How LED's and HPS street lighting can effect day length and have an impact on building landscape design, vegetable gardens and farmers[1]

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LED lighting can have an effect on the short day/ long night plants. A plant that requires a long period of darkness is termed a "short day" (long night) plant. Short-day plants form flowers only when day length is less than about 12 hours.

Table 1: Long, short and day neutral plants

Long Day/short night Plants (Day Length > 12 hrs) Flower in summer	**Short Day Plants (Day Length < 12 hrs)**	**Day Neutral Plants (Ignores Day Length)**
Artichoke & lettuce & spinach	black-eyed peas	apples
Barley & oats	blueberries	apricots
Beets, onions & radishes	cotton	brussel sprouts
Cilantro & potatoes	raspberries	corn
Dill, rye, grass	soy beans	kale
Flax, turnips	sweet potatoes	pears
lentil	rice	tomatoes*
wheat	chrysanthemums	cucumbers
hollyhocks	poinsettias	lettuce
asters	Christmas cactus	rice

Even if **day**-neutral **plants** like cucumbers, **tomatoes** and lettuce are grown in climate controlled environments with enough heat to grow and produce, they will halt their growth and remain dormant when **day length** dips below 10 hours. When the 10-hour **day** returns, **plant** growth begins again.

Table 2: Sensitivity of 40 plants to security lighting

The sensitivity of 40 trees to security lighting were placed into three groups i.e. High, Intermediate and Low. A high, intermediate, or low rating identifies the relative responsiveness of the plants to security lighting. It is red light from streetlights that is the problem and can have harmful effects on both wild and domesticated plants.

High	**Intermediate**	**Low**
Acerginnala, Amur maple	Acerrubrum, Red maple	Fagus sylvatica, European beech
Betula papyrifera, Paper birch	Cercis canadensis, Redbud	Carpinus japonica, Hornbean
Betula pendula, European white birch	Cleditsia triacanthos, Honeylocust	Ginkgo bilola, Cinkgo
Betula populifolia, White birch	Cornus controversa, Giant dogwood	Ilex opaca, American holly
Platanus aceriiolia, Sycamore	Ostryavirginicana, Ironwood	Malus boccata, Siberian crabapple
Ulmus americana, American elm	Tilia cordata, Littleleaf linden	Quercus robur, English oak

Sensitivity of a tree, distance from lamp standard, season, temperature and age are factors that need to be considered. The specific band of wave lengths of light tells a tree or shrub to grow while through shorter days and cooler nights, mother nature is telling it to get ready for winter. Trees prepare for winter by becoming dormant. Come a cold snap, a young tree still growing could be killed.

[1] CIBSE Technical Symposium: Stretching the envelope: Techniques, applications and technologies for healthy and productive environments, London April 2018 - Street lights effect on buildings, landscape design trees, wildlife, circadian rhythms and health and well-being. ©David Garlovsky, BSc, MSc, Certificate in Social Phenomenology, Focusing Practitioner. 84 Upper Valley Road, Sheffield S8 9HE, United Kingdom.