

## Pump selection

Nursery irrigation practices are quite energy intensive with significant volumes of water necessary to meet crop water use demands, requiring pumping systems that can consume significant amounts of power. Careful, well informed equipment selection, coupled with a scheduled maintenance program, and intelligent water management techniques, can assist growers to minimise energy costs and gain significant irrigation system efficiencies.

The pump is the real heart of a nursery irrigation system, but often not enough attention is applied in pump selection. To ensure an irrigation system operates as efficiently as possible, the pump must be selected to match the requirements of the water source, the delivery pipework and the irrigation application equipment. Poor pump selection can be a result of a number of factors including; poor advice due to inexperienced pump sales personnel, insufficient or incorrect data provided to the pump supplier, changes or expansion in requirements outside the original specification, and haste to replace a broken pump. The location and installation of the pump into the irrigation system is also critical to maximise performance and preserve the operating life of the pump.



Before a pump can be selected, it is important to define

- the operational maximum and minimum flow requirements. eg. the largest and smallest flows required for different irrigation zones.
- other system flow requirements eg. filter system backwash, washdown, and hand held hosing that may be required to operate during and between irrigation cycles.
- the system pressure requirements for each irrigation zone.
- the distance between the pump station and each irrigation zone.
- the elevation of each irrigation zone above (or below) the pump.
- the type and size of the mainline.
- the water source and quality.
- suction requirements eg. flooded suction (tank), lift from water surface (high & low water level).
- the amount and type of power available eg. single or three phase.
- the business operational requirements eg. available operating window.

Selecting a pump that is oversized rather than matched to the system requirements may cause it to operate at 'part load' for extended periods, causing reduced efficiency, an increase in noise, vibration, wear and possibly cavitation damage. (Cavitation is the implosion of bubbles of air and water vapour and creates a very distinctive gravel like noise in the pump. If left unchecked, this implosion of bubbles can destroy a pump impeller and housing.) A pump that is undersized will also operate inefficiently and show evidence of excessive noise, vibration and cavitation damage. There is an extensive range of pumps available and expert advice is required in correct pump selection. It may be prudent to start looking at replacement pump alternatives to be prepared in advance of any trouble in the pump house.



Steve Hart  
NGIQ Farm Management System Officer  
mobile. 0407 644 707  
email. [fmso@ngiq.asn.au](mailto:fmso@ngiq.asn.au)