

Apples – Comparison of Traditional and Dwarf Orchards



Apple orchards: Dwarf orchards – compared to traditional orchards - are more productive, produce fruit earlier and produce better fruit – if managed correctly. However, dwarf orchards require a higher level of orchard management – especially in regards pruning, trellising, nutrition and water management.

Dwarfing rootstock limits both root and shoot growth. These differences lead to a number of orchard and management changes (See Table).

Table. Observations comparing Dwarf Apple orchards with traditional apple orchards.

Factor	Observation in Dwarf Orchards compared to Traditional
Rootstock	Special Dwarfing or size-controlling rootstock is required. Rootstocks vary in their effects on the extent of dwarfing, pest tolerances (non-specific replant, phytothphora, fireblight, wooley apple aphid), adaptability to soils (pH, water holding or logging), variety (fruit size and other quality issues, variety vigor), tree architecture (flat branch angles).
Branch and leaf development	Thinner trunks and branches Less growth results in better sunlight interception leading to less disease and better fruit quality (if trees are pruned properly)
Equipment needs and Spraying (or pest control)	Can be managed with smaller less powerful, cheaper equipment Requires less spray chemical per ha (or mu). Better spray penetration and better control because trees are smaller
Tree spacing	Higher density. 2,500-3,000 trees/ha (1,000-1,200 trees/ac) versus 350-600 trees/ha (150-250 trees/ac) for semi dwarf and even lower for traditional
Trellising	Essential
Diseases	Some Rootstocks offer more resistance to replanting and other diseases A more open canopy can result in less disease Better spray coverage means better insect and disease control
Weeds	With more sunlight, the weed types can change – but weeds can be a problem in both dwarf and traditional
Nutrition	Less root growth. Therefore, split applications and put fertilizer closer to plant. Trees can't reach nutrients deeper in soil
Irrigation	Irrigation needed even in humid environments. With less root growth, irrigate closer to the plants.
Pruning	Prune 2 times per year – approximately 62 hours/ha for dormant and 50 hours/ha for summer pruning. Needs special pruning techniques.
Thinning	Much less as less movement of ladders
Fruit production	Trees produce earlier. 2-3 years for Dwarf versus 5-8 years for traditional More light penetration means better apple quality in terms of size, color and sugar content (if pruned properly)
Harvesting	Easier as fruit more accessible and less ladder movement
Mechanization	Potential for mechanization of pruning and harvest