



Orchard Revitalization and Heirloom Fruit of the Klamath and Salmon Rivers

Preserving the Past, Securing the Future

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Introduction

You've probably seen them, on the edge of the woods, or in a clearing that was once a homestead. Old fruit trees that blend into the surroundings – they're hardly noticeable until they're covered in blossoms in spring, or heavy with fruit in the fall. They stand quietly year after year, with no care or tending, no pruning, irrigation, or fertilization. Yet somehow they survive, and even thrive, producing fruit year after year. They've become part of the landscape, and each has a story to tell: of a great grandfather who managed to obtain a seedling or a graft from some faraway place, a family who planted and tended the orchard, and kids who grew up in the shade of the trees and picked and ate the fruit through the summer and fall.

These old legacy trees are not only part of the past; they are an important part of a bioregional food system, vital for the present and the future. They have survived years of drought, heavy winter snow and freezing, heat waves, and intense storms. Those still standing and producing have proven to be well-adapted to their habitat's specific soils, pests and microclimate, and they produce food with little or no extra water and care. Many of these trees are unique, one-of-a-kind plants, nearing the end of their lifespan; and once they are gone can never be retrieved.

Since 2012, The Karuk Tribe Department of Natural Resources (KDNR), the Mid Klamath Watershed Council (MKWC), and the Salmon River Restoration Council (SRRC) have collaborated to revitalize these long-standing orchard sites and save these heirloom tree varieties for future generations. Technicians from the KDNR and SRRC have mapped old orchard sites, made baseline resource assessments, and regenerated conventional and cultural resources through restorative pruning and clearing blackberries and other competing vegetation. Field crews from all three organizations have identified the most promising trees with permanent markers and cataloged fruit by photographing and recording detailed descriptions. Through a series of workshops, community members have learned how to restore their own orchards through regenerative pruning, top working trees with heirloom varieties, and grafting their own seedling fruit trees. Project partners have grafted approximately two hundred seedling trees to be planted in the community, and the Salmon River Restoration Council will be planting a Community Heirloom Orchard in the Forks of Salmon community. MKWC purchased a community apple press that now circulates extensively within the river communities and beyond, making cider from hundreds of pounds of apples that were previously underutilized.

This publication aims to inform our local river communities, and beyond, of the work that has been accomplished in revitalizing local orchards and saving heirloom varieties, and provide inspiration and resources for continuing these efforts.



Orchard Revitalization

Orchard Revitalization is best undertaken as a seasonal sequence of efforts, each one following and building upon the previous step:

1. Summer/Fall - Identify heritage orchards and assess them for number of trees, age of trees, tree health, diversity of varieties, etc. Visit orchard sites and collect fruit as it ripens to evaluate the quality of specific varieties. See Appendices 1, 2, 3.
2. Winter - Begin restoration pruning. See [Pruning to Restore an Old Neglected Apple Tree, Oregon State University Extension](#), and Appendix 5, Pruning Handout.
3. Next summer/fall – continue monitoring, assess fruit for quality and unique heirloom varieties, record field notes, and tag individual trees with aluminum markers.
4. Following winter - Propagate heirloom varieties, prioritizing those that are unique older ones in danger of being lost. Collect scion wood the year after restoration pruning, as the best scion wood is from trees that were pruned the previous winter.
5. Continue assessment, monitoring and propagation.

Assessing Heritage Orchards and Evaluating Heirloom Varieties

Heirloom fruit trees tend to be spread across a wide landscape – some are in plain view and well known by the community, but many are off the beaten track, half hidden, half-forgotten and usually not tended at all. The task of finding, identifying and propagating so many far-flung fruit varieties can seem daunting. Here are some of the approaches used during this project:

1. **Talk to elders.** Many elders have in-depth knowledge of specific heirloom fruit trees and their characteristics. Elders were the most important source of information for this project, sharing their knowledge of particular trees, fruit varieties and the story of where they came from and how they have been utilized.
2. **Visit and document sites.** Make maps and record detailed notes on the location of orchards, number of trees and any relevant details known about the history of the site. Karuna Greenberg and Lyra Cressey of the Salmon River Restoration Council had already taken an interest in preserving heirloom fruit varieties before this project began. Their extensive knowledge of heritage orchard sites and heirloom varieties was a large contribution to this project.
3. **Identify individual trees with permanent metal tags.** An heirloom tree may continue to bear fruit and provide a source of propagation wood for many years after it has been identified and evaluated. Tagging the tree with a clearly printed metal marker assures that it can be positively identified for future propagation.
4. **Evaluate ripe fruit for taste and various uses such as cooking, preserves, cider etc.** Appendix 3 is the form we developed for evaluating fruit. Note that there are specific pomological descriptors for the shape and characteristics of fruit (see Appendix 5, Glossary of Apple/Fruit Terms). It is best to have a standardized form with clear references to terms, and to evaluate fruit as a group rather than an individual, in order to discuss and agree upon general descriptions. Since the goal is to identify and save rare varieties, at this step it is important to identify any known varieties that are still commercially available and record them as such, for the next step of prioritization. We used names that had been given by community member to varieties, and when there



1. Trees were labeled with metal tags.

were none we took the liberty to assign names. Whenever possible we photographed ripe fruit with a card identifying the variety.

5. **Prioritize fruit varieties to be saved.** Any variety of fruit found in an old orchard can be worth saving and propagating, especially if local people know and value the fruit. However, the varieties that are old, rare and possibly one of a kind are the most vulnerable to being lost and most important to propagate. It is important to verify if any of the fruit are known varieties that are still available from commercial nurseries. There are three groups or classes of prioritization:
 - a. Common commercial varieties that are readily available in nurseries, and thus need not be propagated.
 - b. Heirloom varieties which, though less common, are still commercially available through nurseries that specialize in heirloom varieties. Varieties that we encountered include Belleflower, Gravenstein, Arkansas Black, and older strains of Golden Delicious. It is worth noting that some of these varieties, such as Golden Delicious, have been cultivated for so long that several “sports”, or variations exist. The old fashioned Golden Delicious found in heritage orchards are often of superior flavor, the newer varieties having been bred for uniform ripening and the ability to be stored for long periods and shipped long distances. Thus it is certainly worthwhile to preserve such older variations of known varieties.
 - c. Unique, seemingly rare varieties that have distinct characteristics, often with stories documenting their heritage and pathway to the mid Klamath. These include Sheepsnose apple, some Aubrey Ranch apples, Sagaser plum, Sagaser fig, Eddy Gulch Giant apple, Godfrey Winter pear, George Ranch Applesauce, and the Little North Fork Porch plum. These varieties received a higher prioritization for propagating.



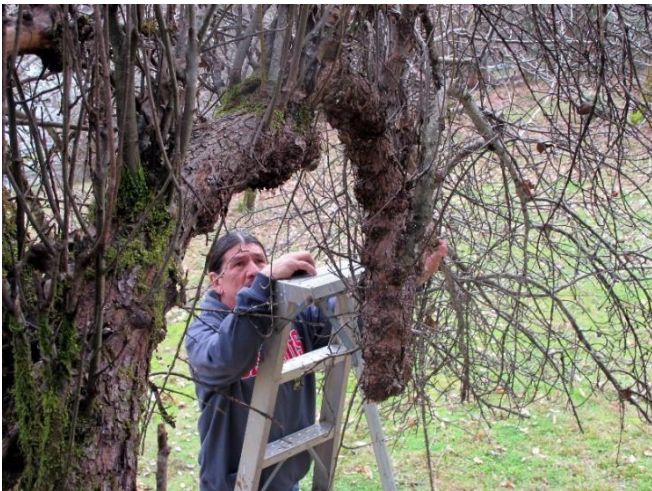
2. Gathering fruit for evaluation.



3. Tasting in the field.

Restoration Pruning

Karuk Food Crews invested many hours in identifying, assessing and restoring heritage orchards. Restoring old neglected fruit trees is a process that should be done gradually rather than all at once, typically requiring 2-4 years. Removing too much wood at once can shock old trees, resulting in sunburned branches or total loss of important older trees. [Pruning to Restore an Old Neglected Apple Tree, Oregon State University Extension](#) is an excellent handout that describes the restoration process. Karuk DNR Food Crews also spent many hours clearing away competing vegetation from old orchards and implementing restoration pruning over several seasons.



