

Growers' experience with CropRecord

Elly Nederhoff & Bert Houter
CropHouse Ltd, New Zealand

Elly@CropHouse.co.nz

Published in the *Grower* 62(3), 2007, p. 28-29

Funded by Horticulture NZ and MAF Sustainable Farming Fund

A new system called *CropRecord* and an accompanying manual and advisory system called *CropAdvice* will be available to greenhouse growers in NZ at nominal costs. *CropRecord* is a tool for 'crop recording', also known as 'crop registration'. It has been tested in this growing season (2006/2007) by six growers. They are content with what they got and say they will definitely use *CropRecord* again next year. First we briefly describe what the systems can do, and then report the growers' experiences.

CropRecord & CropAdvice

CropRecord is a spreadsheet in Excel for recording data such as plant growth, production, growing conditions, energy, water use, nitrogen and 'other data' in a greenhouse. A series of plant measurements are defined as a method to 'read' the plants accurately. The second system, *CropAdvice*, explains how to use *CropRecord* and how to interpret the data. It contains information on plant control, for instance how to recognise generative or vegetative plants, and how to correct them.

CropRecord & CropAdvice together are tools for improving the production, energy efficiency and profitability of a greenhouse crop. Recording the inputs and output of the production system will give you tables and graphs, showing overviews and trends. The plant measurements were developed for tomatoes and capsicum, but the systems are helpful for other greenhouse-grown crops too.

CropRecord and *CropAdvice* are developed by Technolutionz with funding from Horticulture NZ (fresh tomato produce group) and MAF Sustainable farming Fund. The knowledge comes from a broad knowledge base in the Netherlands, where crop registration originates from. Technolutionz staff were once part of the wider research teams in the organisations involved.

Growers tests

CropRecord has been tested by six growers in the 2006/2007 season, starting at planting and ending in the next few months. We asked four of them to share their experience. Gaven Naylor in Waiuku grows capsicums. He had already recorded quite a bit in the past, using various systems and spreadsheets on his PC. Gaven tested *CropRecord* in parallel with data registration that he used to do already. Tim & Peter Mundy in Christchurch grow tomatoes. Previously they looked back at old data stored in their climate control computer. In the past eight months, they recorded climate data as well as plant measurements in *CropRecord*. Cherry tomato grower Peter Fausett in Pukekohe had done a bit of registration in the past, and in the past season he trialled *CropRecord*. Capsicum grower Geoff Shadwell of Christchurch had not done any crop recording before, but he had the good habit of making accurate notes in a QA diary. The past season was his first encounter with plant measurements and recording. They all use *CropRecord* to improve their bottom line. As Gaven puts it, his aim is to drive the crop harder, be more efficient, and earn more money.

Getting started

When asked if it was hard to get started with *CropRecord*, Gaven says he familiarised himself fairly quickly with *CropRecord*. His previous experience with registration made it easy. Peter says that he needed the help that Bert Houter gave him in the beginning, since he did not know excel. Now he finds the programme very clear and easy to use. Geoff had little experience with plant measurements and Excel spreadsheets. The software looked difficult in the beginning, but he learned it by using it. Geoff says discipline is important as he tries hard to do his recording every week on time. Also the Mundys were new to crop recording, but they too found that *CropRecord* was easy to master.

Time required

All growers say crop recording is not difficult, but it takes commitment time. Definitely, it's time well spend. For Gaven, the plant measurements take about 30-40 min each week, and data entry takes 15 minutes. Another 45 minutes is needed for entering climate data and other data. It becomes a burden if you let it pile up for some weeks. Gaven includes two staff members in the *CropRecord* tasks, one specialising in irrigation and another in plant measurements. Staff enjoy crop recording, and take ownership of it. It helps them to look better at the plants.

The Mundys have one dedicated person doing the plant measurements, which takes about half an hour. Another person deals with climate data. Unfortunately their climate control computer does not produce the desired average weekly temperatures etc. So they have to calculate these, which is a tedious job. This, plus data entry, takes them 1½ hour a week.

For Geoff, since it became routine, the time for the plant measurements is about 30-45 minutes. Geoff has the same climate control computer as the Mundys, so he too has to spend extra time calculating average values. Peter records two greenhouses. The plant measurements take about 45 min per house. Entering all his data takes another 30-45 minutes.

Most growers write the plant measurements on a pre-printed sheet and enter them into the computer afterwards. Next year Gaven wants to put *CropRecord* on a laptop. This can be taken into the greenhouse, so the data can be entered directly.

Use selectively

Most growers use *CropRecord* selectively. Most use the pages 'plant measurements' and 'climate data', while some also use the pages 'energy', 'water', 'nitrogen' or 'logbook'. The logbook page is used for noting actions and events such as pest, diseases, spraying, ipm, or technical hiccups. Peter says *CropRecord* allows you to record a lot, but you use only what you want. You can even 'hide' any parts that you don't want to see. He finds ample recording useful, as it brings him up to a new level of information. For instance he never paid attention to energy, although he worried about the increasing price. By using *CropRecord*, he now monitors energy use, and sees how he can influence it.

Benefits

The benefits of *CropRecord* are many. Gaven says that *CropRecord* makes you look accurately at the plants and climate. You learn to see more, and the graphs in *CropRecord* help to see links. You analyse what is happening and you can react. *CropRecord* shows the effects of any mistake in climate or crop management, so it's very helpful for decision making.

Also Tim says that *CropRecord* makes you see how the plants do, for instance stem thickness in response to climate. Previously they decided on intuition and experience. Now they make an informed decision about changing the climate in order to steer the plants. Some weeks later they can see that the changes had the required effect. It reassures them they are doing the right things. Tim adds that newer growers, especially, will learn a lot from *CropRecord* about how to grow a good crop. He looks forward to the accompanying system *CropAdvice*, as it will add value to *CropRecord*.

Geoff finds crop recording the perfect tool to read the crop, to see if it is vegetative or generative. He can then take the necessary action. In that field, he has learned a lot. In other fields, he has not learned so much, but he says it is perhaps due to lack of time for studying the data and graphs in *CropRecord*.

Controlling plant growth - part 4

Peter finds it very useful to see that changes in climate control have an effect on the plants, e.g. thickness of the stem or the length of the leaves. That is not surprising, but it confirms and visualises what he already knew. He sees growing as a jig-saw, and crop recording is a way to solve it. A colleague cherry tomato grower has just started using *CropRecord* so that they are now comparing information.

Documenting

CropRecord is also useful to for documenting for the future, one grower says. For instance if you see root death, you can look back to see if you have over-watered. Or next year he will look back on leaf mould: when did it occur, what were the conditions, and what did he do about it. He adds that documenting and archiving will be very important for official purposes too. If information is required by Auckland Regional Council (ARC), or by other governmental agencies in the future, he can just pull out his *CropRecord*. Gaven thinks *CropRecord* will also be very helpful for consultants, because they can see what the plant has gone through and how it developed, instead of just seeing the present state.

CropAdvice

CropAdvice contains directions for crop recording, as well as information about crop balance (generative, vegetative) and how to steer the plants to where you want them. It was not tested by the growers yet.