

4. Datalogging systems

When a large number of sensors are used, a datalogger is the most convenient method to collect the data. A datalogger is an instrument that can automatically measure sensors and store the data, typically at user-specified intervals. The EM50 datalogger (Decagon) is an example of such a logger, and it can be used with many different sensors sold by Decagon. To transfer the data to a computer, the datalogger is connected to a computer using a USB cable. The data can then be viewed using Decagon software, and imported into a spreadsheet for further analysis.



Figure 3. An EM50 datalogger from Decagon can measure and store data from up to five sensors (Photo courtesy of Decagon Devices).

A more advanced option is a datalogger with a radio or cell modem built in. Such data loggers can transfer data either by radio or cell phone network to a receiver or basestation that is connected to a computer. Specialized software (i.e., DataTrac) is then used to display and export data in a format compatible with spreadsheets. Such systems are often referred to as wireless sensor networks, even though the sensors may still be connected by a wire to the datalogger. Completely wireless systems are also available. In such a system, the sensor has a radio that transmits the data to a nearby datalogger, which can then send the data to a computer.

Not surprisingly, the more capabilities a system has, the more expensive it tends to be. There is no single best solution for all circumstances; this will largely depend on how the data are used. If the data are used to create a permanent record of the conditions during a particular cropping cycle, having instant and easy access to the data may not be critical. However, if the data are used to make important decisions regarding production practices, such as irrigation or fertilization, a more advanced system will likely be needed.

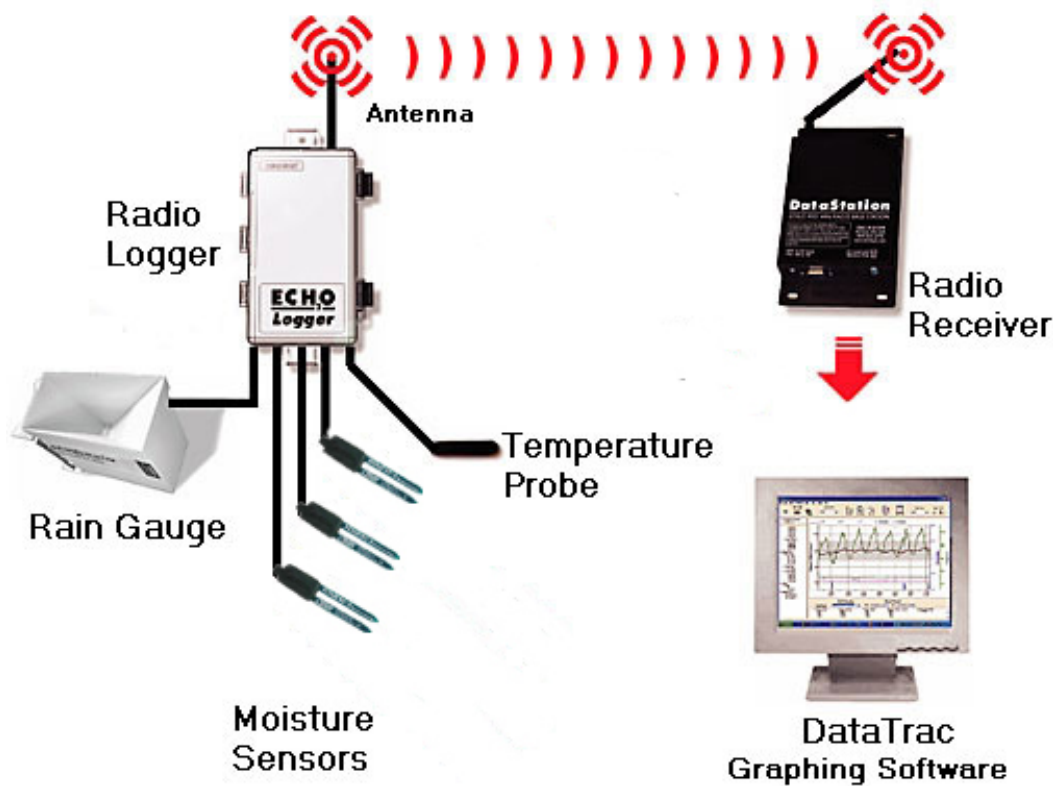


Figure 4. Some data collection systems can send the collected data to a computer by radio. Decagon's EM50R is an example. A dedicated receiver is needed to communicate with the logger (Diagram courtesy of Decagon Devices).