4. Karuk DNR Food Crews restoring heirloom orchards.



Propagating Heirloom Varieties

Once heirloom varieties are identified and restoration pruning has begun, the next step is propagating varieties by grafting onto purchased rootstock (some species such as fig and quince can be propagated by cuttings). Ideally this step follows the initiation of restoration pruning as the best scion wood is the new growth that occurs in response to pruning. We used three approaches to propagating fruit trees: 1) Training Karuk Food Crew and Salmon River Restoration technicians in grafting larger quantities of fruit trees raised in a small nursery, as well as field grafts; 2) Training community members in orchard revitalization and grafting (See Community Workshops and Events); and 3) Partnering with a local nursery to custom graft the highest priority heirloom fruit varieties.

Collecting and Storing Scion Wood

Scion wood is collected and labeled in the dormant season, December through March. The best scion material is wood from the previous season that grew vigorously in response to pruning. Collecting a variety of calipers ensures there will be enough scions to match rootstock size. Scion needs to be clearly labeled, wrapped in a damp (not dripping) towel, and placed in a large plastic bag and kept refrigerated until grafting. Check scion wood occasionally to ensure there is no mold growing. It is essential to keep scion wood fully dormant until grafting. Scion wood from peaches and Asian plums is harder to store and tends to “push” and bloom even in cold storage, so it is best to schedule grafting those early in the season, i.e. January or February.

It is often difficult to obtain ideal scion wood from old heirloom fruit trees, especially if they have lost vigor. Often restoration pruning will yield improved scion wood the following season, but sometimes a tree is too weak to respond, and may not even make it through another year. In these cases it is best to top work whatever scion can be gleaned onto a young, healthy tree. See *Field Grafting* below.



5. Weak, spindly scion wood from an old tree (above) is much harder to bench graft than vigorous scion wood from a healthy, pruned tree (below). It's best to top work weak scion onto a young, healthy tree rather than attempt to bench graft.



6. Scion wood cut, bundled and labeled.

Grafting Fruit Trees

There are many methods for grafting fruit trees, and several instructional publications are on the MKWC website: <http://mkwc.org/programs/foodsheds/resources/fruit-trees-orchards/> . Most of the trees for this project were bench grafted in late winter/early spring by technicians using the whip graft, and/ or cleft graft.



7. Bench grafting in March.



8. The whip graft was used on most bench-grafted trees.



Tending Grafted Trees, Success Rates

Grafted fruit trees require de-suckering and pruning the first several months, and to one to two years of care in a nursery before they are ready to be planted out. Consistent watering and a sheltered location protected from winds and harsh late afternoon heat are essential. For the Food Security Project, the success rate of grafts to field-ready plants ranged from 64% to 89%. Factors include experience of grafters, condition of scion wood (many older heirloom trees lack vigorous growth ideal for scion wood), species, (peaches, nectarines, apricots, and Asian plums are harder to graft than apples, pears and European plums), and nursery conditions (one of the nursery sites was more exposed to river wind and resulted in higher losses). Contracting grafting out to a willing, established nursery can help address all of these challenges, resulting in higher success rates and a lower cost per tree, but lower community involvement. All trees were grafted “in house” by KDNR, SRRC, and MKWC, until the final year, when local Rolling River Nursery was contracted to propagate some of the high priority varieties identified by this project. As noted in RAFT’s *Forgotten Fruits Manual and Manifesto*, small and medium scale nurseries are one of the most vital repositories of rare, heirloom fruit germplasm.



9. Ben Saxon, Karuk DNR, de-suckering young grafted fruit trees.



10. Lyra Cressey (left) and Karuna Greenberg of SRRC with a crop of grafted heirloom trees.

Field Grafting

Mature fruit trees can be grafted in the field using the bark graft and/or cleft graft. This method allows nonproductive trees to be converted to one or more varieties without needing to dig out and replant the mother tree. Topworked grafts on mature trees heal quickly and respond with vigorous growth, replacing the entire canopy in one season and providing a crop within 2 years, a much quicker interval than replanting. The Orleans Community Garden had several seedling peach trees that were not bearing fruit, and we top grafted Red Haven, an heirloom peach, onto the seedlings. Several seedling trees in heritage orchards were topworked with heirloom varieties. This is also an excellent strategy for saving and propagating scion wood from old trees with very little vigor. Old, unpruned, heirloom trees typically lack the vigorous growth needed for scion wood ideal for bench grafting (see photo 5). In some cases the parent tree may be too weak to respond to restoration pruning, and/or in danger of being lost before the next grafting season. Topworking this substandard scion wood into a healthy tree will save the heirloom variety and also produce a substantial amount of scion wood for the following season.



11. Topworking seedling peaches in the Orleans Community Garden, March 2015.



12. Scion wood from old, weak trees can be top worked onto a young, healthy tree to save the heirloom variety and produce healthy scion wood for the following season.



13. The same peaches in August 2015. Five months later the canopies have re-grown.



14. Field grafted (topworked) tree, Winter 2015



15. The same tree one year later.



16. Ben Saxon with topworked trees after one year, note new growth of six to eight feet.



17. Topworked plums in restored orchard.

Distributing Fruit Trees

Several approaches are being used for distributing fruit trees produced through this project. The Karuk DNR is planting and distributing trees to community members, ensuring that trees are returned to families/homesteads from where they originated and are planted in areas where the public will have the greatest access. The Salmon River Restoration Council is planning to plant an heirloom community orchard in order to preserve varieties and provide community access to fruit and scion wood. In the meantime, SRRC is selling grafted trees to recuperate costs and help fund the continuation of the project. Trees are sold at community events where trees are displayed with information about the project. We developed a double-sided handout for fruit tree recipients, with care and planting instructions and background on this project (see Appendix 6).



18. Orleans Elementary students planting heirloom fruit trees at the Senior Center. Photo Ramona Taylor, MKWC.

Community Workshops and Events

Pruning and Grafting Workshops

Free community workshops were offered each year (pruning workshops in January and grafting workshops in March). Workshops were held in Orleans, Sawyers Bar, Happy Camp, Gasquet and Klamath. Pruning workshops covered a wide range of fruit species and types of pruning, as well as how to collect scion wood for grafting. Grafting workshop participants were encouraged to bring scion from their own heirloom tree(s), and each participant went home with at least one grafted fruit tree.

A total of 155 participants attended pruning workshops. 240 trees were propagated in the grafting workshops. Pruning workshops were especially popular, at times attracting 50 – 60 people, in small, rural locations.



19. Pruning workshop, Sawyers Bar, January 2016.



20. Grafting workshop, Orleans, 2015.

Community Cider Press

MKWC purchased a community cider press that is available to the public for free. It has been used extensively at schools and public events and is a great way to make use of local apple crops that are plentiful and underutilized. It's also a big hit with kids!



21. Drive-by apple pressing, Orleans, September 2016.

Heirloom Fruit Tasting and Evaluation

At the September 2016 MKWC Harvest Festival we organized a fruit tasting. Displaying and tasting a wide variety of fruit proved an excellent way to engage the community in sharing the many heirloom varieties we had identified from local orchards. Many participants shared their own knowledge of more heirloom fruit varieties and orchard sites.



22. Community fruit tasting and evaluation, September 2016.

Accomplishments

Number of heirloom trees restored: 165

Number of heirloom fruit varieties cataloged: 59

Technicians trained in pruning and grafting: 8

Fruit trees grafted by project technicians: 400

Fruit trees grafted in community workshops: 240

Fruit trees contracted for custom grafting: 90

Workshop participants, Pruning and Grafting: 365

Heirloom Fruit of the Klamath and Salmon Rivers

The following is a partial list of heirloom fruit varieties identified and cataloged over the five years of this project. Whenever a local name was in use we applied it, otherwise we assigned names based on the site and/ or characteristics of the fruit. During the course of the project some fruit were identified as existing varieties, as noted. It is likely that more of these varieties we identified are in fact named varieties, though it may take several more years to identify them as such. When evaluating the fruit as a group we assigned an overall rating, 10 being the best, to help prioritize which fruit were the highest quality and most important to save, though not all varieties were rated.

