

# Effects of Temperature and Photoperiod on Flowering and Plant Quality of Potted *Ranunculus Asiaticus*

Nicole A. Rud (Terry L. Ferris, PhD - advisor, Mellanie Wells - sponsor)

Department of Plant and Earth Sciences, University of Wisconsin – River Falls

## Introduction

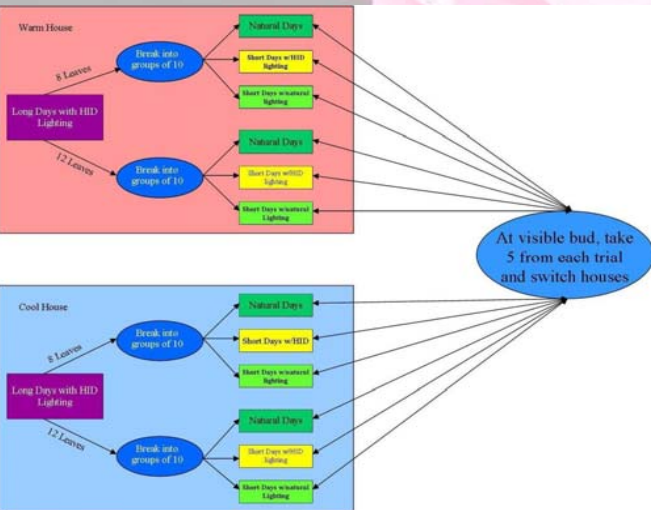
*Ranunculus asiaticus* is a cool temperature crop in the Ranunculaceae family utilized mostly by the cut flower industry. As a result, most of the information on culture and production for this crop is generally based on experiences growing the crop for this purpose, leaving those who wish to produce potted ranunculus to meet the increasing popularity of the crop, often guessing at what techniques would best produce quality, good-looking potted ranunculus. This guessing has led to growers losing time and money on failed saleable crops, making research in this area advantageous to the industry.

It has been found through previous research that *Ranunculus asiaticus* is affected by both temperature and photoperiod (Karlsson, 1998). This study will be focusing on the production of potted ranunculus, looking at temperature and photoperiodic interactions and their influence on quality growth and flowering as suited for a potted crop.

## Materials

- One plug tray (244) of *Ranunculus asiaticus* seedlings
- 4 1/2" azalea pots filled with ProMix BX
- High Intensity Discharge lights (high pressure sulfur) Incandescent night interruption lighting
- Shade cloths
- 14-0-14 fertilizer with 150 ppm Nitrogen

## Methods:



## Results:

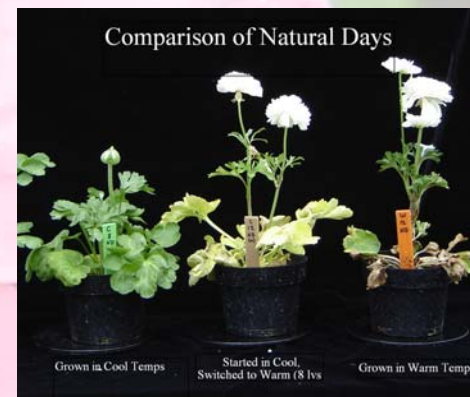
### • Flowering Characteristics

- Flower initiation and development responded more to temperature
  - Plants in the cooler temperatures took almost twice as long to flower
- Uniformity in flowering was more prevalent in cooler temperatures
  - Plants in the cooler environment flowered at the same time (within 2 days of each other)
  - Plants in the warm environment flowered haphazardly
- Flower buds and flower heads were much larger when grown under cooler temperatures
  - Those flowers were almost 2x the size of those in the warm temperatures
- Peduncle lengths did not show any correlation to light or temperature interactions
  - Peduncles were excessively long in all trials
- Suggests a genetic control at work

## Results:

### • Vegetative Characteristics

- The rate of leaf development was impacted most by day length
  - Development was most rapid in long days with similar rates between the two temperatures
- Plant habit was impacted most by temperature
  - Plants in cool temperatures:
    - More compact, higher quality habit
  - Plants in warm temps:
    - Excessive petiole and peduncle elongation



## Implications for Growers:

- This study shows that faster is not always better
  - You can push *Ranunculus asiaticus* to flower faster, but at the cost of vegetative and floral quality
- Even growing in cool temperatures, peduncle elongation may still be an issue due to the genetic variability of seeds
  - Growth regulators, such as B9, may be useful in further increasing quality by decreasing peduncle elongation, however, due to the genetic variability, spraying an entire crop may not be advisable

## References:

1. Armitage, A. 2003. *Ranunculus asiaticus*. Specialty Cut Flowers. Timber Press, Portland Oregon.
2. Dole, J. and H. Wilkins. 1999. *Ranunculus*. pp 792-797 in Floriculture: Principles and Species (1st ed). Prentice Hall, Upper Saddle River, NJ.
3. Horovitz, A. 1985. *Ranunculus*. pp 155-160 in Handbook of Flowering Vol IV. H.A. Halevy, editor. CRC Press, Boca Raton, FL.
4. Karlsson, Meriam. 1998. *Temperature and Light Requirements for Flowering and Development of Ranunculus*. Bedding Plant Foundation Research Report No. F-9803