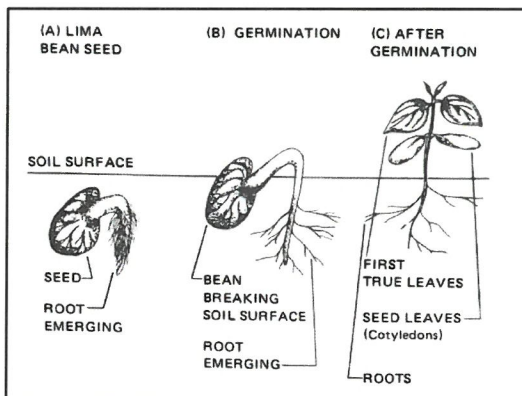


## PROPAGATION FROM SEED

- Containers & Growing Medium
  - Almost anything can be used as a container, as long as you have good drainage. Specialized trays for seed starting are available from a number of sources.
  - Growing Media- favorable pH level, and adequate water holding capacity with optimal drainage. It is firm, porous, uniform in texture, sterile, free of weeds, insects, and disease organisms.
    - ❖ Pro-mix- Peat and Perlite. Mycorrhizae. pH balanced. No nutrients.
    - ❖ Dixon Tree Mix- Peat, Pine Bark, Sand, Compost, and Black Know, Fertilizer and lime for nutrient and pH balance.
- Planting Seeds
  - Read the seed packet for information about planting depth; as a general rule, plant at a depth of about 2-3 times their diameter.
- Watering types
  - Mist- provides gentle hydration from above, increases relative humidity, prevents over watering
  - Bottom Watering- promotes strong root growth, prevents fungal diseases by keeping the foliage dry, maintains an even soil moisture, and reduces evaporation
  - Covered Dome- encourages germination by trapping moisture creating a high humidity environment, prevents drying out by reducing evaporation, increases relative humidity within the growing zone
- Seedling Care Overview (5 min)
  - Light- Good horticultural lighting is essential as it provides the right intensity and spectrum of light needed for optimal growth. Plants require a light that fits within the spectrum of 400 nm- 700nm. This refers to PAR or Photosynthetically Active Radiation. 400 nm represents the blue range which is essential for vegetative growth with strong compact plant development and 700 nm represents the red range which is essential for flowering, fruiting, and overall plant maturation.
  - Temperature- affects both germination rate and seedling development. Seeds have a optimal germination temperature which is unique to genus. Affects root and shoot development by promoting healthy root systems. Reduces stress and

minimizes fungal diseases. By managing temperature properly, you can optimize conditions for faster, healthier, and more vigorous seedlings. Generally, between 65-75F.

- Watering and thinning
  - The trays provided work by capillary action.
  - Check soil surface and water when top ½ inch feels dry
  - Check the weight of the container and water when it feels light
  - Observe leaf behavior. Plants wilt when they need water
  - Water in the morning. This prevents plant stress and ensures continuous healthy and vigorous growth of your seedlings.
  - Consistency is key
- Fertilizing
  - Once the seedlings have emerged and just before the true leaves begin to show, you can then begin fertilizing your seedlings.



- A dilute mix of something like Miracle-Gro 24-8-16 works great. This fertilizer has both macro and micronutrients needed for plant growth. The only exception is that most fertilizers lack Calcium and Magnesium that are required for plant growth. A product like Cal-Mag can be added to your nutrient solution; however, we have found that this step is not essential until you transplant seedlings to a larger container. Cut the recommended fertilization rate in half to dilute the nutrient solution to an acceptable level for the seedlings. Water your seedlings once per week with this dilute nutrient solution.

➤ <https://agriflifeextension.tamu.edu/library/gardening/essential-nutrients-for-plants/>

- Transplanting

- Hardening off is the process of gradually acclimating indoor grown seedlings to outdoor conditions before transplanting them into the garden. Seedlings grown indoors do not use direct sunlight, wind fluctuations, and other outdoor elements.
- Start slow- begin by placing them in a shaded area outdoors
- Gradually increase their exposure to direct sunlight
- Reduce watering during this time

- Troubleshooting

- Rapid trouble Shooting

- Leggy seedlings- typically occur due to **insufficient light**, leading to weak, spindly growth. Provide stronger light with either direct sunlight or good horticultural lighting, natural sunlight from a south facing window may not be enough. Adjust light duration between 12-16 hours. Note photoperiod for plants. If using natural light, rotate containers daily to prevent one sided growth habit. **Lower temperature**, overly warm conditions can lead to leggy seedlings. **Proper Spacing** as crowded seedlings can compete for light and thus stretch. **Reduce watering and fertilization**, this can lead to rapid weak growth. **Use a fan**, helps strengthen stems by mimicking natural outdoor conditions.
- Over watering- root rot, damping off, and stunted growth can occur. **Yellow leaves** can indicate either under fertilization or over watering. **Mushy stems**, especially at the base, can be a sign of damping off caused by overwatering. **Root rot** can be identified by brown, slimy, and foul-smelling roots. **Allow soil to dry out**, let the top 1 inch dry out between waterings. Water less often.