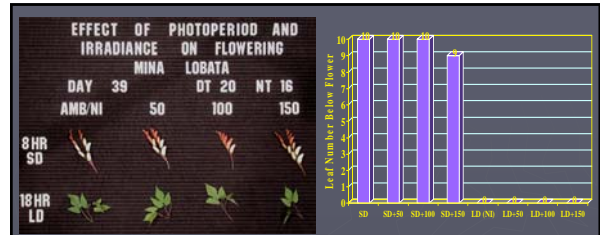


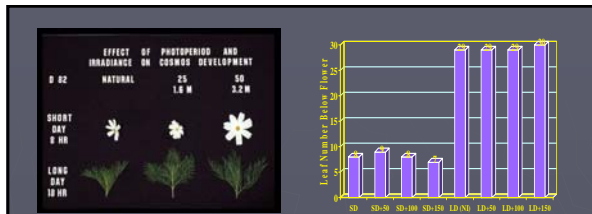
Floriculture Research at the University of Minnesota

John Erwin
Department of Horticultural Sciences
University of Minnesota



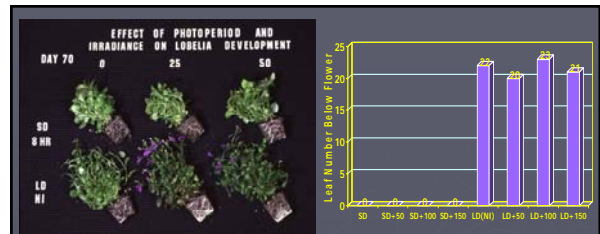
Obligate Short Day Plant

Plants only flower when grown under short days.



Facultative Short Day Plant

Plants flower earlier and develop fewer nodes below the first flower when grown under short days compared to long days.



Obligate Long Day Plant

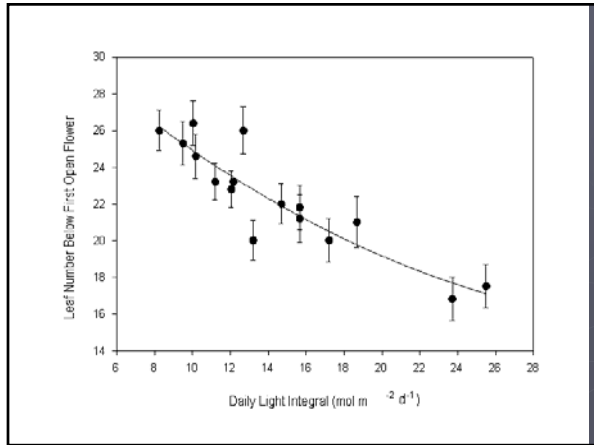
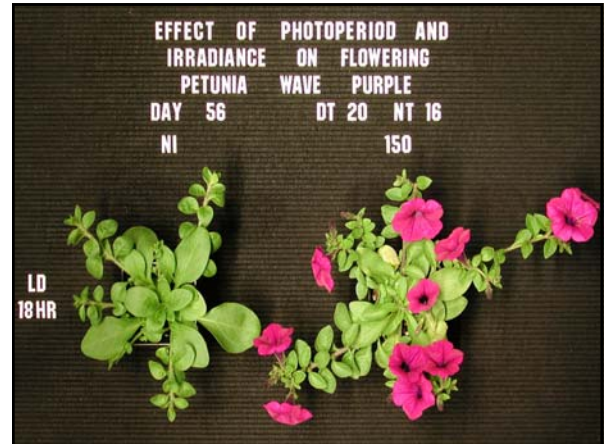
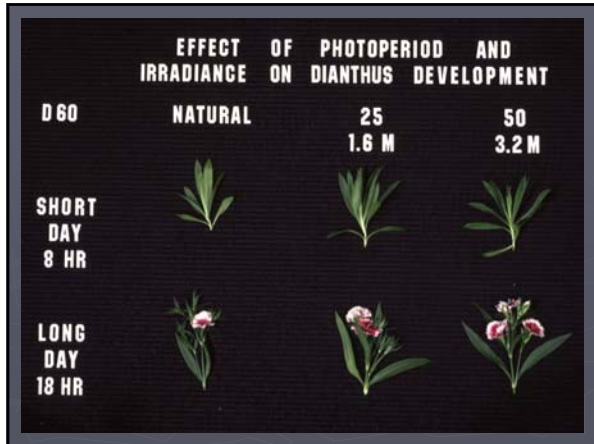
Plants only flower when grown under long day conditions.



