

Property Planning

The production of top quality container plants is dependent on the supply of a number of generic inputs: water, growing media, fertiliser, pesticides, labour, light and energy. The challenge for production nurseries is to manage these inputs to produce a quality plant to market specification, and make a profit, all without causing detriment to the environment.

Water: The access to sustainable water supplies and the rising costs of water and energy have encouraged growers to focus a great deal of attention to water management in recent times. Growers have traditionally applied water to nursery container production areas at volumes above the requirements of their crop, causing leaching of the containers resulting in uneven growth, increase in plant disease and fertiliser losses. The objective for growers should be to apply only the required amount of water to the plant to support its potential growth and also prevent possible stress that can often be the catalyst for pest and disease outbreaks.

Excessive irrigation or overwatering can occur either with manual application via a hose or through automated systems. Staff members who are not sufficiently trained or do not thoroughly understand the principles of good irrigation can apply water using a hose and nozzle at rates greater than the growing media can absorb causing excessive leaching and runoff. Inexperienced and poorly trained staff can also program irrigation systems to irrigate more frequently or operate longer than required resulting in similar problems. The MAR or Mean Application Rate is a measure of the rate of water application by a system and should be matched to the growing media.

The design and maintenance of an irrigation system can also be responsible for excessive water use. Poor distribution of water across an irrigation zone can be caused by poor sprinkler layout, incorrect system pressure, excess or insufficient flow rates, incompatible riser heights, and poor sprinkler selection. These problems can be easily identified within a system by on-farm testing and calculating the system CU, Coefficient of Uniformity. Poor distribution of water within an irrigation zone generally results in the increased application of water to ensure the driest containers are irrigated sufficiently resulting in waterlogging, leaching and uneven growth. This requirement for excess irrigation can be measured on-farm as the SC or Scheduling Coefficient.

Growing Media: The selection of premium quality growing media can assist growers to effectively manage both the water and nutritional requirements of their crop. Specialist grower knowledge in growing media, water quality and crop nutritional requirements provide an opportunity to manage nutrients and prevent loss to the environment. There are a number of amendments that can be added to growing media to adjust its characteristics and change the performance of growing media but these need to be evaluated over the life of the crop.

Fertiliser: Fertiliser is crucial to container production and the fertiliser requirement in production nurseries is relatively high due to the nature of growing conditions and the restricted size afforded by the growing containers. While the fertiliser, and in particular the nitrates and phosphates, are generally supplied at relatively high rates, they are managed by the industry use of coated products encapsulating the fertilisers and only releasing as required. Leaching of fertiliser into wastewater flowing to water storage and off-site can still occur and be of particular concern in operations with inefficient irrigation systems. Fertigation systems also provide the opportunity for fertilisers to easily enter the wastewater stream and this can again be compounded by poor irrigation practices.

Pesticides: Customer demand on nursery production for blemish free plant material has traditionally resulted in significant pesticide use within the production nursery sector in an effort to produce plant material free of insect damage, spots, marks and disease. Protocols for some interstate plant movement also require major pesticide applications. Production Nurseries can reduce their pesticide use by incorporating IPM, integrated pest management into their plant protection program along with the use of less toxic chemicals, upgraded chemical storage and improved staff training. The market driven requirement for aesthetically pleasing, blemish free crop production can be achieved using thoughtful plant protection measures that result in less pesticide entering nursery wastewater.

Labour: Competent staff are invaluable to a professional, well organised production nursery. Most changes within a business cannot materialise without the assistance of staff at all levels in an organisation. Staff education, training, incentives and communication are vitally important to ensure the efficient operation of nurseries and to facilitate change.

Light: Light is available to growers in abundance in our sub tropical climate, however growers can achieve significant savings in energy, water, fertiliser, quality and crop production times by managing the light levels available to their crop. Protected structures can lose light transmission over time due to aging and discolouration causing loss of potential growth. Roof cleaning and maintenance and the installation of moveable screens can produce valuable saving. Growers of trees and shrubs can also identify important opportunities to achieve dollar savings by providing some limited crop shading to reduce the high light and heat levels experienced during summer.

Energy: Energy is most notably used in nurseries to move water around, from storage dam to tanks, and from tanks to the crop. The selection of pump size and style to meet the irrigation demand is crucial along with the correct sizing of the irrigation mains that distribute the water to the various zones.

To Summarise:

- Evaluate your irrigation system to ensure it operates to industry benchmarks
- Regularly pressure test irrigation zones
- Group like 'wateruse' crops together
- Upgrade irrigation system as necessary
- Evaluate you growing media against industry benchmarks
- Trial alternate growing media batches and amendments before changing
- Investigate IPM programs
- Ensure all staff handling pesticides have suitable training
- Use low toxicity pesticides and those least persistent in the environment
- Ensure pesticide storage meets legislative requirements
- Provide staff with quality training
- Communicate directions clearly to staff and supervisors
- Evaluate light levels available to nursery crops
- Clean and maintain protected structures where necessary
- Monitor energy use
- Use energy efficient equipment
- Establish equipment maintenance schedules

Assistance is available to growers under the 'Nursery Production Farm Management System'. Please contact NGIQ.

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