Evaluating heirloom fruit varieties is often a matter of spotting a diamond in the rough. Most of the trees from which we gathered had had no pruning, fertilization or irrigation for several years; many were “bear pruned” and overgrown by competing vegetation, factors which were considered when rating for flavor and quality. A fruit produced under such conditions which yields good flavor is most likely to be even better with a bit more care.

Apples

Allen Keeper – Shape is slightly conic and lopsided, angular. Small, green fruit ripening to yellow, with stars, lightly russeted, good keeper. Too underripe at time of tasting (9/14/16) to evaluate flavor, but lots of sweetness considering how green it was. Planted by Jessie Allen’s grandmother Jessie.



Allen Swimmer – Fruit shape is oblate, lopsided and regular. Yellow fruit with red stripes, starred and spotted. Light russet. Thick skin, coarse flesh, crisp, medium juicy. Tart, aromatic, vinous flavor. Excellent for fresh eating and keeps up to six months. Planted by Jessie Allen’s grandmother Jessie (born 1898), who did laundry for miners as a girl, saved money and bought trees, which she planted up and down the Salmon River; Jessie believes they may have been ordered from the Sears catalog. As kids, when Jessie and her friends and siblings were done with



school and chores on late summer evenings, they would collect shirt-fulls of this apple in their backyard. Upon reaching their swimming hole at Indian Crossing they would dump the apples into the river, and when they were done playing they would swim home downriver, catching as many apples as they could with their mouth along the way. Jessie’s mother is Nancy Allen, born in 1919. **Rating 8**

Aubrey Ranch #1 – Round, regular fruit with stars, yellow background, blushing more on the sunny sides, but ripening in the late fall to a bright rosy red. Thick, waxy skin and no russet. White flesh is coarse, dry, tart, and slightly sweet - good for fresh eating, pies, and preserves; hangs well on the tree. This tree is one of the largest and most



accessible on the Aubrey Ranch. Labeled photo with "Aubrey Ranch #1" taken at first sampling 9/28/16. Second photo with box of apples taken 11/2/16. *Photos Heather Rickard, Karuk DNR.*

Aubrey Ranch #2 – Round to oblate fruit, regular shape. Stout, very hard, dense fruit with green-yellow background and rusty red stripes. Crisp, dry and bland. Sampled on 9/28/16, perhaps flavor improves later in season? Some apples were rotting on the tree... *Photo Heather Rickard, Karuk DNR.*



Aubrey Ranch #3 – Oblate, elliptical fruit, yellow with red stripes, blushed, spotted, with darker stars. Thick, waxy skin, light russet at stem end. Fruit was overripe at evaluation, 9/28/16, but still had good flavor – re-evaluate earlier in season. Large tree is believed to be one of the older and more established on the Aubrey Ranch, close to the river. *Photo Heather Rickard, Karuk DNR.*



Bloomer Spring – Large, green apple growing in the spring at the bottom of the Bloomer Mine driveway. Recommended by Sarah Hugdahl.

Daisy Jacobs #1 – Oblate, lopsided shape is elliptical to angular in cross section, late green apple; thick skin is waxy, with stars, lightly russeted at stem end; coarse white flesh is very dense, tart and crisp, with a tiny bit of bitterness. Was underripe at evaluation, good for fresh eating, cooking, baking, preserves, probably a good keeper. *Photo Heather Rickard, Karuk DNR.*



Eddy Gulch Giant – A huge red apple with hard, very tart, snow-white flesh (1 apple can make a pie). Old apple growing next to David Foote’s house, now burned. Origin unknown, but probably left from old Rollin’s Mine settlement. From Boone Ford and Dave Foote.

Ferris #1 – (at time of evaluation, 9/12/16, fruit was too ripe to evaluate). Fruit is ovate, lopsided, ribbed. Yellow color with light red stripes. Starred and spotted, very light russet at stem end.



Ferris #2 - Green-yellow apple with coarse, dense flesh; very firm. Tart, crisp flavor with a good snap. Fruit is spotted with dimples at calyx end; round to slightly conic, lopsided, angular at cross section. Old, large tree was pruned in 2015 and 2016, still in shade. 2016 crop was modest but good quality considering the shade and lack of care. Trees have been identified as good heirloom varieties, show lots of promise.

Rating: 8



George Applesauce –A green apple, described by Claire as making the BEST applesauce of any apple, ever. Biennial bearer. Growing on the George place on the lower South Fork, planted by Claire’s dad in the 1940’s. From Claire George.

George Ranch Red – A small red apple with greenish flesh and tart flavor. Good winter keeper. Originally from the old George homestead in Cecilville, grafted and replanted at Claire’s house on the lower South Fork in the 1940s. From Claire George.

Godfrey East Fence – No description for this apple, but the tree is left from the original Godfrey Ranch Orchard, and Godfrey was known for the quality of his fruit trees. From Geba Greenberg.

Godfrey, Lino’s Yard – No description for this apple, but the tree is left from the original Godfrey Ranch Orchard, and Godfrey was known for the quality of his fruit trees. From Lino Darling.

Hacking, Backyard Red & Green (Late Sour) – Conic, regular shape, red stripes over green background, blushed, russet absent. Fine, crisp juicy flesh, tart, large fruit, good for pies. *Photo Heather Rickard, Karuk DNR.*



Hacking, Old Fashioned Yellow Delicious – Green ripening to yellow, with spots, thick skin, light russet at stem end. Fine flesh, snappy, sweet rich flavor. Note – old fashioned Golden Delicious tend to have better flavor than modern varieties, which are bred for cosmetics and to store and transport well. The “pop” or snappy description is typical of this variety, which ripens to an excellent, crisp consistency.



Hacking, “Big Wavy” (identified as Belleflower) – Oblique to oblong shape, lemon yellow color with stars, ribbed, russeted at stem. Cream colored flesh is coarse, both tart and sweet. Ripens in September. Belleflower was a common pollinator variety planted in California orchards in the 1930s onward, and has been identified at several old orchards in the Mid Klamath/Salmon River corridors. It develops long, arching branches covered in flowers (thus its namesake, and useful pollination). Favored as a cider apple for its high sugar content. *Photo Heather Rickard, Karuk DNR.*



Knownothing McIntosh – An old McIntosh apple from the Knownothing cabin. McIntosh is a large apple with fine-grained, crisp, sweet/tart flavor. Origin unknown, but probably left from the old homestead there. From Lloyd Ingle.

Knownothing Etter’s Waltana – A Waltana apple planted by Lloyd and Nancy at the Knownothing cabin. Waltana is a medium to large green apple with thin red striping and crisp, firm juicy flesh. From Lloyd Ingle.

Larson, 9/12/2016 – Dense apple with thick green skin, starred, light blush and slight russet at stem. One of the few fruits found at the Larson orchard in 2016 due to bear foraging. Fruit was underripe at tasting, but shows promise. Likely to be a good storage apple.



Little North Fork, Best – Conic to oblate, regular shape, red stripes over green-yellow background; thick skin, blushed, no russet. A very large, crisp, firm, juicy apple that ripens over a long period (30 + days) in mid-September to mid-October. Biennial bearer. Prolific. An excellent quality, all-purpose apple. Origin unknown but presumably from the old Algren homestead. One of the best varieties collected from the Salmon River. (Could be Northern Spy, or similar variety?). From Robert Will.

Rating: 9



Little North Fork, #2 – Oblate, regular shaped apple, yellow cream colored with stars, thin skin develops a deep red-pink blush, has veined russet on calyx end. Fine flesh is crisp, but not snappy, juicy. Sweet and tart, good for cider and fresh eating. **Rating: 6**



Little North Fork #A3 – Conic, angular green apple, lightly starred, develops a light, orange blush. Sweet tart, caramel flavor. Underripe at time of evaluation, shows promise.