Facultative Long Day Plant

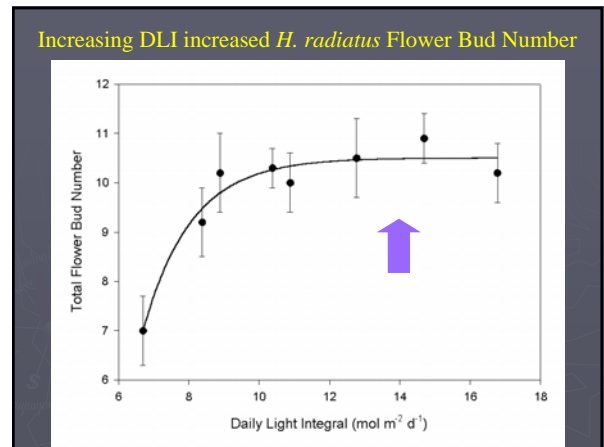
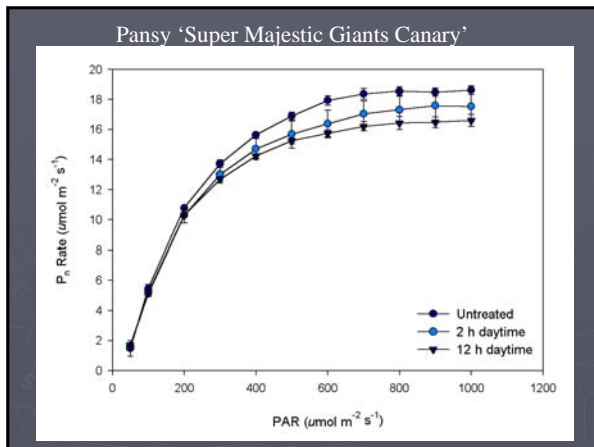
Plants bloom earlier with fewer leaves below the first flower when grown under long days compared to short days.

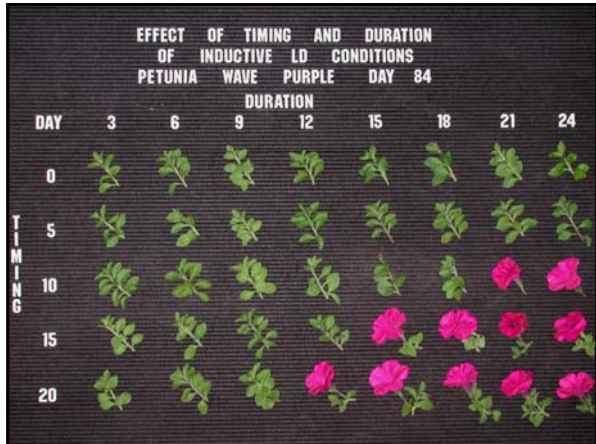




Irradiance Response Groups

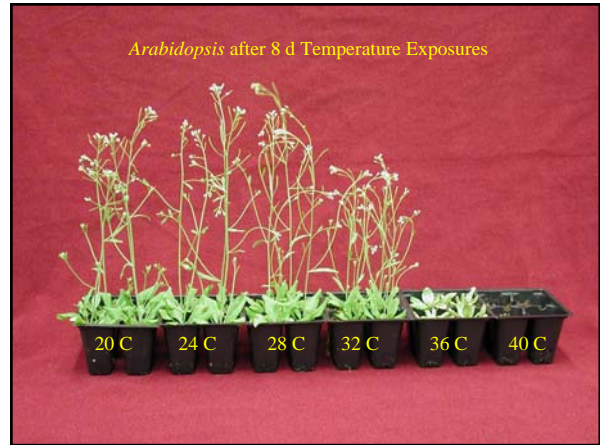
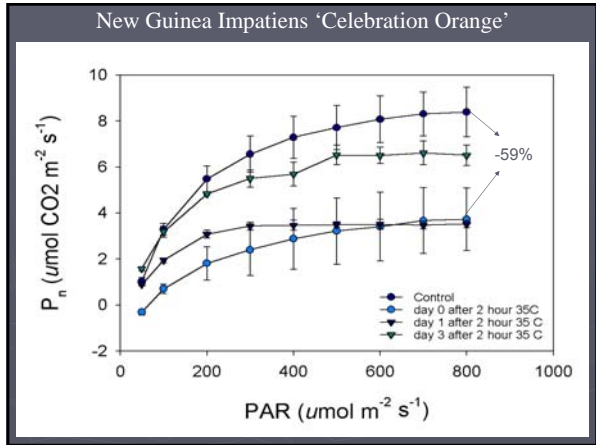
- ▶ **Facultative Irradiance Response**; Leaf number below the first flower decreases as irradiance increases.
- ▶ **Irradiance Indifferent Response**; no impact of increased irradiance on leaf number below the first flower.





