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SHORT REPORT

MANAGEMENT OF FLUORESCENT LAMPS IN CONTROLLED ENVIRONMENT CHAMBERS

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Management of fluorescent lights is recommended to:

[a] maintain uniformity of light intensity over time and
[b] permit reproducibility of lighting conditions during experimental replications.
(chamber x chamber) (chamber x time).

At the McGill Phytotron, the lighting intensity can be controlled to desired level because any individual pair of the 40 lamps in each chamber can be set to be 'on' at any particular time.

Lamps are evenly divided into four lamp groups of differing hours of use. One-fourth of the lamps are replaced each 1500 hours of use. Thus at any time the lamps in the chamber will have the following range in hours of use:

25% tubes	25% tubes	25% tubes	25% tubes
0-1500	1500-3000	3000-4500	4500-6000

This replacement procedure has provided the following history of use for providing PPF in one of the chambers.

	Jan. 16 Replacement		April 16 Replacement		July 20 Replacement	
	Before	After	Before	After	Before	After
Group A	4600	4600	6200	0	1480	1480
Group B	3300	3300	4750	4750	6250	0
Group C	1650	1650	3010	3010	4650	4650
Group D	6200	0	1600	1600	3250	3250
PPF (μmol $m^{-2}s^{-1}$)	515	560	530	610	540	580

Tube burning hours for each level are logged by the chamber control microprocessor but can also be manually tracked by numbering tube-pairs and calculating age (photoperiod x days). Intensities should be measured at the start and weekly over the entire course of an experiment to obtain averaged vs. initial PPF readings.

A lamp canopy service history is maintained for each experiment permitting accurate replication of lighting conditions for subsequent replicate trials.