

Better Modelling Your Irrigation System®

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INTRODUCTION

A national survey of nurseries belonging to the Nursery and Garden Industry Australia during 1999, covering subjects such as, average water use, water costs, maintenance costs and hand watering labour, determined that there was reform needed in the way in which we had been previously operating. These findings were despite the fact that the industry had entered into a program to better use a diminishing resource in the mid 80s. Subsequently, a series of new programs and workshops were created and then taken to the industry on a nationwide basis, the results have been pleasing.

The Australian state and federal governments continue to regulate each catchment so it is has become critical for nurseries to carry out regular water audits to ensure that they are able to supply information to the authorities on usage, run off and water sources.

How much do you know about your production irrigation system? There are a number of steps you can take to build a management tool that will help you better understand your particular circumstances. These include daily, weekly, monthly water use and diagnostic leaks. All this information can then be translated into a chart that will give you a picture of usage over a twelve-month period from which you can also calculate how much is water worth to your business.

As part of this process you also need to calculate which plants require most water; which plants require most frequent watering, which plants require the least amounts of water and then how you will meet these demands and will you, need a separate system?

An efficient irrigation system will save water and labour; maintain quality plants, reduce the volume of throwaways; produce plants faster and will save you money. Additionally, if you can collect and recycle runoff you could reduce your consumption by up to sixty percent. An efficient drainage and storage system can also collect and use rainfall which is cheap and high quality.

Many nurseries are surrounded by urban sprawl and those communities are becoming more aware of the quality of water that flows into catchments and ground water aquifers. You need to be in the driver's seat and regularly check the quality of your runoff. Don't wait for the authorities to close you down while you remedy the problem and probably give you a fine as well.

If you are using water from a mains water supply then you may be subject to restrictions based on daily timing, this is the mechanism most used to reduce consumption. Restricted watering times will have an impact on you without any reduction in water use if you don't change your irrigation practice. Therefore the knowledge that you build up regarding your plant water usage will give you a tool to better manage the amount of water you have available and hopefully save water under these circumstances. In addition, adequate staff training will be required to ensure they have the awareness needed to help you implement a new action plan.

A full system evaluation will be needed initially and then on a regular basis, to check pumping systems, filters, sprinkler/dripper performances and system hydraulics. While all of the components of an irrigation system are important, sprinkler and dripper performances are perhaps what will eventually need most attention, so measurements need to be taken from each block and recorded. The equipment required for this is quite simple and readily available, comprising a 100 ml measuring cylinder, 250 ml beaker, a set of catch cans, a tape measure and a pressure gauge. Using these tools you can calculate the mean application rate (MAR) the coefficient of uniformity (CU) and the scheduling coefficient (SC).

Once you have all your information together it is advisable to recruit the help of an irrigation specialist who can check the hydraulics system, comment on the adequacy of pumps, piping and valves and make suggestions on nozzle selection to suit your different requirements.

Finally, if you are not already recycling your runoff water then this should become a priority after you have reworked your irrigation system. You will almost certainly need help with this as it entails ensuring that you minimise downstream pollution, that the drainage system matches the slope, soil and rainfall intensity and if it meet the regulations for your area.

Drainage storages require good management if you are to feel confident about recycling runoff through your irrigation system but they may require retreatment and certainly some type of aeration to ensure that the quality and particularly the disease status of the water is at least as good as or better than where you drew the water from in the first place.

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