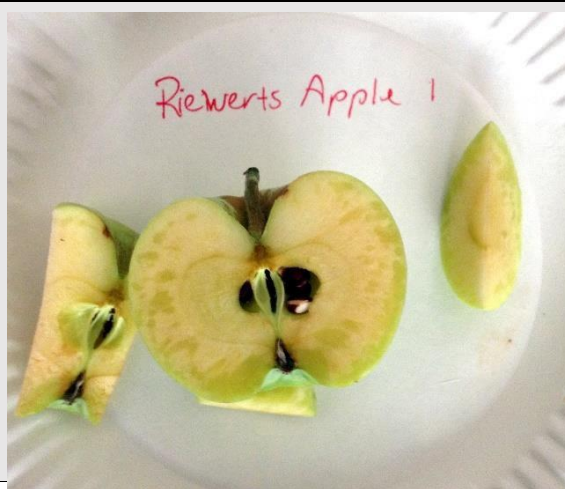
Nordheimer A6 – Oblate, ribbed fruit is green with light red stripes. Skin develops a light wax and slight russet at stem. Very juicy with a nice balance of sweet and tart. Seems to have a wide ripening season. Fruit quality is impressive considering tree is very over-shaded and neglected. Possibly a Gravenstein? No scab or insect damage. **Rating 8.5**

Nordheimer A8 – From the large, weeping apple tree at Group Site B. Growth habit and preliminary fruit assessment suggest that this could be a Belleflower Apple, but we have not yet confirmed this. A Belleflower would be a medium to large, pale-yellow apple with cream-colored flesh that is crisp and juicy with a sweet/tart flavor.



Pink Peach – Round, regular shape, creamy yellow with pink stripes, thick skin, light russet at stem end. Fine, crisp, juicy white flesh is slow to brown when cut. Sweet, tart and aromatic, good for fresh eating, cooking/baking and applesauce. A good dessert apple with nice texture. **Rating: 7.5**

Riewert's #1 – Oblate, angular shape, green apple with red mottling, shiny skin with light russet, very hard, firm apple, water core. Tart flavor, good cooking apple, disease free. Underripe at evaluation.



Sagaser A1 – Green apple with very slight blush and stars, round-oblast shape, angular. Thick skin has bloom and no russet. Tart, lemony flavor. Largest tree at the Sagaser site. Underripe at time of testing, 9/14/16. **Rating: 5**



Sagaser A-2 – Round, slightly conical, regular shape, green apple with red striping blush that can deepen to solid red on sunny side; thick skin with bloom, russet absent, course, dry, mealy flesh, sweet taste, browns quickly. Solid, blemish free apple appears to be disease resistant, tree is old but healthy. Sweet, non-descript flavor, resembles Rome (bubble gum flavor). Possibly a good keeper which may develop better flavor in storage. **Rating: 4**



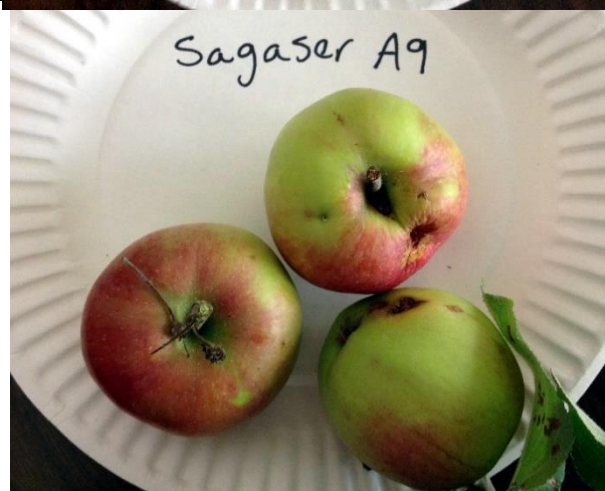
Sagaser A6 – Shape is oblique, regular. Green fruit with light red stripes/ blush; skin has light bloom, slightly waxy, very light russet. Good complex flavor with hint of spice, at sweet end of tart. Probably a good keeper. Scraggly tree at edge of cliff, fruit quality likely to improve with better care and conditions. **Rating: 7+**



Sagaser A-7 – Round, angular shape, green, spotted skin with light pink stripes, lightly russeted; fine, smooth, juicy flesh is at the tart end of sweet, dense flavor; good for fresh eating, cider and probably a good keeper. Shows a lot of promise. **Rating: 7**



Sagaser A9 – Round, regular shape; green fruit, lightly blushed with red stripes. Russet absent. Fine, snappy, crisp flesh, well developed flavor, good for fresh eating, seems it would hold up well in cooking, and likely good cider apple. Tree is shaded and scraggly. **Rating: 8**



Sagaser A11 – Round to truncate shape, regular cross section. Green apple with red stripes, starred, with a bright pink-red blush and light russet. Crisp and juicy with a strong, complex flavor that is flowery, reminiscent of sweet-tart candy. Good for fresh eating and cider. **Rating: 8+**



Sagaser A-14 – Oblate, regular shape, small green apple with light red stripes; thick skin with a light wax, no russet, very underripe, hard to evaluate, was dry and astringent on 9/14/16.



Sagaser A 15 – Red Delicious – Conical, ribbed shape typical of Red Delicious, red skin with stars; thick skin with bloom, russet absent, coarse flesh, sweet, insipid flavor. (“tastes like school lunch, could be worse”). **Rating: 5**



Sawyers Bar Golden Delicious – Golden Delicious is a yellow apple with light russetting. Flesh sweet, firm, juicy. This is a very old tree planted in the yard of the house by Eddy Gulch bridge in Sawyers Bar. Origin unknown.

Sheepsnose – Very distinct oblong shape with dimples at the calyx end (thus the “sheepsnose” description), yellow apple with red stripes/ blush, thin skin is starred and spotted with light russet at the tip. Fine, crisp, dense, juicy white flesh with a caramel, nutty flavor. Excellent for fresh eating, cooking, baking and preserves. Keeps long into the winter and holds its flavor. An apple highly prized by Bill Tripp and his family. A family member acquired the seedling from the Hudson Bay Trading Company, who brought it from Scotland, in exchange for trapping access to family territory. **Rating: 9** Photos Heather Rickard, Karuk DNR.



Shivshaneen, Heather's truck, identified as Red Delicious – Conic, regular to angular shape, red-green striped, thick, waxy skin, light russet at stem, flesh is coarse, crisp, dry, cream colored. Better than modern Red Delicious in stores. Flavor and juiciness improves a few days after harvest. Mild flavor, which some folks liked and others did not. *Photo Heather Rickard, Karuk DNR.*



Shivshaneen, June Striped #2 – Round, regular shaped apple, red stripes over yellow background, thin, waxy skin, light russet at stem end, sweet, tart and caramel like flavors. Good for sauce and fresh eating, early ripening, done by end of July. (Could be Gravenstein?) *Photo Heather Rickard, Karuk DNR.*



Shivshaneen Long and Tall – Fruit has distinct oblong “sheepsnose” shape, with prominent dimples on calyx end. Color is green background ripening to yellow with red blush. Thin, waxy skin with no russeting, coarse flesh is somewhat dry (tree has not been irrigated for years). Sweet and tart flavor. Planted by Native American CCCs in 1930s. Bill Tripp says that the fruit closely resembles the Sheepsnose variety from the Tripp Ranch. *Photo Heather Rickard, Karuk DNR.*



Shivshaneen, McIntosh, Red Blush – *Photo Heather Rickard, Karuk DNR.*



Tishanik, Adjacent to #1— Round, yellow-green apple with spotted skin and no russet. Coarse flesh has a good balance of sweet and acid, probably a good cider apple. Underripe at testing time, shows promise.



Tishanik Roadside – Conic, truncate shape, light green color with stars, lightly russeted. Flesh is quick to brown. Very bland. **Rating: 2**

Van Scoyoc Winesap – Medium red apple with yellow flesh that is sweet, crisp and aromatic. Planted by the Van Scoyocs at their house in Sawyers Bar. From Mel Van Scoyoc.

Cherries

Knownothing Pie Cherry -- Lloyd and Nancy's famous pie cherry from the Knownothing cabin. Origin unknown, but probably left from the old homestead there. From Lloyd Ingle.

