



CHOPPER LIGHT AS A GROWTH LIGHT FOR PLANTS

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The Chopper Light technique was developed in cooperation with Humboldt University, Berlin, to investigate the use of intermittent light for the illumination of plants. For their purposes, it was necessary to develop a light source with practical usefulness under greenhouse conditions.

Dr. Ina Pinker's research has confirmed the theory of Prof. P.Hoffmann; the plants used intermittent light with greater efficiency than continuous light, permitting a reduction in the total electricity needed for growth. Light pulsed in rapid sequences, giving a reduction of 30% to 50% of the continuous light controls, were as productive as the controls, depending on the species of plant. (Chopper-Light for shoot cultures, Dr. Pinker, I.M.)

The controller unit for the standard fluorescent tube switches light on and off every 20 msec. The timing is controlled by the 50 Hertz (Hz) cycle. The duration of the pulses is adjustable by a tenfold switch. This allows the selection of a desired combination of light-dark intervals, in milliseconds, and ratios of light to dark.

Switching the light on and off is possible in intervals of one Hertz. Alternatively, the switches can be set in increments of five Hz on and five Hz off. The total of ten switches allows a multitude of combinations. The special construction of the fluorescent tube fixtures makes the rapid on/off switching of fluorescent tubes possible without any decrease to the lifetime of the tube, contrary to common predictions.

Consequently, the illumination of a complete tissue lab with a large number of tubes is entirely feasible. For smaller scale research projects, a tabletop Chopper Light with two 40 watt fluorescent tubes is also available.

Maximizing the energy saving benefits, the intermittent light application requires intensive research. This work is ongoing at: the Humboldt University in Berlin, IGZ Grossbeeren Germany, Tissue-Grown Corporation in California, the Assosiation Hidroponica Mexicana and University of Agriculture Hanoi. Internationally, Chopper Light Technique is a method being used for investigation of plant growth, quality and performance.

The Chopper Light technique is an innovative technology for light assimilation permitting many levels of control, as well as electrical savings. The common lighting technologies for plant growth work in a static fashion. With the Chopper Light technology, lighting for growth of plants becomes a dynamic interaction. This kind of illumination adds a new chapter to the literature of lighting techniques for plants.