



Nursery & Garden Industry
Queensland

Nursery Drainage and Recycling Overview

Nurseries are responsible for the quality of water that is collected and discharged from their property.

Nursery wastewater can be described as irrigation water that is not utilised in the container or by the plant. Nursery wastewater comes from overhead sprinkler irrigation systems, from irrigation that does not reach the container and falls onto the open space between them, or falls on access paths and road ways. It also originates from bottom watering, capillary and dripper systems. Nursery wastewater can also come from irrigation leachate, i.e. water that moves through the container growing media and out the drainage holes during and after an irrigation event. Water used in nursery cleaning operations and plant detailing is another source of nursery wastewater that, while likely to be highly contaminated, still has the potential to be collected and recycled or reused.

The single use of water for irrigation and later release to waste is no longer acceptable to the regulators or the community. Nurseries operating under the nursery industry environmental management system, EcoHort™, are encouraged to include water reuse or recycling in their future planning activities.

Drains and drainage systems in production nurseries channel irrigation wastewater and rainfall water to storage facilities for reuse on gardens, grass and stock areas, or for recycling onto production areas after being filtered and disinfested.

The 'reuse' of irrigation runoff is the capture and subsequent use of that water resource onto another area such as stock gardens, not only giving a second use to the resource but also reducing the irrigation runoff moving offsite as waste. The 'recycling' of



irrigation runoff is the continual capture and reuse of the resource within the growing system over and over. These management systems of reuse or recycling of irrigation wastewater are promoted within best management practice programs such as NIASA and EcoHort.

Drainage systems should be designed around calculations of the expected runoff from roofs, roadways, storage and production areas during rainfall or storm events. Systems should also be designed to manage the varying wastewater quality from different collection areas, either separately or together, often depending on the decision whether to recycle or reuse the wastewater.

Drainage systems can be constructed as surface drains (open drains, grassed waterways, masonry drains, gutters, etc.) or subsurface drains (ag-pipes, slotted pipe, pipes, gravel trenches, etc.), or most commonly a combination of both.

Wastewater from production areas often contains growing media fines, organic matter and other debris leached or otherwise lost from the containers, that must be removed before entering the water storage facility. Other waste materials entering the drainage system such as scraps of paper, plant tags and labels must also be

prevented from getting into the system. These waste materials, if not removed, may lead to water quality issues within the water storage, increasing water quality management, filtration and disinfection costs. Simple sediment and floating trash traps should be installed to manage these contaminants.

Wastewater should be reused or recycled after storage and treatment. Three principle reasons often provided for establishing catch and recycling systems in nurseries are given as reducing the overall wastage of water, preventing offsite water quality issues, and providing an alternative or supplemental irrigation source, thus increasing water security.

The decision to catch and recycle or reuse nursery wastewater is generally seen as an economically beneficial approach to the nursery wastewater issue, and is certainly recognised as an environmentally responsible achievement.

There are a number of considerations that should be taken into account before embarking on the process of catching and recycling nursery wastewater to ensure the project delivers all the anticipated benefits. An assessment of the current system will provide information on the direction to take—see technical article ‘Nursery drainage and recycling assessment’ for more information.

It is often a prudent exercise to conduct a cost benefit analysis to ensure the system proposed to capture, store and disinfect the nursery wastewater is cost effective. The answer is usually a positive one, with the added benefit of reducing the business impact on the environment and providing improved water security for the nursery.

When planning for the reuse or recycling of irrigation runoff, disinfection of this water is vitally important in providing good quality irrigation water to maintain hygiene standards and protect crop health.

Information on current disinfection system and alternatives will assist in deciding which of the available systems may be suitable for your operation. When comparing systems, be aware of specific requirements each disinfection type has, such as water quality requirements, maintenance intervals, maintenance and operational costs, required contact time and acceptance under the NIASA Best Management Practice programme.

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