefore needs to take a more proactive stance in protecting the water interests of the horticultural industry working with other levy bodies.

Although looking 'upwards' will be relatively new territory for the HDC, it is not something that it needs to do alone. Other organisations that support agriculture face a similar challenge – the Potato Council, NFU, CLA, UK Irrigation Association and others. At the moment each organisation pursues its own water agenda which, although laudable, tends to be disconnected. So at best they are patchy and at worst lead to unnecessary duplication of effort, inefficient use of limited resources and a fragmented and potentially weak lobby for the critical resource on which each organisation depends. The obvious answer is for all these organisations with a vested interest in water to work together. This may be easier said than done but if there is the political will it can be done and it would produce a "win-win" situation with many benefits. Since the formation of the AHDB, the HDC and Potato Council are now institutionally much closer and together represent the majority of irrigation interests in England and Wales. The NFU and CLA could provide the political drive and the UKIA brings a range of technical expertise and industry support to the table. With growing concerns over water availability, this new water strategy could be the catalyst that brings together these key organisations to create a 'champion' for water for agriculture and horticulture that can drive the water agenda at the highest levels and provide increased water security for all farmers and growers.

Financial benefits and action points for growers

There are no direct financial benefits or action points for growers associated with this work, as it was intended to provide a strategic framework for implementing a set of water actions, including promoting cross-panel collaboration by the HDC. However, the strategy does highlight a number of key options at farm level including the 'hierarchy of water resource actions' which growers should implement, to improve security of their on-farm water supplies.

Table 1 Summary of key water priorities and their relative importance (* = low; ** = medium; *** = high) within each HDC crop sector.

Key priorities	BOF	FV	HNS	M	PC	SF	TF
Understand/quantify links between poor irrigation uniformity, crop production and profitability (yield & quality)	*	****	**	*	**	***	*
Improve efficiency of irrigation application equipment (energy, labour and water)	**	****	**	*	**	**	*
Evaluate new equipment and technologies and options for switching systems	**	**	*	*	*	*	*
Improve understanding of water harvesting and water reuse options for horticultural irrigation	**	*	****	*	**	**	*
Improve irrigation schedules for specific crop types and production systems (including monitoring/auditing)	*	**	**	*	****	**	*
Improve soil management to understand the links between soil variability, soil water and crop production	*	**	*	*	*	*	*
Support the development of improved scheduling technologies (wireless etc)	*	**	****	*	**	***	**
Improve knowledge of the impacts of new water regulation on water availability and reliability	**	**	**	*	**	**	**
Improve knowledge of the impacts of irrigation on diffuse pollution including nitrate leaching, phosphate and pesticides	***	****	*	**	****	***	**
Improve knowledge of the risks associated with low irrigation water quality on crop production	*	**	*	*	*	***	**
Improve knowledge on alternative water sources (e.g. grey) and impacts on water quality and suitability for production	*	*	**	**	*	**	*

BOF = Bulbs & Outdoor Flowers
FV = Field Vegetables
HNS = Hardy Nursery Stock
M = Mushrooms

PC = Protected Crops
SF = Soft Fruit
TF = Tree Fruit