



Nursery & Garden Industry
Queensland

Scheduling irrigation following a rainfall event

Scheduling irrigation following rainfall events appears simple enough. However, recent investigations using the Portable Weight Based Scheduling Unit (PWBSU) have highlighted some fundamental problems with current practices. The PSBSU records container weight every minute, and can therefore be used as a means of measuring changes in the moisture content of the growing media. On-farm data-logging of container weights in the field over extended periods, has often shown that the duration between the end of a rainfall event and the restarting of the irrigation, is delayed too long. This delay in restarting the irrigation shows as a lower container weight. This in turn equates to less available water in the container for the plant, and too often produces periods of mild to extreme water stress in the crop.

Rainfall events, whether from sustained rainfall, drizzle for days on end, or a soaking delivered by a summer thunderstorm, can all result in the growing media in containers holding the maximum amount of water possible, termed 'field or container capacity'. Growing media in containers has a limited ability to hold water and once it has reached field or container capacity from either irrigation or rainfall, no further water can be held within the growing media. In containers in nursery production, water is held by surface tension in the small pores of the growing media, called micropores. The water held in the large pores, the macropores, generally drains out after the irrigation or rainfall has ceased, providing the air porosity in the container growing media, vital for plant growth.

Irrigation scheduling aims to deliver a balance between water and air held in a growing media to maximize plant growth.

Irrigation scheduling is calculated to apply the required amount of water to each container to maintain the crop within acceptable stress limits during their growth cycle. Delay in restarting the irrigation after a rain event, has shown that the available water in each container is maintained at a

significantly reduced level, which can adversely affect production growth times and quality. This reduced volume of available water in each container continues to mirror the fluctuations as delivered through the normal scheduled irrigation, but with the moisture content maintained at a much lower level. The reduced level of available water then continues until intervention by either another rain event, or the grower instigates one or two extra manual irrigations to correct the slight or significant plant water stress. The result is often a requirement for a longer irrigation cycle or the application of a greater volume of water to correct the issue, particularly where the growing media has dried out significantly and become water repellent.

Growers should endeavor to instigate the re-scheduling of the irrigation to ensure the level of water held in the container does not fall below predetermined set points.

Growers have to constantly make informed decisions on irrigation throughout the year and in all growing seasons, when to irrigate and just how much to apply. The decision on when and how much involves grower expertise gathered from years of trial and experience to efficiently manage time, water, labour and equipment. The data gathered from the PWBSU indicates, when making decisions about restarting irrigation after rain events, particular attention should be made to more frequent monitoring of crops to determine the point at which irrigation should recommence. The consequence of poor irrigation decision making can deliver too little or too much water to each container, resulting in increased production times, higher input costs, greater plant losses, and ultimately reduced financial returns.

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