Figs

Sagaser Fig 1 – Elongated shape (rather than round or squat like many figs). Green background, blushing to a bronze-brown striping. Thick skin, chewy, good flavor with caramel/ brown sugar tones. Undeveloped seeds (not crunchy). Has a good second crop. Tree appears to have been frosted back, small and stressed, fruit underripe at tasting. Diane Wickstrom's grandfather, who was a whaling captain in the late 1800s, settled here on the river and sent for his sweetheart in the Azores to come join him. She brought along a cutting of this fig from the Isle of Flores.



Nordheimer Fig – From the giant fig tree at the old Nordheimer homestead.

Quince

George Pineapple Quince - A tender pale yellow fruit with white flesh and slight pineapple flavor. Used for jelly preserves, and as an addition to applesauce. From Claire George.

Peaches

Sagaser Peach – Round fruit, yellow skin with orange-red blush, fine flesh, moderately juicy with firm, smooth texture and nice consistency; moderately fuzzy. Freestone. This fruit was picked 10 days prior to evaluation and tree has had no care, it was still firm and flavorful, fruit quality would improve considerably with care, so this peach shows a lot of promise. **Rating: 7**



Tom's Peach – A seedling peach dug up from a river bar on the South Fork Salmon by Tom George in 1946 and planted at the George homestead on the lower South Fork. Large, good flavored, white peach. From Claire George.

Pears

Godfrey – Phil's Front Yard Pear – Wide neck, Anjou-shape, green spotted flesh ripens to yellow, with a brick red blush on sunny side. Little to no russet. Flesh is creamy, custard-like, very juicy, slightly astringent, much like Anjou, with a hint of vanilla. May have been planted in 1970s. **Rating: 8+**



Knownothing Bartlett - An old Bartlett pear from the Knownothing cabin. Origin unknown, but probably left from the old homestead there. From Lloyd Ingle.

Sagaser Bartlett – Classic old fashioned Bartlett with a thicker neck, green ripening to yellow with green and russet spots, skin blushes on sunny side, firm, juicy flesh has some graininess typical of pears, but minimal. Sweet but not cloying, citrus flavor when fresh, ripening to an aromatic fruit with hints of almond. Tree has had no care for 15-20 years and has healthy foliage and fruit, with no scab, so could be disease resistant. **Rating: 7.5**



Godfrey Winter Pear – Very attractive green-yellow pear with deep red blush on sun side, thin skin with bloom, no russet. Flesh is fine and juicy, sweet and aromatic, no grit, slightly astringent. Excellent dessert pear, good for fresh eating and excellent keeper. Tree is dying back and may not last much longer. **Rating: 8**



Plums

Little North Fork Porch Plum Oblong plum with creased shoulder, apricot color, starred, thin skin. Fruit is sweet with a tart skin, creamy consistency, apricot flavor. **Rating: 8** *Photo Karuna Greenberg, SRRC.*



Little North Fork Purple Plum – Purple skin with tiny stars, bloom present, green-yellow flesh is smooth, with a fresh taste, tart skin. Parent tree is being overtaken by a large English walnut, tree gets consistent water. *Photo Karuna Greenberg, SRRC.*



Sagaser Plum 2 (Tall Tree) – Beautiful, unique color and shaped plum, shape is similar to prune plum, necked, maroon to brick-red skin has moderate bloom with orange spots toward stem end, clingstone, smooth, firm yellow-orange flesh, not juicy, but not dry, creamy consistency, great flavor which is good when firm, becoming sweeter and juicer as it ripens, with a caramel-like flavor. Tree has had no care for 15-20 years. No bitterness in flesh or skin. A high quality variety worth saving and propagating! **Rating: 9**



Knownothing Lloyd's Favorite Plum – A purple plum that was Lloyd's favorite. Origin unknown, but probably left from the old homestead there. From Lloyd Ingle.

Knownothing Green Gauge Plum – Origin unknown, but probably left from the old homestead there. From Lloyd Ingle.

Appendix 1 References

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Heirloom Fruit Description Form Orchard Revitalization Project



Variety Name: _____ Overall Rating, from 1-10 _____

(OK to use local names, guesses, letters or numbers, but be sure to identify tree with aluminum tag)

Date (s): _____

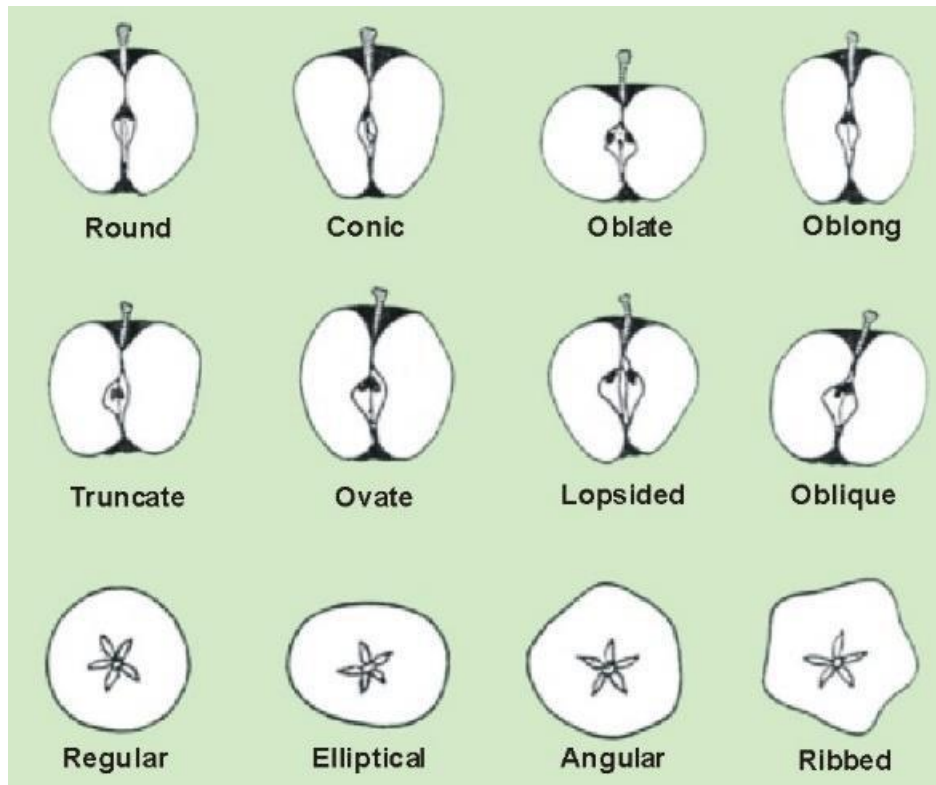
Take close up photos from different angles, include labelled index card in photo.

Description by: _____

Describe health of the tree, and how its condition or site may affect fruit quality

How ripe is the fruit at the time of testing? Circle one: Under Ripe Ripe Over Ripe

Fruit Shape (circle those that apply):



USDA – ARS. [Untitled Image of various apple shapes.] Retrieved from <https://www.ars.usda.gov/ARSUserFiles/24438/appleshape.jpg>

Color (circle all that apply)

Red Yellow Green Cream Striped Starred Spotted

Skin (circle all that apply) :

Thin Thick Waxy Bloom Greasy Blushed

Russet (circle one)

None Light Medium Heavy

Flesh

Coarse Fine Crisp Dry Juicy Mealy

Taste

Sweet Tart Aromatic Wine-like Astringent Bitter

Uses (circle all that apply)

Fresh eating Cooking/ Baking Cider Preserves Other:

Description include unique or remarkable characteristics of the fruit as well as the tree, include stories, family, history, etc....

Appendix 4 Strategies for Sampling Apples from Farmstead Orchards

STRATEGIES FOR SAMPLING APPLES FROM FARMSTEAD ORCHARDS

Once you've found apples worthy of collection from historic orchards, we recommend collecting as much site-specific information and oral history documentation as possible, to be conserved along with the apples themselves. The steps of collecting apple scion wood include documentation through field notes, maps and permissions, photographs and collecting scion or bud wood from the trees for later grafting.

