

SPECIES AND SPACINGS IN ROOTMAKER® PROPAGATION CONTAINERS.

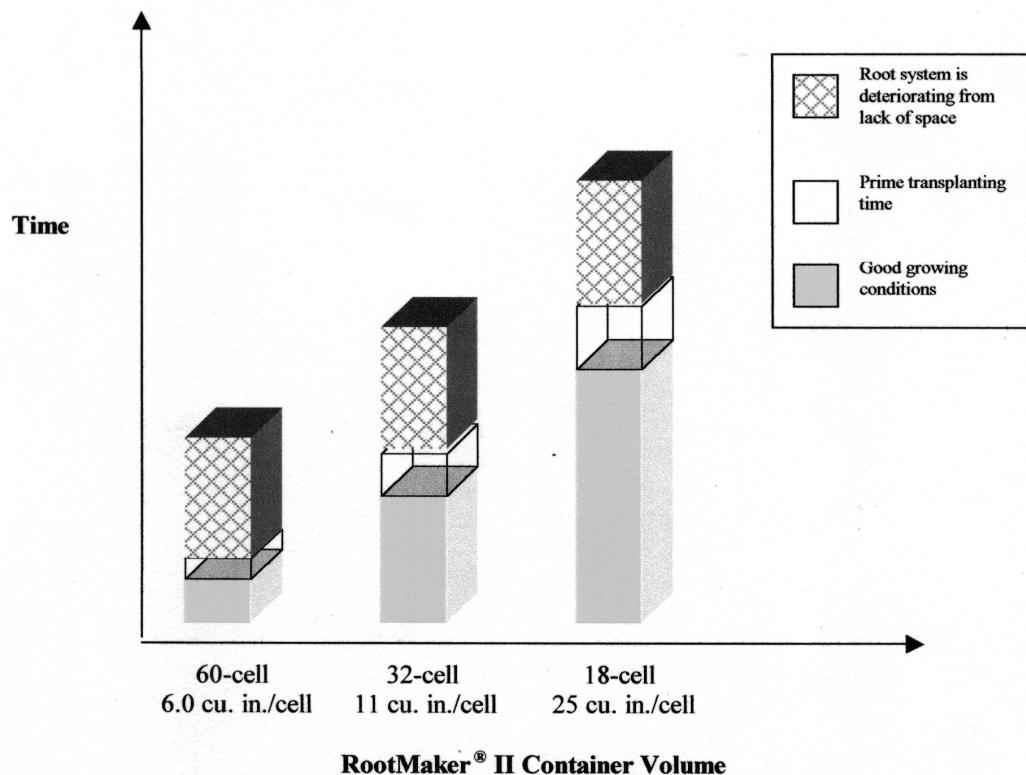
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Start with the basic physiological principals of plant growth. The more you work with the natural plant requirements and responses, the greater the benefits. The more you try to dictate to plants and ignore these basics, the more problems you create.

1. Light is essential for leaf functions and production of energy (sugars) that drive growth of roots and tops. With nearly all species, high light is superior to shading. Exceptions are beech, some maples, and a few other species that have evolved to do best with some shade during the early years.
2. When lower leaves become shaded and less efficient, plant reaction is to grow taller in order to better access light.
3. Lower leaves produce most of the energy for root and lower stem growth, while energy produced by upper leaves stays mostly in growth near the top.
4. When lower leaves are shaded, seedlings or cuttings are typically tall, spindly and have poor root systems. RootMakers® cannot produce miracles. If little energy is being sent to only a few roots not much can happen.
5. Tall, spindly seedlings require staking. Staking is a labor consuming, maintenance quagmire best avoided or at least minimized.

Therefore, production of seedlings or rooted cuttings should be done allowing light to lower leaves and the accrued benefits as prime objectives. Benefits from attention to these early details are many and continue throughout the life of the plant.

- A. 60 cell tray. ----- Species with small leaves, moderate growth rates and at least somewhat upright growth. Remember, the smaller the cell, the shorter the time plants can remain. Early transplanting is always superior to being late. Examples include; slow growing conifers, river birch, elm and hackberry as well as most species of shrubs, including crapemyrtle, althea, honeysuckle and others.
- B. 32 cell tray. --- Species with larger leaves and/or faster growth rates. Examples; loblolly, slash or spruce pine in Oklahoma grow sufficiently fast that they start shading one another and causing vertical stretch within a few months in 60 cells. I much prefer to grow these in the 32 cell and have stronger stems and roots and more flexible time in transplanting. Most species may be grown in the 32 cell tray; but those with large leaves must be transplanted very early.
- C. 18 cell tray, Original 4-Pack and Express 18 single cells---- Species with large leaves and/or fast growth rates. Examples; Shumard oak, Northern red oak, bur oak and others produce large leaves, even on very young seedlings. The 18 cell spaces these seedlings sufficiently far apart that stem and root development progress well up to a point where the seedlings are 12 to 14 inches tall and ready to transplant. Another example is Catalpa or sycamore/ Londonplane tree which both grow fast and have large leaves and quickly becomes shaded and less desirable when planted in smaller and more closely spaced cells.



After a certain amount of time, which varies due to diversities in geography and growing conditions, the root system of a plant will fill a container and growth will begin to slow. Propagation containers are more sensitive than larger containers. For each container size, there is a time of good growing conditions (gray bar), then a 'window' (clear bar) in which the plant should be transplanted to a larger container to prevent growth becoming restricted (cross-hatched top bar). Plants transplanted at the earliest desirable stage of development have consistently outperformed those not transplanted until later.