

## Keys to success when germinating seed!

John Irwin, Department of Horticultural Science,  
University of Minnesota

- ✓ Check Media Temperatures
- ✓ Thoroughly Moisten Media!
- ✓ Reduce Light Intensity
- ✓ Provide Moisture Based on the Environment!
- ✓ Consider Topping With Coarse Grade Vermiculite!
- ✓ Some Species Require Light - Some Don't!

Often reduced or uneven germination is avoidable! Many of these problems result from non-uniform conditions while in the germination chamber/room/area or during the first three days after germination (seed coat cracking). Non-optimal conditions during this time result in dramatic losses and/or uneven development that can result in significant differences in flowering time. Six rules are listed below that are critical for getting optimal germination.

### **1. Check Media Temperatures in the Germination Chamber!**

Media temperatures should be between 72-74 degrees F. Often media temperature is less than air temperature (3-5 degrees F. less). This can drop media temperature to below the optimal temperatures for germination. Also, do not water with cold water! Cool media results in reduced percent germination and decreased seedling survival.

### **2. Thoroughly Moisten Media!**

Larger seed such as salvia, Dusty Miller or pansies may need more watering than other species before being placed in a germination environment. Alternatively, do a second watering while in the germination room with tempered water. Often a thicker layer of vermiculite is helpful to provide uniform moisture.

### **3. Reduce Light Intensity After Removing From The Germination Area!**

Often direct sunlight will heat flats to temperatures that decrease germination - any temperature over 78 degrees F. Media and/or seed temperature can easily be 10-20 degrees F. higher than the air temperature when plug trays are in direct sunlight. At no point during the first three days after germination (seed coat cracking) should light intensity at flat level exceed 200 footcandles (400  $\mu\text{mol m}^{-2} \text{s}^{-1}$ ). Some form of Saran is often good for this.

### **4. Provide Moisture That is Based on the Environment!**

Often higher light will result in seed drying on the upper surface while the lower surface is moist. This dramatically decreases uniformity of early development. Therefore, misting or watering frequency should be adjusted to accommodate changes in seed drying rate.

### **5. Consider Topping With Coarse Grade Vermiculite!**

Coarse vermiculite allows for air movement while providing a moist, shaded environment for early seedling development. Apply coarse vermiculite before or immediately after removing trays from the germination chamber.

### **6. Some Species Require Light - Some Don't!**

Provide light in the germination environment to deliver at least 10 footcandles of light (fluorescent bulbs only!). Germination of many species is enhanced by red light. However, germination of cyclamen, phlox and vinca requires darkness.

