

**Project title:** GrowSave; an Energy & Resource Efficiency Knowledge Transfer Programme for the PC Sector

**Project number:** PE/PO 011

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**Report:** Year Two, August 2014

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**Location of project:** Farm Energy Centre, Kenilworth, CV8 2LS, commercial nurseries and various meeting venues.

**Industry Representatives:** Neal Ward, Roly Holt, Chris Need & Colin Frampton

**Project start date:** 1<sup>st</sup> June 2012

**Project end date:** 31<sup>st</sup> July 2014

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## **AUTHENTICATION**

We declare that this work was done under our supervision according to the procedures described herein and that the report represents a true and accurate record of the results obtained.

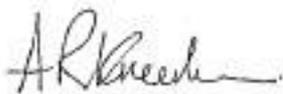
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## Headline

The GrowSave project has delivered a programme of technology transfer and information dissemination activities to HDC levy payers that has provided up to date information about energy saving and energy efficiency. Between June 2013 and July 2014 the activities included four meetings / seminars, three newsletters, four technical update publications, one technical conference and regular information updates via the GrowSave website.

In addition one additional technical meeting and a mini conference will be delivered on 25<sup>th</sup> September 2014 and 4<sup>th</sup> November 2014 respectively.

All of the activities have been designed to encourage growers to take energy saving actions in their own business.

## Background

GrowSave is the HDC communications platform that disseminates energy saving information and supports the implementation of energy saving technologies by the UK protected cropping (PC) sector. The programme has run for 7 years, is delivered by the Farm Energy Centre (FEC) team, and steered by a group of edible and ornamental growers. The format of outputs and the project programme are deliberately kept flexible. This is to allow the project to respond to the energy issues that the industry is facing at any given time.

This phase of the project started in June 2012 and ended in July 2014. This report provides an update on the activities carried out in the second year of this phase of the project.

## Summary of Work Completed

The following table summarises the deliverables in the second year of the project and compares them to the work plan specified in the contract:

Activity Area	Contracted Activity	Delivered Activity
Website	Provide at least one update per week	News stories added as per contract. Also "blogs" from FEC energy specialists added on a regular basis
Grower meetings & seminars	Deliver four meetings / seminars	<p>The meetings and seminars delivered were:</p> <ol style="list-style-type: none"> <li>1. Biomass energy for protected edible crops – 30/07/13</li> <li>2. Energy topics update for protected salad vegetable growers. TGA Conference 26/09/13</li> <li>3. Visit to Evesham Vale Growers / R&amp;L Holt Anaerobic Digester. 08/04/14</li> <li>4. Dutch Energy Saving Methods – The New Way of Growing. 30/04/14</li> </ol> <p>In addition a speaker is being provided for the BOPP AGM / Technical Seminar on 25/09/14 to contribute to a session on biomass heating systems.</p>
Energy benchmarks	Deliver information and data via the GrowSave website to allow growers to do energy use comparisons	Done via the Managing Energy section of the website where information is given on comparison methods using degree-days. Degree-day data and ambient temperature data given to allow comparisons to be made
Energy News	Deliver three editions of this energy specific newsletter	Delivered to contract with three editions completed in Nov 13, Mar 14 and May 14.
HDC News Columns	Deliver columns of approx. 750 words in each edition of HDC News	Delivered to contract.
Technical updates	Publish five technical updates covering topics relating to recent energy developments	<p>Technical updates have been delivered on the following topics;</p> <ol style="list-style-type: none"> <li>1. Renewable Heat Incentive Update</li> <li>2. The ProSelect GC6 System for CO<sub>2</sub> Recovery from Biomass Boilers.</li> <li>3. Report on a Growers Study Tour to Canada<sup>1</sup></li> <li>4. Diffuse Glass for Greenhouses</li> </ol>
Study tour / conference	Deliver one study tour or technical conference	<p>"Sustainable Greenhouse Production Conference – Saving Energy &amp; Managing Water" was held on 29/01/14</p> <p>"Energy Saving Update Workshop – LED R&amp;D and the Green Growing Project" to be held on 06/11/14.</p>

<sup>1</sup> Note that, because of the material and detail included in the technical updates labelled 2 & 3 in this list, only four updates have been delivered.

