

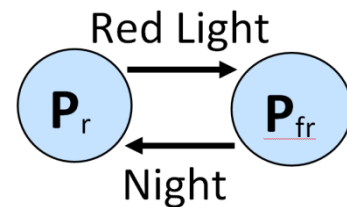
Horticultural Points of Interest

January 2018

- **Plant Flowering (Particularly Indoor Plants)**

- Phytochrome

- Pigment that behaves as Plant Seasonal Clock
- Exists in two Forms typically labeled P_r and P_{fr}
 - Different structural Forms of the same Molecule
 - Light causes P_r to transform to P_{fr}
 - Darkness cause to P_{fr} to slowly transform to P_r
- The relative Abundance of the two Forms controls many Plant Functions
 - Preparation for Winter Dormancy
 - Flowering
 - Seed Germination particularly for small Seeds
- Flowering
 - Long Day Flowering requires a Preponderance of P_{fr}
 - Long Night Flowering requires a Preponderance of P_r



- Long Day Flowering

- Necessitates night Length of less than 10 or 12 Hours so P_{fr} doesn't transition to P_r
- Examples: Irises, African violet, Cape Primroses (*Streptocarpus*), Gloxinia
 - Auxiliary Lighting helpful for these Indoor Plants

- Long Night Flowering

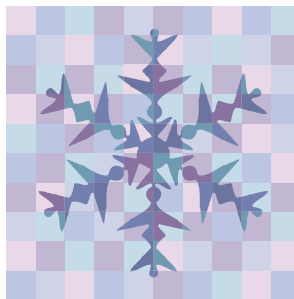
- Necessitates Night Length of more than 12 or 14 Hours so P_{fr} does transition to P_r
 - Night Length can be interrupted by artificial Lighting to a Degree depending on Brightness
 - Moon doesn't interrupt outside long Night Plants
 - As expected Red Light particular Problem
 - Think "Warm White"
 - With Interruptions Plants won't set Flower Buds
- Typically requires Long Night Length for 4 to 8 Weeks for Bud Set
 - Slower Response than long Day Plants
 - Once Buds are Formed Night Length not Critical
- Examples: Asters, Chrysanthemums, Fancy Leaved Begonias, Poinsettias, Christmas and Easter Cactuses, Kalanchoe, Gardenia
 - For any of these must shield from artificial Lighting at Night

- Day Neutral Plants

- A few Plants like Roses aren't affected by Length of Day or Night

- **Mycorrhizae**

- Bacteria and Fungi that colonize the roots of Plants
 - Especially prevalent in woody Plants
 - May extend long Distance from Roots
- Mutually beneficial Relationship
 - Mycorrhizae assist in transferring Water and Nutrients to Plants and may assist in protecting roots against Disease
 - Plants provide Carbohydrates and some Vitamins to Mycorrhizae
- Mycorrhizae Spores now Commercially Available
 - Organic Matter in Soils usually provides sufficient Mycorrhizae Spores for Outdoor Growing
 - That said Research at Cornell did show noticeable improvements in outdoor plant growth with some Mycorrhizae
 - Indoor Plants with sterile growing Media may see Benefit
 - Some Peat based potting Mixtures highlight the addition of beneficial Mycorrhizae
 - If purchased separately follow Instructions and heed Warnings, if any
 - Treat as an Experiment because little Data available to quantify Benefits for Specific Plants
- Some Commercial Mycorrhizae
 - Root Naturally Soluble Endo Mycorrhizae
 - Four Species of Glomus Fungi, which improve Water & Nutrient transfer to Plants
 - Endo means grows into Root; Ecto grows around Root
 - Presently experimenting with Fancy Leaved Begonia Seedlings
 - Natural Industries Actinovate
 - Species of Streptomyces Bacteria, which acts as a natural Fungicide
 - VivaGrow Mycostop
 - A second Species of Streptomyces Bacteria, which acts as a natural Fungicide



With All Best Wishes of the Season to You & Yours