Plant growth in irregular night breaks of light

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Introduction
We investigated how chrysanthemum plants were affected by irregular night breaks of light, when grown in a low energy input system for optimal use of supplemental light for four weeks. Parameters of photosynthesis were studied in relation to overall plant growth and performance.

Dynamic light control
The strategies for supplemental light control were LD, where light was given to extend the day to 18 h, 60% NB and 30% NB, where light was controlled by forecasted solar irradiance and hourly changes in electricity prices. 60% and 30% are set points of photosynthesis based on a leaf photosynthesis model.

Results
Plant dry weight was linearly correlated to the cumulative light hours (CLH) during the four weeks.
Leaf expansion was relatively higher in the climate with a low set point for photosynthesis and shorter days.
Chlorophyll fluorescence and leaf chlorophyll content were affected by irregular light periods.

Conclusion
The results illustrates for the first time that dividing a long day light period into a natural light period and irregular NB lighting, does not influence vegetative dry matter production, even though circadian regulated processes are affected.

Reference