



Do you accurately measure and report growing conditions of tissue culture experiments?

International Committee for Controlled Environment Guidelines

Conditions in controlled environment tissue culture facilities should be reported in detail. This is important to:

- Allow replication of experiments on plants
- Compare results among facilities
- Avoid artefacts due to uncontrolled variables

The table below indicates the type and amount of information that should be measured and reported to meet these aims.

What to measure for accurate reporting	When to measure	What to report
PAR (400-700 nm, $\mu\text{mol m}^{-2} \text{s}^{-1}$) and photoperiod (h) Quantum sensor for photosynthetically active radiation (PAR)	PAR: at start of experiment and every 4 weeks; Photoperiod: also at start	Mean & standard deviation (SD)
Air temperature ($^{\circ}\text{C}$) Resistance, thermocouple or thermistor sensor (aspirated)	At least once daily during light & dark periods; at least 1 h after changeovers	
Atmospheric moisture (RH, %; or VPD, kPa) Capacitance or dewpoint sensor, psychrometer or IRGA	At least once daily during light & dark periods; at least 1 h after changeovers	
Air circulation	At start of experiment	Describe in words **
Room & cabinet properties		
Shelf properties		
Vessel specifications		
Vessel alignment		
Culture medium		
Number of explants		
Atmospheric CO_2 concentration ($\mu\text{mol mol}^{-1}$) * IRGA (infrared gas analyser)	Daily but only if CO_2 enrichment is installed within facility	Mean & standard deviation (SD)

* Report if records are available, and always when it is a variable under investigation

** For details of what to describe see the reference below

For more advice on measurement and reporting, consult the brochure:
International Committee for Controlled Environment Guidelines (2008)
Guidelines for measuring and reporting environmental parameters for experiments in plant tissue culture facilities.

Also available at <http://ncr101.montana.edu/Guidelines/TC-guidelines.htm>

The **International Committee for Controlled Environment Guidelines** includes representatives from the UK Controlled Environment Users' Group, the North American Committee on Controlled Environment Technology and Use (NCERA-101), and Australasian Controlled Environment Working Group (ACEWG).