



# The Tall Spindle Planting System

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The Tall Spindle planting system is a planting system particularly suited for New York. It maximizes profitability through early yield, improved fruit quality, reduced spraying, pruning, and training costs, and the ability to rapidly turn over apple varieties from those less profitable to those more profitable.

Essential components of the Tall Spindle system include:

- **High density** – 1000 – 1500 trees per acre. Planting systems research in NY has shown that the optimum economic planting density is approximately 1000 trees per acre. Proper selection of density for this system depends on consideration of the vigor of the variety and rootstock and the soil strength. The maximum spacing between trees should 4 feet and 12 feet between rows. The optimum Tall Spindle spacing for an average vigor variety and soil is 3 feet by 11 feet
- **Full dwarfing rootstocks** – The most successful Tall Spindle orchards established to date have been on M.9 and B.9. Precocious dwarfing stocks are important since early cropping is essential. The yield efficiency and precocity of the Geneva rootstock series justifies their use especially where fireblight is a concern. Geneva 41, G.11, and G.16 are all appropriate rootstocks for the Tall Spindle. More vigorous rootstocks than these should only be used with the weakest growing varieties such as Spur Delicious.
- **Highly feathered nursery trees** – Nursery trees ideally have from 10-15 feathers per tree. Transplant shock caused by a high top to root ration helps keep trees within this tight spacing. It also contributes to significant fruit bud differentiation the year of planting. Trees with scaffolds provide bearing surface for production in the second leaf. Early bearing is essential to help pay for increased tree numbers and establishment costs.
- **Minimal pruning at planting** – Pruning at planting is a common practice with most planting systems to provide balance between the top to root and to encourage growth. Since the Tall Spindle system is planted with very little growth needed to fill the available space, very little pruning is needed. And one of our objectives is to actually cause some transplant shock. Pruning is limited to only the removal of a few larger branches along the leader. Generally, those that are more than ½ the diameter of the leader at the insertion point are removed.
- **Branch devigoration** – Upright scaffold branches are devigorated by bending below the horizontal through bending. Branch weights, rubber bands, or tying can all be successful. Branch bending maintains vigor, keeps trees within allotted space, and encourages the production of fruit buds for the following growing season.
- **Limb renewal** - ALL scaffolds are renewed by complete removal as they become too large for the available space and become out of balance within the tree. Renewal cuts are made using the standard method of using a “bevel cut” which encourages new shoots to form as replacement fruiting limbs. The Tall Spindle differs from most other systems in that there are no permanent limbs within the tree.

**Early fruiting** – Fruiting in the second and third leaf is essential to keep a low tree vigor level and provide income from early fruit sales. Aggressive pest management practices are essential starting in the second year since marketable crops are expected and necessary for optimum profitability. Crops in the early years must also be carefully managed to prevent biennial bearing. This is the only system we have ever tested that achieved a cumulative production over 1000 bushels in the 1<sup>st</sup> five years! This resulted in approximately a 40% increase in crop value compared to the Slender Vertical Axis and Sol Axis planting systems.