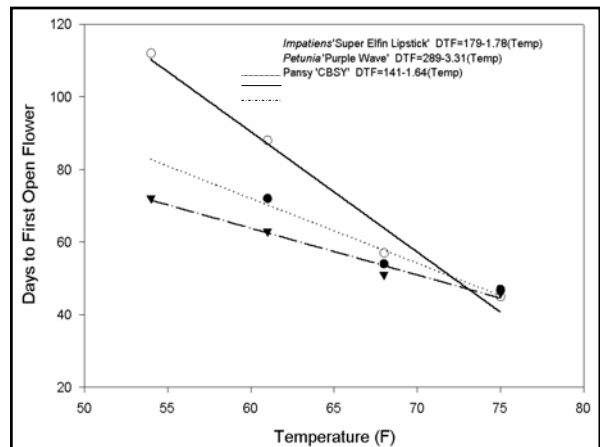
Floriculture Projects

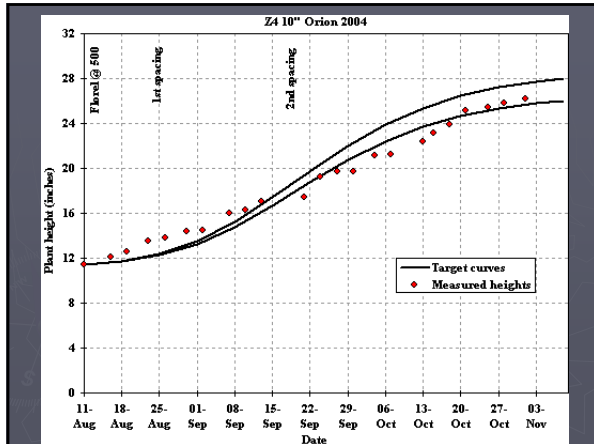
- ▶ Photoperiodism and Light Intensity and Preenfinishing
- ▶ Impact of Stresses
- ▶ Crop Predictability
- ▶ Plant Defenses
- ▶ New Crops Program
- ▶ Potential New Projects?



Floriculture Projects

- ▶ Photoperiodism and Light Intensity and Preenfinishing
- ▶ Impact of Stresses
- ▶ Crop Predictability
- ▶ Plant Defenses
- ▶ New Crops Program
- ▶ Potential New Projects?





Degree Hour Concept

- ▶ We have used the concept of 'graphical tracking' to control/manage growth stem elongation.
- ▶ Apple growers have used the concept of 'degree days' to predict disease infestation and growth rate.
- ▶ I propose that we can use the new concept of 'degree hours' to manage growth rate in bedding plants.

Calculation

- ▶ There is some base temperature at which leaf unfolding stops – usually 40-44oF.
- ▶ Take the actual temperature each hour and subtract the base temperature to calculate the degree hours accumulated.
- ▶ When the total degree hours (or energy) needed to produce the flowering shoot is reached, flowering occurs.

Example

- ▶ 8:00 – 9:00 am : $65^{\circ} - 44^{\circ}\text{F} = 21^{\circ} \text{ hrs}$
- ▶ 9:00 – 10:00 am: $72^{\circ} - 44^{\circ}\text{F} = 28^{\circ} \text{ hrs}$

Accumulated $^{\circ}$ hours 49 $^{\circ}$ hrs

