

Flowering Annuals and Perennials When You Want!

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Blooming annuals and perennials during the peak marketing period (spring) can greatly increase sales of plants that naturally flower later.



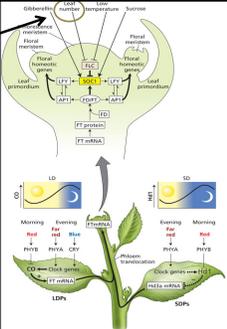
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Maturity

Irradiance (light intensity)

Vernalization

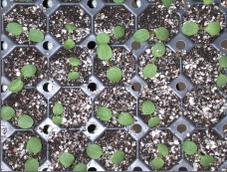
Daylength



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Juvenility versus Maturity

- Plants are 'immature', or juvenile, after germination. Juvenile plants are incapable of flowering.
- As a plant ages (unfolds leaves), the shoot tip transitions to mature phase. Mature plants can be induced to flower.



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Juvenile Period Lengths – Herbaceous Plants

Crop	Node Number
<i>Aquilegia</i> 'McKana's Giant'	12 nodes
<i>Aquilegia</i> 'Fairyland'	15 nodes
<i>Calceolaria herbeohybrida</i>	5 nodes
<i>Callistephus chinensis</i>	4 nodes
<i>Coreopsis grandiflora</i> 'Sunray'	8 nodes
<i>Gaillardia x grandiflora</i> 'Goblin'	16 nodes
<i>Heuchera sanguinea</i> 'Bressingham'	19 nodes
<i>Lavandula angustifolia</i> 'Munstead'	18 nodes
<i>Rudbeckia fulgida</i> 'Goldstrum'	10 nodes
<i>Pennisia hybrida</i> 'Purple Wave'	4 nodes
<i>Viola x wittrockiana</i> 'Delta Pure White'	3-4 nodes

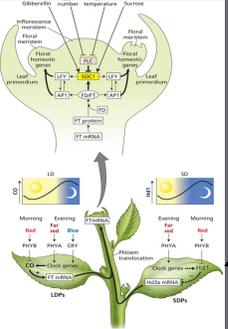
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Maturity

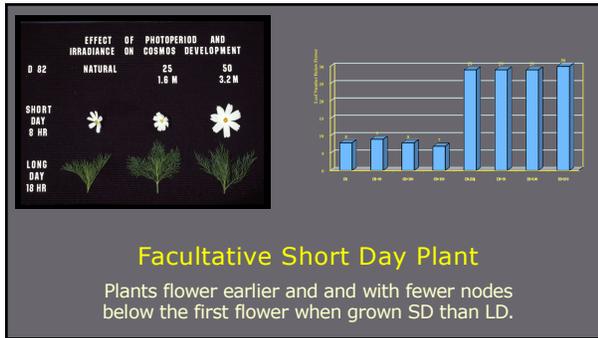
Irradiance

Vernalization

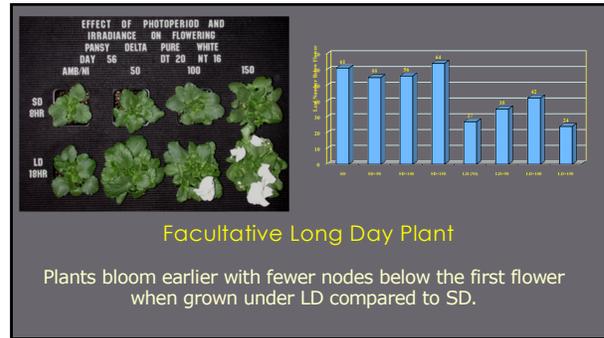
Daylength



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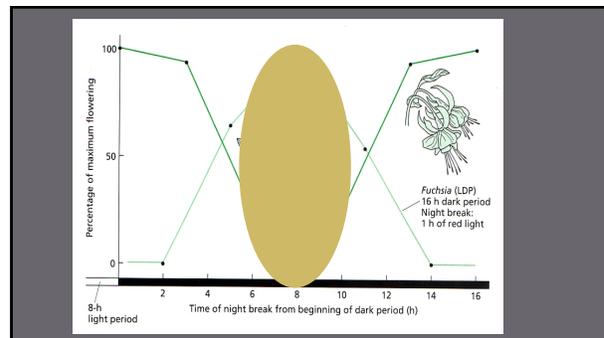
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Ways To Manipulate Photoperiod

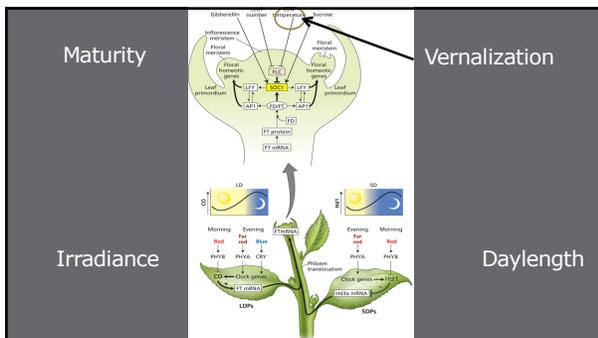
- Providing Long-days (short nights)
 - Night interruption (10 pm - 2 am; 2 $\mu\text{mol m}^{-2} \text{s}^{-1}$)
 - Incandescent, 'Flowering LEDs (must have Far red light for LDP), High pressure sodium lights.
 - When night temperatures drop below 63 OF, NI lighting duration and/or intensity needs to be increased.
- Providing Short-days (long nights)
 - Pull black cloth, generally from 6-8 pm until 8 am.



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Vernalization

Once mature, some plants like many perennials, some Marth Washington geraniums and many Osteospermum - require a cold period to induce flowering. Cool temperature induction of flowering is called 'vernalization'. Vernalization occurs in the shoot tip.

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