DOCUMENTATION

Proper field notes should include:

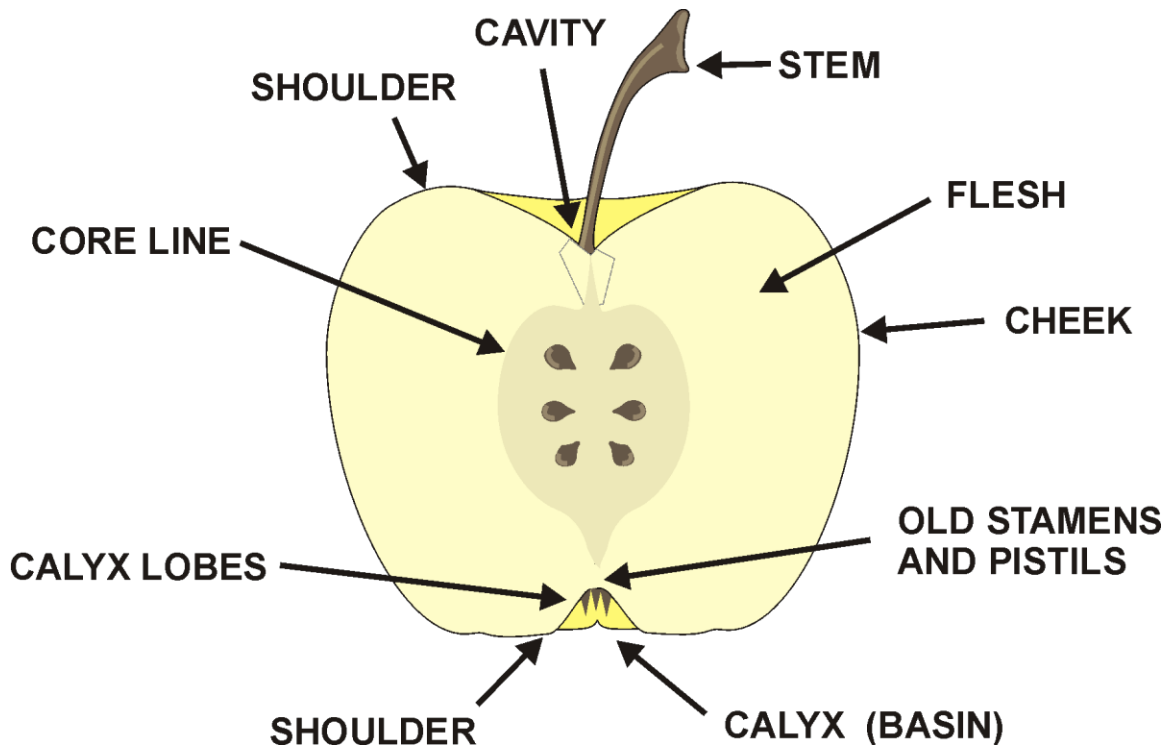
1. Directions to the site. Record clear directions for returning to the site. Useful descriptors include roads, mileage, landmarks and a sketch-drawn map.
2. Describe the orchard. Write a brief description and sketch a map of the orchard. If possible, record the GPS position of the orchard and note the settings of the GPS (standard settings include: hh°mm'ss" in WGS1984 or UTM NAD1983 or UTM NAD1927). Nailing aluminum tags to individual trees is one of the most effective methods for identifying trees on return visits.
3. Write field notes describing the ownership of the orchard, the condition and approximate age of the orchard, number of trees, species and varieties present. In addition, if the trees have fruit, describe the fruit's size, color, shape, texture and flavor. If there are oral histories or written documentation of the orchard, this should also be recorded or referenced in the field notes. Record additional, site-specific field notes from interviews and observations.

Photograph close-ups of the fruit, profiles of the fruit trees and landscapes of the orchards for long-term documentation. Proper oral histories should include:

1. Name, address and other relevant contact information for person(s) interviewed.
2. Digital or other media recording of interviewee, including recording of their agreement to be interviewed. Include date, time and location of interview. The name of the interviewer should also be recorded at this time.
3. A signed agreement between interviewee and interviewer regarding the treatment and final use of the information collected during the interview. Release forms or a "Memorandum of Understanding" can be used. Copies should be provided both to the interviewee and individual or entity to which the information is being "donated."

Reprinted from Nabhan, G.P. (2010). Forgotten Fruits Manual and Manifesto. Renewing America's Food Traditions (RAFT) Alliance. P. 26. Used with permission.

GLOSSARY of APPLE/FRUIT TERMS



Basin – the sunken area at the bottom of the apple opposite the stem where the calyx is located.

Bloom – the natural white dust-like covering or film on the surface of some fruit that can be easily removed by rubbing.

Calyx – (Greek for cup) the outermost part of the flower that persists after the fruit has developed. The calyx contains the sepals, which often remain green and fleshy.

Cavity – the funnel-shaped sunken area at the stem-end of an apple.

Furrowed – characterized by a narrow groove or depression (as in a wrinkle) in reference to the basin and on the inside shoulder of the basin.

Lenticel – a patch of suberized cells, originally the stomata or pores in the skin of an apple for gas exchange.

Ridged – characterized by crests and valleys, usually in reference to the basin, resulting in a non-smooth condition that provides a "lobed" appearance. On Delicious these ridges result in the 5 prominent lobes at the bottom of the fruit. This condition may be characteristic of the cavity also, but is generally limited to a single valley.

Russet – a rough, sandpaper-like condition on the surface of fruit; usually brown or tan colored, may be net-like or in large patches.

Scarfskin – a gray flecking or milky appearance on the surface of fruit most often recognized on the red overcolor area which cannot be removed by rubbing.

Soluble Solids Concentration – a measure of the solids (sugars, organic acids and inorganic solubles) dissolved in the juice of the fruit. Predominately sugar and used to express the sugar content of the apple. Measured with a refractometer.

Starch Index Rating (S.I.) – a subjective rating that measures the conversion (hydralization) of starch to sugar as the fruit matures. Based on the area that stains blue-black when an apple is cut tangentially and treated with an iodine solution, a rating of 1 to 3 = immature, 4 to 6 = mature, and 7 to 8 = overmature.

Triploid – an individual plant with 3 sets of chromosomes. The pollen from a triploid is not viable and therefore, cannot be used to pollinate another variety.

Glossary, USDA – ARS, retrieved from

<https://www.ars.usda.gov/SP2UserFiles/person/24438/GLOSSARY.doc>

Appendix 6
Pruning Resources

Pruning Handout Mid Klamath Foodsheds

Tools:

- **Hand pruners** - [Felco](#) makes the best pruners. [No 2](#) is the basic model, [No 13](#) is the larger pruner for bigger diameter branches.
- **Loppers** are used just as much, if not more, than hand pruners. My favorite brand is Fiskars. They make a large, [extendable lopper](#), as well as a [smaller lopper](#) that is light and extremely efficient at cutting due to its geared design.
- **A good saw** is essential. [Silky](#) makes the best, though there are a number of good pruning saws available at cheaper prices. Get a good scabbard.
- **An [orchard ladder](#)** is necessary for pruning. Don't try to use regular folding ladders, they are unstable and potentially dangerous. Stokes is a good brand.

Books:

- [Pruning Manual by Dan Lurie](#), Filoli Gardens Newsletter (on the MKWC website) - This is the **best** pruning manual we've seen. Divided into three sections - Principles of Tree Growth, Training Young Trees, and Pruning Mature Trees
- [Pruning to Restore an Old, Neglected Apple Tree](#), by R. L. Stebbins and J. Olsen, Oregon State University - This completes the manual above by showing how to restore an old tree that has not been pruned for years; (hint: it takes a few years).
- Joyce, D., & Brickell, C. (2001). *Pruning and training plants: a complete guide*. Buffalo, NY: Firefly Books Ltd. One of the best books on pruning available.
- Kourik, R. (2005). *Designing and Maintaining Your Edible Landscape Naturally*. White River Junction, VT: Chelsea Green. Great info on fruit trees, with lots of tables on variety selection, rootstocks, pollination, planting, pruning & care. Highly recommended.
- **Editors of Sunset Books & Magazines (1990).** *Sunset Pruning Handbook*. Menlo Park, CA: Lane Publishing Co. Primarily dedicated to ornamentals, but lots of good, solid info on fruit and nut trees, presented in encyclopedic format; older editions tend to be just as good and can be had for cheap in used book stores.