## Description of Activities

The activities of the GrowSave project were discussed and planned with the grower coordinators at the advisory group meeting held on 19<sup>th</sup> September 13. In addition regular contact was maintained with industry groups including the TGA, CGA, PTG and BPOA. These industry inputs formed the basis of the work programme described here.

## Website

The project website has been continually updated with articles and news items. In addition reports from GrowSave events have been posted together with any associated hand-outs or presentations.

There were 9,900 website visits between 1<sup>st</sup> June 13 and 31<sup>st</sup> July 14. New visitors accounted for 7,207 (73%) of these visits. 4,325 website visits came direct and 3,907 were directed via Google.

The number of visits to the website has increased significantly over the period covered in this report. For the period 1<sup>st</sup> June to 31<sup>st</sup> May the website received 8,564 visits in 2013/14 compared to 1,635 visits in 12/13. This increase indicates that the website is now being used more frequently by growers as an energy information source.

The top five most popular topics for visitors were:

Topic	No. of Visits
GrowSave home	3,729
Energy events	854
Lighting	751
Energy saving	710
Renewable energy	490

The top five most popular subject pages were:

<b>Page</b>	<b>No. of Visits</b>
LED lighting	620
Sustainable greenhouse production conference	263
Biomass heating	213
Thermal screens	153
Canada Study Tour	149

## **Meetings and Seminars**

The topics for seminars were decided based on grower demand and the guidance given by the project advisory group. Where possible, events were held that would attract both edible and ornamental crop growers.

The government's Renewable Heat Incentive (RHI) and Feed in Tariffs (FiT) have continued to raise growers' interest in using renewable energy. Biomass heating systems have again been of particular interest, but growers have also been keen to find out more about some more complex and diverse technologies such as anaerobic digestion (AD)

Because of this level of interest, two meetings on renewable energy technologies were organised.

1. A meeting on the options for biomass heating systems was held in the Lea Valley. This event particularly targeted PC edible crops and it considered system selection, boiler sizing, fuels and funding options. Delegates were particularly interested in the funding solutions based on zero capital outlay that some suppliers were offering. 16 growers and 4 manufacturers / equipment suppliers attended the event.
2. A visit to see the AD installation at the Springhill Nursery of R&L Holt Ltd. This event was organised in conjunction with the Tomato Working Party and 22 delegates (21 growers and 1 consultant) came to the event.

In addition to the above renewable energy topics have been supported at two grower association events. The first event was the 2013 TGA Conference (held on 26<sup>th</sup> September 13) where the financial benefits of the RHI were reinforced to delegates alongside a number of other energy topic updates. The second event is the 2014 BOPP Technical Seminar which will be held on September 25<sup>th</sup> 2014. GrowSave are supporting this event by contributing to their sessions looking at the practicalities of using biomass heating on ornamental nurseries.

Following on from the greenhouse sustainability conference (see below), growers wanted to find out more about how the Dutch energy saving technique known as "the new way of growing" was being implemented in practice. As a result a one day training course on the topic was held. The event was delivered by a speaker from the Dutch training & consultancy company Green Q and it was attended by 12 delegates (8 growers, 3 manufacturers/suppliers and 1 consultant).

## ***Energy Benchmarks***

GrowSave provides information to allow growers to benchmark the performance of their nurseries against other similar facilities. However, factors like the wide range of protected crops grown in the UK and the existence of some established industry initiatives like the Tomato Working Party means that providing energy use benchmarks is not feasible under the current project.

Two of the largest factors affecting the energy use of greenhouses are the prevailing weather conditions (and most particularly the ambient temperature) and operating temperature. Therefore, if information on these two parameters is used by growers alongside their own energy use data they can compare their own performance against others.

Throughout the project the GrowSave website has provided weather data (temperature and solar radiation) and degree-day information so that growers can use this to carry out energy performance benchmarking.

