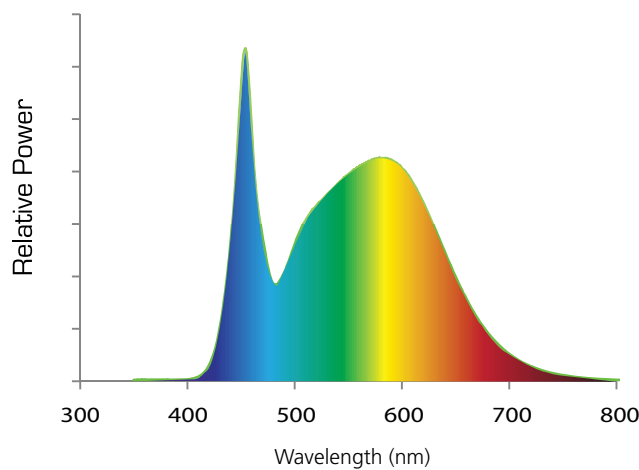




# HORTICULTURE SPECTRUM REFERENCE GUIDE

Full spectrum white light provides useful light for photosynthesis across the 400 nm to 700 nm wavelengths, which is also referred to as Photosynthetic Active Radiation (PAR). Additional Far Red light (700 nm - 800 nm) influences plant growth and development (morphology). Full spectrum white light also provides comfortable lighting for workers within the space, which may allow growers to reduce or eliminate additional light sources within the growing space.

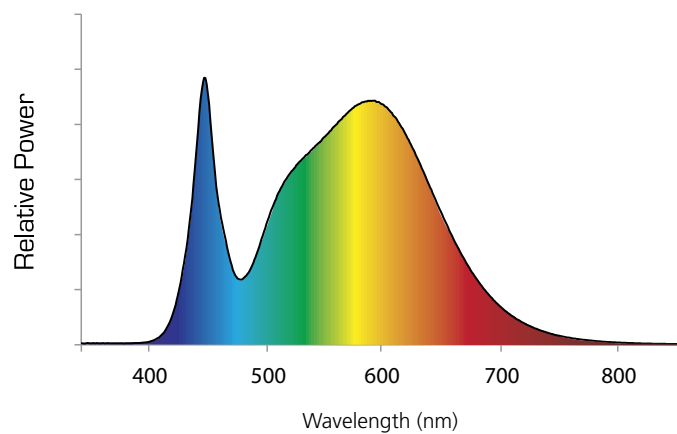
## FULL-SPECTRUM VEGETATIVE (FSV) DISTRIBUTION



Hubbell's Full-Spectrum Vegetative mix (FSV) is designed with added blue light for strong growth and development in the vegetative stage.

Waveband	PPF output percentage (%)
Light 400-750 nm	100
Blue 400-499 nm	22
Green 500-599 nm	46
Red 600-699 nm	30
Far Red 700-750 nm	2

## FULL-SPECTRUM GENERAL (FSG) DISTRIBUTION

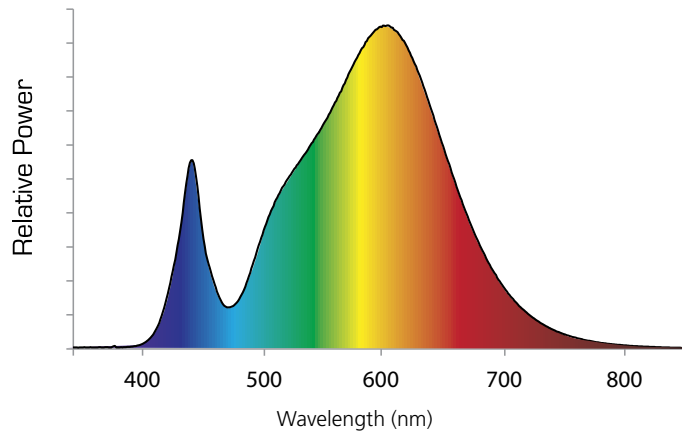


Full-Spectrum General (FSG) distribution contributes to overall photosynthesis to improve yield.