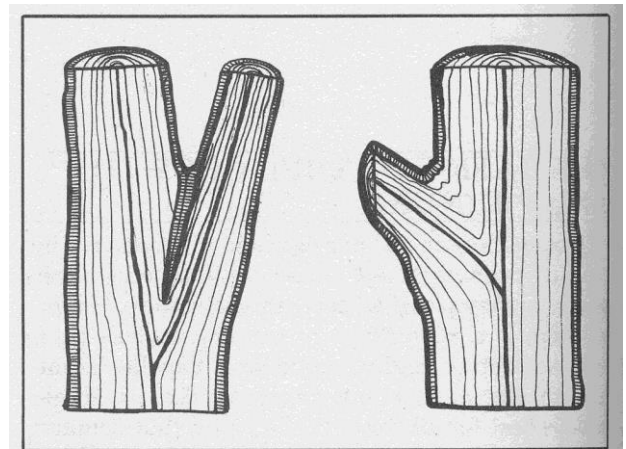


Figure 14.3 A narrow-angled fork forms a fissure that weakens its attachment to the trunk. A fork angle of 45° to 90° is much stronger.

Branch angle affects strength, Robert Kourik, Chelsea Green, 2005. P. 204 Used with permission.

Basic Guidelines for Pruning, by Robert Kourik

Excerpted with permission from Robert Kourik, *Designing and Maintaining Your Edible Landscape Naturally*, Chelsea Green, 2005, p. 207.

Before you choose a style of pruning, there are a number of considerations to take into account. Here are the major ones.

All trees are not equal. Two 'Golden Delicious' apple trees growing side by side in different soils may have noticeably different growth and fruiting habits. And the growth of the 'Red Rome' is very different from that of the 'Golden Delicious.' The experienced pruner avoids forcing a single style on every tree, and, instead, combines a variety of techniques to suit the needs of each tree.

Prune for shape. Visualize the form you desire. Beauty is as important as productivity for fruit trees in an edible landscape. Make as few cuts as possible to achieve the effect you desire.

Pruning delays fruiting. Pruning early in the life of a tree, and removing substantial amounts of wood, delays the start of fruiting. Unpruned trees tend to bear a few seasons earlier and heavier than heavily pruned trees.

Dormant season pruning promotes growth. Pruning deciduous trees when they are dormant encourages leafy, vegetative growth, not flower buds. Winter pruning causes new branches to form and stimulates the rapid extension of branch growth.

Summer pruning stunts growth. Removing foliage during the time of active photosynthesis reduces the tree's vigor and advances the formation of fruit buds on all sizes of trees. Summer pruning is an important part of caring for dwarf fruit trees. It also opens up the tree's canopy, letting in sunshine, which encourages fruit bud formation and keeps spurs healthy. However, summer pruning sometimes causes succulent new growth which is vulnerable to damage from winter freezes.

Pruning Rules of Thumb

There are also standard, age-old rules to remember, regardless of the pruning style you choose.

Remove dead and diseased wood. With any tree, the first order of business is the removal of dead and diseased wood. Pests and diseases enter damaged wood, then spread to the heart of the tree. Catch diseased wood early through periodic inspection. Prune it out, and to prevent the spread of spores and insects in your landscape, take it to a dump.

Remove crossing wood. The constant rubbing of two crossed branches leaves a raw, unhealed wound, another possible entry for pests and diseases. Remove the rubbing branches. Crossing branches that don't rub still crowd each other. Remove one and allow the other to receive more light.

Remove weak wood. With standard-sized trees, pruning all but the most vigorous wood is important to a long-lived tree. Still, weak growth is not always bad. Within limits, leaving less-vigorous branches on a dwarf tree is a technique preferred by some horticulturalists, since it furthers the dwarfing effect.

Remove suckers. Some trees produce tall, spindly shoots that head straight to the sky and form scant fruit. These fruits are often called suckers or water sprouts. Those that originate from the base of the tree are sprouts from the rootstock. Shoots higher up dominate and shade the lower portion of the tree. Cut out suckers in mid to late summer to avoid stimulating additional growth.

Avoid spreading disease. Pruning shears can pick up and spread certain diseases, among them fire blight (*Erwinia amylovora*), bacterial canker (*Pseudomonas syringae*), and viruses. To disinfect them, dip your shears in a 10 percent solution of laundry bleach or 100 percent alcohol after each cut. (It helps to oil the shears beforehand because the bleach corrodes the metal, especially aluminum. After you are done pruning and dipping, rub steel wool on all metal surfaces, sharpen the cutting edge, and oil all metal thoroughly.) As a cautionary measure, you can spray a Bordeaux solution on large cuts, this will help prevent the entry of bacterial and fungal diseases, but not of viruses.

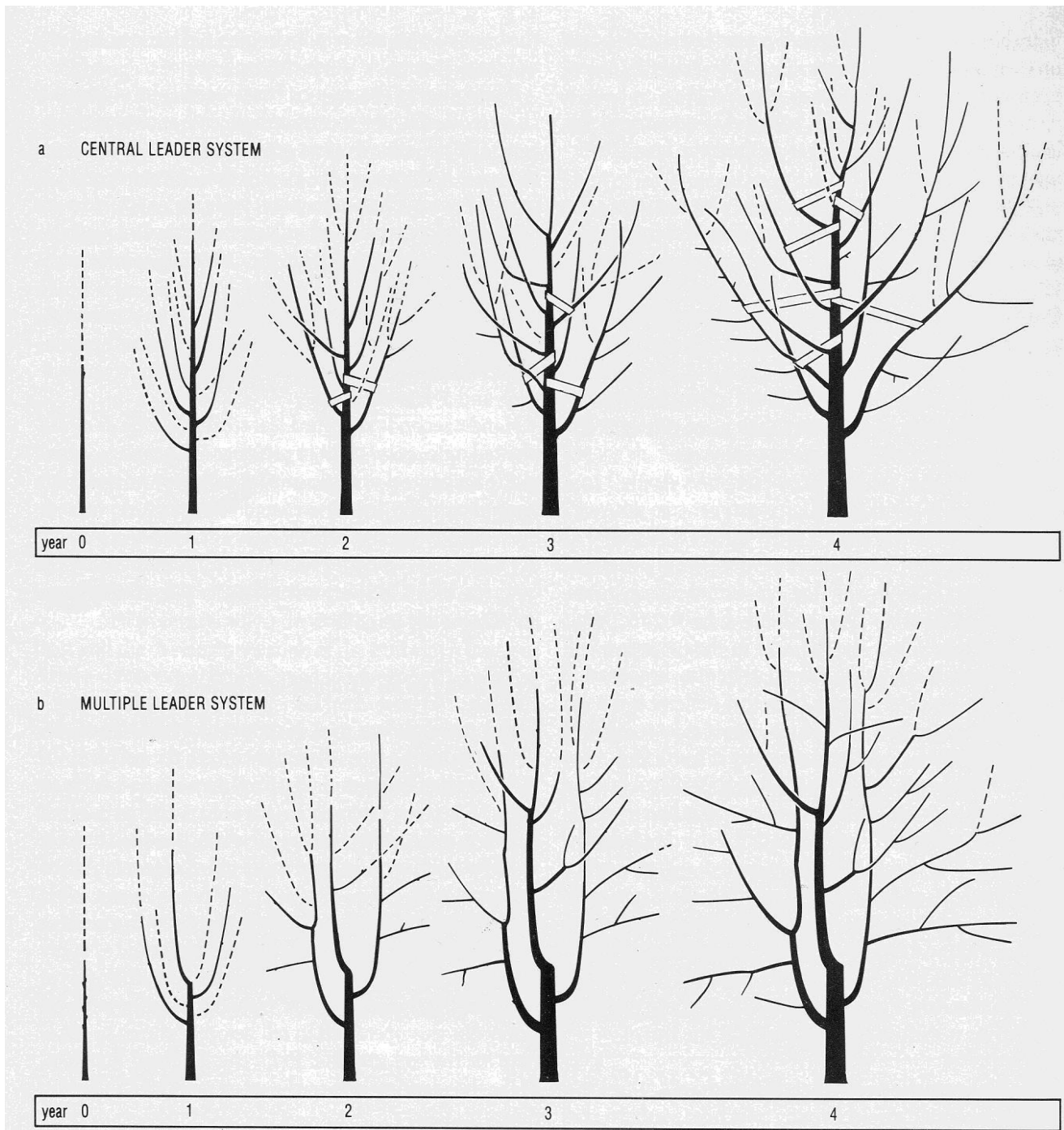


Figure 14. Growth of trees trained to a central leader system (a) and a multiple leader system (b). (Central leader system adapted from Pacific Northwest Publication 156, March 1983.)

