LIGHT

LIGHT SENSORS

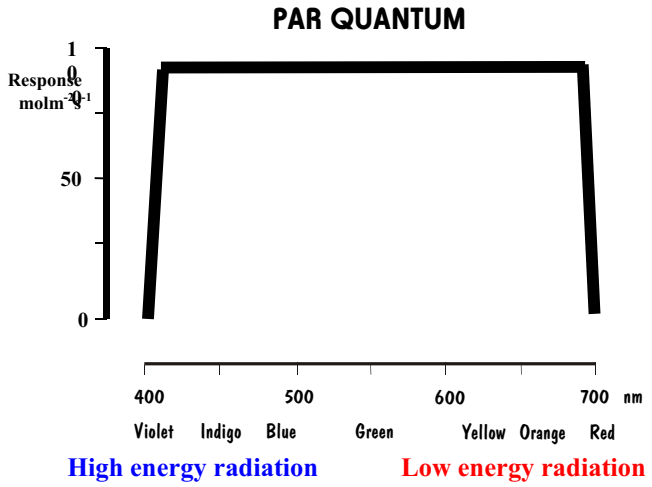
PAR Quantum or PAR Energy?

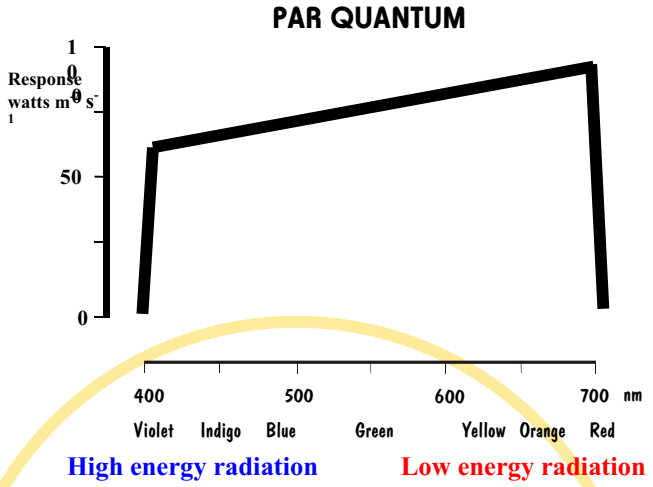
Both the PAR Quantum sensor and the PAR Energy sensors measure solar radiation between 400 and 700nm. The main difference between the sensors is in the calibration units. The PAR Quantum is calibrated in mmol m^{-2} s^{-1} whilst the PAR Energy sensor is in watts m^{-2}.

Please request a copy of our Light Guidance notes which gives an introduction to light sensors for plant research and also has some useful conversion tables between watts m^{-2} & mmol m^{-2} s^{-1}

The two sensors also have a different response curve between 400-700nm.

The PAR Quantum sensor is designed to have a square response (i.e. is equally sensitive to all wavelengths between 400-700nm) when plotted in mmol m^{-2} s^{-1} (number of photons). If this same sensor is plotted as an energy curve (in watts m^{-2}), the graph at the 400nm end would be lower than at the 700 nm end, as seen below:





Photons of light at 400nm have a greater energy than those at 700 nm, and so the PAR Quantum sensor needs to be less responsive to these higher energy wavelengths to have an equal response to photon numbers (umols) over the whole range.

The PAR Energy sensor is designed to have a flat square response when plotted in an energy curve.

PAR Quantum sensors are usually used in studies on the rate of photosynthesis, and PAR Energy sensors are usually used in solar energy studies.

However, Skye can calibrate either sensor in ?mol m^{-2} s^{-1} and / or watts m^{-2} , for the response curve you prefer.

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