

Research area: VITICULTURE

Regional cluster: RIVERLAND

## How does phenological stage influence grapevine water requirements for Shiraz and Chardonnay in the Riverland?

### Background

While there is a general understanding that plant water requirements under any given weather conditions are strongly dependent upon the particular phenological stage the crop is experiencing at the time, this relationship is not sufficiently well understood to enable the irrigation manager to use this knowledge in order to actively control and fine tune the canopy and crop development.

Fully understanding this relationship and integrating it into irrigation management principles has the potential for greatly increasing the water usage efficiencies for irrigated grape vines. The relative water use relationships between the identified phenological stages will provide knowledge to determine the most appropriate crop coefficient ( $K_c$ ) at each phenological stage, thus enabling the determination of daily water usage.

These relationships could then be manipulated to fine-tune irrigation management and thus crop and canopy development to obtain desired fruit yield and quality outcomes.

### Why is it important?

Understanding crop water usage requirements and the ability to significantly influence plant growth, yields and quality has the following potential outcomes:

- more closely matching the applied irrigation with daily water usage by vines
- 'controlling' and 'moderating' vine growth by delivering controlled and consistent restrictions on water application
- using the phenomenon of 'plant adaptation' to strongly influence canopy development, volume and yields
- more consistent grape quality or style, driven by a better knowledge of the relationship between water applications, phenology and quality and yields.

### What would success look like?

The project would supply the data to supplement existing studies on the relationship between phenology and crop water requirements. Refinement of current suggested crop coefficient and irrigation management regimes under irrigated warm climate conditions would form the basis for developing more informed irrigation management strategies and programs. This will maximise efficient use of irrigation water and help to achieve desired fruit yield and quality outcomes in warm inland wine regions.

For further information and to develop an application please contact

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