Reprinted from Strand, L. (1999.) Integrated Pest Management for Stone Fruits. Publication 3340. Second Edition. Oakland, CA: Regents of the University of California, Division of Agriculture and Natural Resources.

Appendix 7 Handout for Fruit Trees

Planting and Tending Your Heirloom Fruit Tree

Your heirloom fruit tree has been selected and grafted from local, historic homesteads and/or orchards as part of a collaborative project with the Mid Klamath Watershed Council, the Karuk Tribe Department of Natural Resources and the Salmon River Restoration Council. These heritage varieties have stood the test of time, having survived years of drought, severe winters, summer heat waves, and intense storms. Those still standing and producing have proven to be well-adapted to our region's specific soils, pests and microclimate. We invite you to participate in this effort to identify and preserve these old varieties by ensuring this tree is planted and cared for, and by maintaining the identity of your tree so it can be preserved for future propagation.

Caring for your Potted Tree

If your tree still has tape on the graft union, then remove it carefully so that it does not girdle the trunk. Larger, branched trees (4.5 to 6 feet tall) are ready to plant, just follow the directions below. If your tree is smaller it is best to wait another year and allow it to size up before planting it out. Simply keep the soil moist, but do not overwater. You can apply a small amount of fertilizer on the surface of the soil in the spring to boost growth. Keep the young tree away from the intense, late afternoon summer sun.

Maintain Your Tree's Identity

Your tree comes with a metal tag that identifies the variety, it is very important to make sure this tag remains with the tree for its lifespan. Check the tag every year, you may need to change it to a small branch to prevent girdling, or change the wire if it is wearing thin. Maintaining identity of fruit tree variety is key to the success of this project. We have cataloged all varieties with a name, description, and photo of the fruit. By maintaining the identity we can continue to evaluate the quality of the fruit and ensure a source for future grafting wood.

Best Time to Plant

A potted tree can be planted any time of the year, but the best times are in the winter when the tree is fully dormant, or in the fall when temperatures cool down. It is best to avoid planting a tree out in the hottest time of the year to avoid transplant shock.

Site Selection

Your tree is grafted on an M-111 rootstock, which means that it will grow to approximately 16 – 20 feet tall, with a canopy about 14 – 16 feet wide. Fruit trees prefer a moderately fertile and well-drained soil. How do you know if your soil is well drained? Easy: dig a hole large enough to accommodate your tree roots (about 2' x 2') and fill it with water. Let it drain and fill it again. If you still have water in the hole after 12 – 24 hours you likely have a drainage issue. If so, your options are 1) find a better draining site for fruit trees, or 2) plant your trees on a mound to promote drainage and avoid "wet feet" (i.e. having the tree roots in standing water for long periods of time).

Apples require

another apple variety for pollination; ideally you should plant your apple within 50 feet of another apple variety, though you can get away with up to 100 feet distance.

Digging the Hole

All that's absolutely necessary is to dig a hole large enough to accommodate the roots of the tree, though you may also loosen the soil around the hole as well. When digging keep the topsoil and subsoil separate. Loosen the sides and the bottom of the hole. Note that the shovel may "glaze" the sides of the hole in clay soils, leaving a hard, compact surface that is impenetrable to young roots. For this reason it is always advisable to fracture the sides of the hole when filling in.

AMENDMENTS – Placing too many goodies in the hole, such as manure or compost, can create an environment that the tree roots never venture out of. The best amendments are low bulk sources of minerals, such as bonemeal, soft rock phosphate, kelp meal and oyster shell flour. Mix these in the bottom of the hole, where most active root growth will occur.

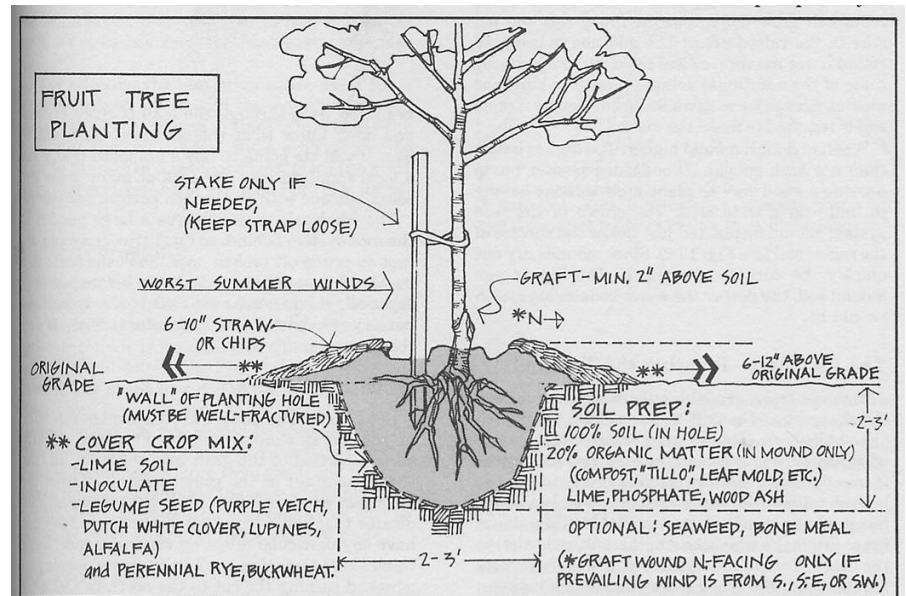
Planting

Do not bury the graft! With grafted trees it is important that the graft union be 3"-6" above the soil. Your tree will settle after you plant, so allow for this. When ready for planting, put about 1/3 of the topsoil mix in the hole and place the tree in, spreading the roots. Mulch your tree well to retain soil moisture and fertility, but pull the mulch back 6" from the trunk to prevent collar rot. (There is no need to stake your tree.)

Whitewash the Trunk to Avoid

Sunburn

If you do not protect the tree trunk with a coat of whitewash it is likely to sunburn and die with the very first hot, sunny days. Use any white, water-based latex paint or primer, water it down 50%, and paint the trunk from the soil to the first branches. Do not use full strength paint as it will suffocate any dormant buds. This is especially important with our hot summers, to protect the tree's young sensitive bark from sunburn and flathead bark borers.



Fruit tree planting, Robert Kourik, Chelsea Green. 2005. P. 204. Used with permission.

Care of Young Trees

Proper care is essential during the first few years of a tree's life, with the first season being the most crucial. A healthy soil and vigorous growth is the best insurance against pests and diseases. Be sure to weed and irrigate regularly during the summer, at least 1" of water per week (drip works great). Eventually your tree can be weaned to dry farming as it matures, but you will need to irrigate it the first 3 to 4 years. Top dress in the spring with compost or aged manure at the dripline. During the growing season, remove any sprouts from the rootstock. Cultivating or mulching the ground in a minimum 2-foot circle around the tree will greatly help the growth. Keep mulch and organic matter away from the tree collar (where the trunk meets the soil) to avoid collar rot.

For more information on care of fruit trees including pruning and orchard management, visit the MKWC Foodsheds website at <http://mkwc.org/programs/foodsheds/>



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