

## **The infrared thermometer as a practical irrigation scheduling and crop management tool**

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Plant temperature has long been recognised as an indicator of plant stress. Now that technology has reduced the infrared thermometer in size to that of the current hand-held infrared gun, plant temperature can now be measured quickly and accurately in the field to 0.1°C.

This paper presents the results of experiments conducted to investigate the practical use of hand-held infrared thermometers in the field and their application to large scale irrigation scheduling.

Field data collected at Collarenebri and Moree, NSW, are presented to show the practical application of the infrared thermometer to irrigation scheduling.

A methodology is developed by which canopy temperature measurements may be used as a quick and reliable means of predicting impending crop water stress and some of the practical problems encountered when collecting field data are described.

Progress towards utilizing computer technology to rapidly record and process raw field data is described.

Examples of the use of the infrared thermometer to monitor causes of crop stress not directly related to water shortage, but which therefore illustrate the potential application of the infrared gun to overall crop management are discussed.

The non-water-stressed baseline derived by Idso et al. 1982 may be used as a basis for accurate and reliable irrigation scheduling in Australia using the infrared thermometer. In addition, the infrared thermometer may be a valuable tool in identifying and solving agronomic problems related to water management which result in reduced yield. An effective irrigation scheduling system using the infrared thermometer interfaced to a portable lap computer has been developed however more research is required to overcome the problems associated with variability of infrared thermometer data.

1. Idso, S.B., Reginato, R.J. Radin, J.W. 1982. Agric. Meteorol. 27:27-34.