Waveband	PPF output percentage (%)
Light 400-750 nm	100
Blue 400-499 nm	17
Green 500-599 nm	44
Red 600-699 nm	36
Far Red 700-750 nm	3

# HORTICULTURE SPECTRUM REFERENCE GUIDE

## FULL-SPECTRUM FLOWERING (FSF) DISTRIBUTION

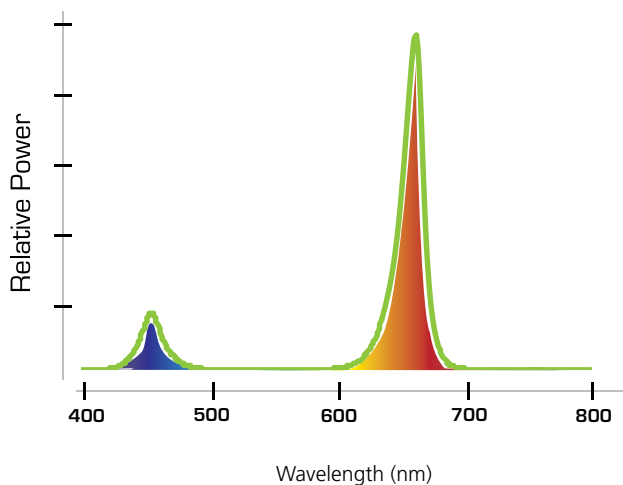


When flowering is a growth emphasis, Full-Spectrum Flowering (FSF) distribution supports both improved flowering and overall growth. Designed with an emphasis on the red and far red ranges, FSF, combined with your expertise, improves both quality and quantity of flowering yields.

Waveband	PPF output percentage (%)
Light 400-750 nm	100
Blue 400-499 nm	11
Green 500-599 nm	41
Red 600-699 nm	44
Far Red 700-750 nm	4

Partial-spectrum: Targeted to specific stages of plant growth, these 'narrowband' grow lights can dramatically reduce time required to grow, and improve yields by concentrating all lighting energy on only the plant photoreceptors responsible wavelengths most beneficial to plant growth and development.

## VEGETATIVE SPECTRUM (V1)



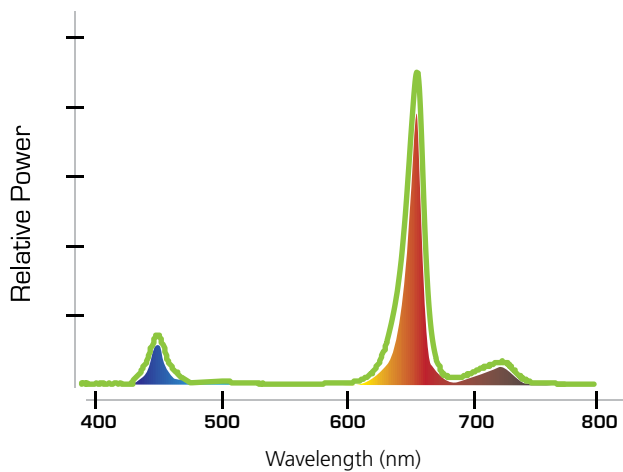
The Partial-spectrum Vegetative mix (V1), provides only red and blue wavelengths conducive to photosynthesis. V1 is designed for the vegetative growth stage of plant life, and is considered robust enough to support the entire plant growth cycle, if desired.

Waveband	PPF output percentage (%)
Light 400-750 nm	100
Blue 460 nm	11
Red 660 nm	89



# HORTICULTURE SPECTRUM REFERENCE GUIDE

## FLOWERING SPECTRUM (F1)



The partial-spectrum Flowering mix (F1) is designed to nurture and support improved flowering. The heavy emphasis of red and far red wavelengths serves to promote reproduction and flowering in a wide variety of plants.

Waveband	PPF output percentage (%)
Light 400-750 nm	100
Blue 460 nm	9
Red 660 nm	81
Far Red 730 nm	10

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