## ***HDC Energy News and HDC News***

Three editions of HDC Energy News have been produced. They have been delivered as inserts with HDC News. The content of each of the editions focused on topical stories and information at the time of publishing. In all cases the stories were designed to appeal to as wide a cross section of HDC levy payers as possible.

A short (500 to 750 word) column with topical news on either the GrowSave project or energy related projects has also been included in HDC News. Topics covered include news on upcoming events, reports of recent meetings, information on the progress of HDC energy projects and general energy developments.

## ***Technical Updates***

The technical updates are short (one or two page) documents designed to summarise information about the latest energy topics and techniques. They can provide information about topics such as new commercial developments or latest research results.

As previously highlighted, growers continue to be keen to exploit the potential funding for renewable heating systems that's available from the RHI. In response to this interest, two updates relating to this topic have been produced. These covered;

1. Changes in the RHI – this covered what technologies now qualify and what are the latest tariffs.

2. The ProSelect GC6 System – this is the first commercially available system that allows biomass boiler flue gases to be used for CO<sub>2</sub> enrichment.

Diffuse light has been of interest for many years now and the recent developments in glass with diffusing properties were covered in an update.

A report on a growers study tour to Canada that took place in February 2014 was produced. This visit to Ontario and British Columbia that was part funded by Defra's RDPE program was organised under the GrowSave banner. Because of the quantity of information to be communicated this report did not follow the GrowSave Technical Update format. However, the 14 page report communicated simple take home messages from the visit that are relevant to growers in the UK.

### ***Energy Conference / Study Tour***

A one-day technical conference on the subject of sustainable greenhouse production was held on 29<sup>th</sup> January 2014. It was attended by 45 delegates.

The event covered recent R&D and technology transfer that has been carried out in Holland to improve the sustainability of greenhouse production. The focus of the event was on energy saving / energy efficiency, but some information was also given on reducing water use.

All of the speakers at the event were from Dutch organisations that had been involved in the R&D programmes.

Discussions have also continued with Carl-Otto Ottenson of Aarhus University in Denmark with regard to an event covering the recent energy saving work he has conducted. Topics discussed include climate controls, lighting (particularly LED developments) and renewable energy. The topics are most likely to attract growers of ornamental crops, but some edibles growers will also benefit as Aarhus University is also involved with R&D on protected edible crops.

Although initial discussions concentrated on the possibility of taking a growers study tour to Denmark, the availability of suitable dates ruled out this approach. However, through Aarhus University's involvement in a Europe wide energy saving project, Carl-Otto has agreed to deliver a seminar in the UK that will be held on 6<sup>th</sup> November. The event will cover a range of topics including LED lighting, developments in humidity control and the German Zineg project that is looking at the performance of a range of new energy saving technologies.

## Financial Benefits

Estimates are that the energy costs for the PC sector are currently £125 million/year. CCL discount available to the sector is worth £22 million over the term of the current phase that runs for 10 years until 2023. For this discount, growers will need to achieve 14% energy savings compared to 2008. Therefore, providing information to growers so they can make the savings needed to achieve the imposed savings targets has significant financial value.

Assuming that this programme has helped stimulate a modest 5% saving over just 10% of the protected cropping sector, the savings have been over £300,000.

## Summary & Highlights

1. The GrowSave website has continued to be regularly updated with the latest energy information for growers. Also, the materials from GrowSave events such as technical meetings have been made available via the website. Statistics show that there were 9,900 website visits over the period covered by this report and the most popular topics included LED lighting, biomass heating and thermal screens.
2. A series of seminars and grower meetings have been delivered. These have concentrated on working with growers to identify the best energy efficiency solutions for their business. Renewable energy, biomass heating and the RHI have feature highly in these events.  
A meeting specifically looking at the implementation of the Dutch "new way of growing"
3. A one-day conference on the subject of sustainable greenhouse production was attended by 45 delegates. This event concentrated on the outcome of recent R&D and technology transfer that has been carried out in Holland.
4. Four Technical Updates have been produced which give information on some of the latest developments in greenhouse energy saving. Again renewables, biomass and the RHI has featured here alongside diffuse glass and the outcome of a growers study tour to Canada.