

## Temperature Loggers

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Over the past couple of months we have looked at some of the technology that enables weather and the environment to be monitored routinely, accurately, and cost-effectively. This month we finish off our exposé on monitoring technology, and next month we return to our more usual format when we will look at the progress around the country of the all important winter chilling.

The theme of temperature recording is of special significance in horticulture. Accurate data on temperatures can be used to provide the horticultural manager with detailed information on issues of importance including insect development, crop maturation, frost probabilities, and spring canopy management to name but a few. For example, the use of hydrogen cyanamide for improved bud burst is directly affected by winter temperatures. Winter temperature information can be used to improve the timing and rate of application to give optimal effect, and to avoid phytotoxic effects.

Specialist dataloggers exist for collecting temperature information. There are a variety of manufacturers and models, but the basics of each is similar: A means of measuring the temperature, memory to record the readings, and a way of communicating with a computer to transfer the recorded temperatures and to set up the logger for a recording session or "mission".

Some of the more popular temperature logging units in use in New Zealand are the Quick Measure Temperature Logging System (available from HortPlus); the Tiny Tag loggers (HortPlus and Energy Engineering), and the Hobo loggers (Scott Technical Instruments). Some of the tradeoffs you need to consider when buying temperature loggers are price, accuracy, memory size, physical size and robustness of the unit, and software for setting the loggers up and downloading information.

The Quick Measure Temperature Loggers are the latest units on the market and worth a mention. These loggers follow the general trends found in most later-generation electronic devices: more miniaturisation, and lower cost. You just have to love an industry that in general produces better products at lower cost as time passes!

The Quick Measure Loggers are about 1/4 to 1/8 the cost of most other loggers, are very discrete in size (a cylinder 17mm in diameter and 5mm thick), and robust (sealed stainless steel canister that can be submersed in up to 3m of water!). The tradeoff with the Quick Measure loggers is that they are slightly less accurate than many of the other units on the market with a resolution of 0.5°C vs 0.3°C or 0.1°C, though a high resolution unit is just being released in response to demand.



This highlights the need to carefully consider your measuring needs when looking for equipment. Many horticultural applications, including monitoring product temperatures in transit, are fine with a more coarse resolution unit. The lower cost of these units opens up many opportunities for temperature recording where other units are cost-prohibitive. But you do need to consider your data requirements as this type of unit is not for every application.

With the range of temperature monitoring products on the market today, there is a logger available for most jobs and most budgets. Define your needs first, then look for the product to fit your requirements and your budget.