**Apple Tree Culture**

⋅*Malus domestica*- in the Rose Family: Rosaceae

⋅Apples have the widest range of suitable growing conditions in the world

⋅Chill hour requirement to break dormancy. Mendocino Coast ~600-900 hrs

⋅Self-Un-Fruitful. In general, apples need other varieties for pollination.

⋅Fruit trees need consistent irrigation until fully established (4 gal/week).

⋅Fruit trees need 6 to 8 hours of sunlight per day. Sunlight=fruit.

⋅Pomme trees bear on 2 yr (and older) fruiting spurs

⋅All varieties are grafted onto dwarf, semi-dwarf or standard rootstocks.

**Tree Structure**

All tree forms are comprised of these basic elements:

⋅Rootstock

 ⋅Graft

 ⋅Scion/Main Trunk

⋅Scaffold Branches- 45-60° optimum crotch angle for strength

 ⋅Laterals- “hangers for fruit”

 ⋅Buds- Vegetative, Fruiting and Compound Spurs

Proven Tree Forms:

⋅Open Center (vase-shaped)

⋅Modified Central Leader (Christmas tree form)

⋅Espalier, hedgerow etc. (horti-torture)

**Apple Tree Botany:**

⋅An understanding of woody plants: Cambium layer (under the bark) is comprised of Xylemˆ/Phloemˇ that transport water and nutrients throughout the tree.

⋅The top bud releases a growth-suppressing hormone (Oxin) that inhibits the lower buds, while stored energy from the roots comes from below.

⋅Alternate bearing: The natural tendency of many trees and plants to set fruit one year and spend the next year growing leaves. Thinning and pruning can help to suppress alternate bearing.

⋅Vertical growth is vegetative while horizontal growth produces fruit spurs.

⋅Training branches will alter hormones. 45-60° crotch angle is ideal for fruit and leaf harmony.

⋅Tricks like nicking or notching above or below a bud can interrupt hormone flow.

**Objectives of Pruning:**

To allow light into the center of the tree;

To influence the balance, form and size of the tree;

To direct growth for the purpose of balancing fruiting and vegetative growth; and

To strengthen the branch framework for quality fruit production.

**No two trees are alike, and no two people will prune a tree the same way, but pruning does have relatively predictable results. It is important to prune with a plan, starting with a few simple goals and a clear sense of the tree’s intended form.**

**Objectives of Training:**

Tree training is simply the manipulation or bending of a branch. Training is used to influence the naturally occurring growth hormones that move throughout the tree. Once you understand how these hormones work, you can train your tree to do almost anything! Training is also an effective non-cutting method to increase sunlight into the center of the tree.

**It is best to think of pruning and training in tandem, in both summer and winter, to achieve balance between vegetative vigor and fruitfulness and to maintain optimum tree form.**

**Essential Tools:**

⋅Hand Shears

⋅Loppers

⋅Pruning Saw

\*Always start with the pruning saw and work down to the loppers and shears. Large cuts should be made first to limit the time spent on small cuts. A branch may need to be removed entirely.

**The differences between winter and summer pruning on Pomme Fruits:**

**Winter Pruning** removes bare wood resulting in the tree using the stored energy in its roots to “re-grow” lost wood; thus it stimulates significant new growth. Winter pruning is invigorating for the tree!

⋅On young trees, head back ALL new lateral/spur growth to 3 buds. This will encourage the new apical bud to GROW and the laterals/fruit spurs to push out.

 ⋅The more buds cut off, the more vigorous re-growth will be.

⋅Keep laterals and fruit spurs close to the branch with heading cuts. Minimize bare wood. Reduce total branch weight to avoid breakage from heavy fruit loads.

**Summer** **Pruning** removes leaves (solar panels) thus suppressing growth and is de-stimulating for the tree. It is used to balance tree form, curb vegetative growth and induce rapid fruit spur formation on lateral branches.

⋅On mature trees, head back ALL new lateral/spur growth to 3 buds. This will encourage new fruit spurs below the highest remaining bud and stop the lateral from growing.

 ⋅Use thinning cuts on excess vertical wood to control unwanted height.

⋅Head back vigorous laterals to achieve balance.

**\* The 4 “D’**s”- **D**ead**, D**iseased**, D**amaged**, D**isoriented**-** Remove these first. **\***

**Primary types of cuts:**

**Thinning cut**: Removes a branch back to the point of origin.

⋅Cut just outside the branch collar and avoid flush cuts with the trunk.

⋅Not very stimulating at the cut. Limited re-growth in most cases.

⋅Wounds should be kept under 3 inches, whenever possible.

⋅If unexpected new shoots appear, thin them out immediately.

⋅Thin out roots suckers always.

⋅Thin water sprouts (vertical laterals) unless a new branch is desired.

⋅Thinning cuts do not need sealer- branch collar is the best band-aid.

**3-Step Cut** for thinning large-diameter branches to avoid tearing:



1. Start 6-12 inches from point of origin at the trunk. Make an upward cut on the underside of the branch, halfway through.
2. Finish the cut from the top down to remove bulk weight of branch.
3. Cleanly remove stub at branch collar.

**Heading cuts**: Shorten a young, growing branch back to a desired bud.

⋅Heading cuts will produce different reactions depending on season.

⋅The harder you cut in winter, the more will grow. Healthy trees will replace lost wood, with gusto!

⋅Cut to outward facing spurs and laterals. 45- 60° is optimum.

⋅Head back vigorous top growth to weak leaders on older trees.

⋅Summer heading of laterals encourages the formation of fruit spurs and allows light into the canopy.

**Shortening cut**: \*Use sparingly\* A heading cut into older wood tends to stop further growth. It is used when a branch has filled its allotted space. Can backfire with extreme, undesirable sprouting!

Do not try to cut a tree across a certain height- aka “Hedging” – This will encourage bushiness and inhibit fruit set due to excess shade.

**Spur thinning**: For mature, heavy bearing trees to lessen fruit load.