

# Information at your fingertips with CropRecord™ and CropAdvice™

Elly Nederhoff & Bert Houter  
CropHouse Ltd, New Zealand  
Elly@CropHouse.co.nz  
Published in the Grower 63(2), 2008, p. 38-40

Most greenhouse growers feel the need for continuous improvement to cover ever-increasing costs. To improve the net profit, a grower can reduce the costs, or increase the production, or do both. Or to improve energy efficiency, a grower can reduce the energy input, or increase crop yield, or both. Finding out where improvements can be made requires comparing numbers and analysing figures. This article is about 'crop registration' or 'crop-recording' (as we like to call it). This is a method for collecting and analysing data and helping decision making. This article is also about applying knowledge to achieve improvements. In a project funded by HortNZ and MAF-SFF we developed two products: a spreadsheet called CropRecord™ and a website called CropAdvice™. These are great tools for growers in New Zealand who want to increase the yield or reduce the energy input and other costs, thus improving their energy efficiency and net profit. These systems are now available.

## Introduction

Some years ago we did a project on *improving energy efficiency in greenhouses*, funded by HortNZ and MAF-SFF. We identified and reported many techniques for improving the energy efficiency. One approach was different from the other techniques, namely improving energy efficiency by enhancing the *yield per amount of energy input*. This can be achieved by increasing the production without increasing the energy input. We suggested doing some work in this field. HortNZ and MAF-SFF then agreed to fund a second research project, aiming at *improving energy efficiency by improving the production*. This is now nearing completion.

## Project

The project on *Improving energy efficiency by improving production* consisted of three parts: (1) Field work, (2) CropRecord and (3) CropAdvice. We started with testing growers' ideas and checking our own ideas. Our ex colleague Roelf Schreuder was taking care of the first beginning of this project. It turned out that growers agreed with our ideas of crop-recording and saw the benefits of it. It was also clear there was no good system for recording plant measurements as well as detailed data on energy, water, nitrogen and other items.

Subsequently we focused on developing a practical crop-recording system that would work for NZ growers. Roelf Schreuder left us, and Bert Houter came on board to man this project. He made a draft crop-recording system in Excel (spreadsheet), which we later named CropRecord™. The system was then tested with the help of eight greenhouse vegetable growers, some in Auckland and some in Christchurch. They helped decide which plant measurements were practical, and which recordings were relevant. Most of them have been using CropRecord for two growing seasons or part of it. Thanks to these growers we are convinced that the systems are practical and robust.

The third focus was on 'knowledge & information'. Growers wanted to learn about plant balance, plant management and plant steering. They also wanted to know more about optimal use of inputs such as energy, water & nutrients. We wrote new texts that we published as articles in the Grower, and also used these texts to build a website. Many articles and much more information can be found at [www.cropadvice.co.nz](http://www.cropadvice.co.nz) (called CropAdvice for short). CropAdvice is a source of knowledge and information, and is also meant as a guideline for CropRecord.

### CropRecord

The principle of crop-registration (crop-recording) was developed in the 1980s/1990s in Europe. Nowadays it is common practice in most modern greenhouse operations. It involves collecting detailed measurements of plant growth and growing conditions and entering these into a computer programme. The new CropRecord™ is developed especially for greenhouse vegetable growers in NZ. It is a spreadsheet that runs on the grower's computer (actually PC). It facilitates recording information about the plants (e.g. plant growth, development, production) as well as about 'inputs' such as growing conditions, energy, water use, nitrogen and more. To obtain the plant data, the grower must take plant measurements every week. This in itself is very useful because the grower then accurately 'reads' the plants every week. The plant measurements and other information are typed into the relevant worksheets of CropRecord. As a result CropRecord then displays a series of tables and graphs. These assist the grower to better understand the plants, e.g. the state the plant is in (balanced, vegetative or generative), plant growth rate, development rate, production, and the effect of growing conditions and inputs on plant performance. It has a strong section to record energy use, either gas, coal, oil or other fuels.

CropRecord was primarily meant for tomatoes and capsicum, but can also be useful for other greenhouse grown crops. It contains basic recording and presentation facilities for cucumber, and blank fields for 'other crops'. It can be made more specific for particular crops.

### CropAdvice

CropAdvice is the name of a website ([www.cropadvice.co.nz](http://www.cropadvice.co.nz)) with information for NZ greenhouse vegetable growers. It is designed to assist growers to do crop-recording with CropRecord. So the first 'chapter' explains how to do plant measurements and other recording. The second 'chapter' is about crops, and is split into tomatoes, capsicum, etc. You will find information on how to recognise generative or vegetative plants, and how to correct them. There is also information to help interpreting the data that are recorded, and helps understanding graphs and tables produced by CropRecord. The following chapters of CropAdvice contain valuable information, on growing conditions, greenhouse climate control, and a lot on energy. CropAdvice also contains articles that have been published previously, both on plant management and energy. Other articles will probably be added later. Like CropRecord, also CropAdvice was primarily meant for tomatoes and capsicum. However, both are helpful for other greenhouse grown crops too.

### Benefits

CropRecord and CropAdvice are unique systems, that were developed especially for the NZ greenhouse industry. CropRecord and CropAdvice together facilitate data recording and finding information. They can assist making the best decisions on climate control, irrigation control and plant management. Recording and storing important data is very helpful when you want to see what you did in previous years, so you can learn from good and bad actions. CropRecord replaces all the logbooks, print-outs, notes and other loose pieces of information.

An important part of doing crop-recording is taking the weekly plant measurements. This is an effective way to check plant growth and development. Subsequently looking at the graphs produced by CropRecord will help you see trends and links that you would not detect otherwise. You can determine whether the plants are in balance or too generative or too vegetative. CropAdvice then offers guidelines for steering the plants in the required direction. CropRecord also predicts the production (for tomatoes only).

### How to register

CropRecord™ and CropAdvice™ were developed for growers who are member of HortNZ, and for their consultants and other interested parties in NZ. Registration is via internet. Go to [www.cropadvice.co.nz](http://www.cropadvice.co.nz), and click on 'register here'. The spreadsheet CropRecord can be send to you by email. You can request it via the website [www.cropadvice.co.nz](http://www.cropadvice.co.nz) under the heading 'CropRecord'. Or you can send us an email at [info@cropadvice.co.nz](mailto:info@cropadvice.co.nz) to request CropRecord directly. It will be emailed to you, with basic instructions of how to install it. Further instructions are found on CropAdvice.

Like all computer-based systems, CropRecord™ and CropAdvice™ have the potential to grow and develop further. Both can be widened (to cover more crops and more fields) and deepened (to give more detailed information). Your feedback will assist us in improving and expanding the products.

**Acknowledgements:** *Horticulture New Zealand (fresh tomatoes product group) and the MAF Sustainable Farming Fund (MAF-SFF) are acknowledged for funding this project. We also thank the many growers who were very helpful in developing and testing CropRecord and CropAdvice.*