Orchard Steward HANDBOOK

KCCG THE GIVING GROVE

NAME: _____

SITE NAME: _____

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Orchard Steward Handbook

Welcome!

We are honored that you have chosen to plant and care for a community orchard! Your ongoing work and dedication will create an IMMENSE IMPACT in your local community for years to come.

You are helping to build a future with thousands of little orchards spread across the nation, feeding neighbors, spreading knowledge, and building community in a sustainable way.

This handbook is designed to outline the BASICS OF ORCHARD CARE alongside the practices described in our recommended text, “The Holistic Orchard” by Michael Phillips.

Periodically, you will receive updated maps, documents, and guides from KCCG via email that can be printed and added to your handbook binder.

Please remember, this is YOUR orchard! MAKE IT YOUR OWN!
Together we can make a huge impact through our small orchards.

LITTLE ORCHARDS. BIG IMPACT.

Kansas City Community Gardens + Giving Grove, Inc.

The idea for the Giving Grove began in 2012, as a new program of **Kansas City Community Gardens (KCCG)**. KCCG is a non-profit organization with a mission to empower low-income households, schools and community groups to grow fruit and vegetables in food-producing gardens and orchards. We've been serving the KC metro area since 1979.

When you partner with us to plant an orchard, you'll be working with our **Giving Grove program team** – KCCG's "boots on the ground" staff that will help you to plant trees and assist you with your community orchard needs. Want more than fruit? KCCG has other programs – like our Community Partner Gardens and Schoolyard Gardens programs – that can help you with your veggie needs.

After just a few years, it was clear that the Giving Grove concept was a hit in Kansas City. So much so that we decided that, like the fruit in our orchards, it was too good not to share. In 2017, **Giving Grove, Inc**. was created as a separate non-profit to take the model that was developed here in KC to a national audience.

Giving Grove, Inc. is also headquartered in Kansas City, but is a NATIONAL organization devoted to establishing community orchard programs in urban areas across the country. They raise funds to help new affiliate partners get programs off the ground and provide networking opportunities among affiliates, where all of us can share knowledge and best practices. Today, what started in Kansas City is 14 cities strong, and still growing!

Here's what it means to be a steward:

KCCG staff will serve as a lifetime coach for your orchard. We serve as a resource for many of your needs related to the health and productivity of your orchard. **THE ORCHARD IS YOURS** and will require regular maintenance by your team of two or more people.

TIME SPENT IN THE ORCHARD DEPENDS ON THE TASK, NUMBER OF TREES, AND NUMBER OF PEOPLE INVOLVED. A new 10-tree orchard will take about 30-60 minutes per week to water, weed, and scout for pests. As the trees mature, more time will be spent with spraying, thinning, and pruning.

The following is a list of tasks that need to be done in the orchard, but more information can be found in following sections of this handbook. It is advisable to visit the orchard at least once a week during the growing season (March-November).

- **WATERING:** 5 gallons (amount increases with every year's growth) every week during the growing season (March-November) when we do not have 1 inch or more of precipitation in a week.
- **WEEDING:** This is as-needed but can be done while watering.
- **PEST SCOUTING/REMOVAL:** Looking for insects and pests such as aphids, mites, scale, caterpillars, etc. Heavy infestations require more time. Sometimes simple water spray will knock off the offending pest.
- **DORMANT PRUNING:** Done in February/early March
- **SPRAYING:** Various times of the year, focusing on the third year and beyond.
- **REMOVING OR PINCHING OFF FRUIT:** Only necessary in year 1 & 2. Done May- June
- **FRUIT THINNING:** For apples, pears, and peaches in May-June
- **TREE TRAINING:** Place limb spreaders on tree for good structure (spring and throughout the year)
- **SUMMER PRUNING:** Remove suckers, water sprouts, and limit growth (July-mid September)
- **HARVEST & DISTRIBUTE FRUIT:** Organize and communicate to neighborhood opportunities to harvest.
- **MULCH TREES:** Maintain a healthy layer of mulch under the canopy of the tree.
- **FERTILIZING:** Annual organic granular fertilizer application around plants (January - March)
- **WRAP TRUNKS:** Cover trees with wrap in November, remove in March.
- **ORCHARD BUDGETING:** KCCG offers some initial items at our cost. We also have many tools available for our stewards to borrow as needed. However, some items, outside of what we offer, may need to be purchased by the site (i.e., sprayers, hoses, pruning equipment, etc.)

Stewardship of trees requires bending, stooping, reaching, lifting, ability to use ladder (or directing others to use ladder), & working in hot and cold weather.

Your Partnership with KCCG:

- **ORCHARD PLAN:** We have designed a custom blueprint of your proposed orchard to maximize the use of the space. If you elect to add trees, please contact your local team.
- **PLANTING ASSISTANCE:** We will personally assist on your tree installation. We will include your existing volunteer, staff, and student network as well as our own.
- **TREE INVENTORY:** We have carefully selected an inventory of tree and shrub varieties suited for disease and pest resistance, hardiness zone, and soil type.
- **ACCESS TO ORCHARD SUPPLIES:** We offer some initial items at our cost. We also have many tools available for our stewards to borrow as needed.
- **TRAINING WORKSHOPS:** Numerous workshops are made available covering orcharding basics, such as pruning, pest management, community engagement and harvesting. Stewards will be given a
- calendar each year.
- **LIFETIME COACHING:** We schedule site visits annually and are available to make special visits as needed. We also provide educational resources through social media, email, and the Giving Grove website. Our team is always willing to answer any questions you may have along the way! When you need help diagnosing a problem, please send a clear photo with your email to your local program.
- **ACCESS TO LOCAL VOLUNTEER NETWORK:** We will share volunteer connections to assist in any projects needing large groups of volunteers. We can also guide you in attracting individual neighborhood volunteers for your orchard.
- **FUNDING AND LOW-COST RESOURCES:** If cost is a prohibitive factor to maintain your orchard, we may be able to provide financial support. The average installation cost for one tree is $35-50 depending upon the variety and materials. Please let us know if the purchase of supplies becomes a financial burden.

Your organization or neighborhood must provide:

- **WATER SOURCE:** Access to water is essential for the orchard site to be successful. The closer the better. If you don't have a water source, we can talk through it! Your city may have programs to help.
- **TWO COMMITTED STEWARDS:** For an orchard to be successful, we require each site to have at least one steward (a primary caregiver for the trees) as well as an apprentice (a person from a separate household that assists the primary steward). These volunteer stewards are responsible for the ongoing care and maintenance of the orchard. If one of these people were to forfeit their commitment, a replacement steward/apprentice must be found. Teams of 2+ people are ideal. In addition to maintenance, participation in ongoing education through workshops, events, and communication is strongly encouraged.
- **PERCENTAGE OF HARVEST INTENDED TO PROVIDE THE COMMUNITY ACCESS TO HEALTHY FOOD:** In many cases, the surrounding community will harvest and receive all the produce. If the orchard location does not experience food insecurity, we ask that the produce be donated to a local food pantry or hunger relief organization.

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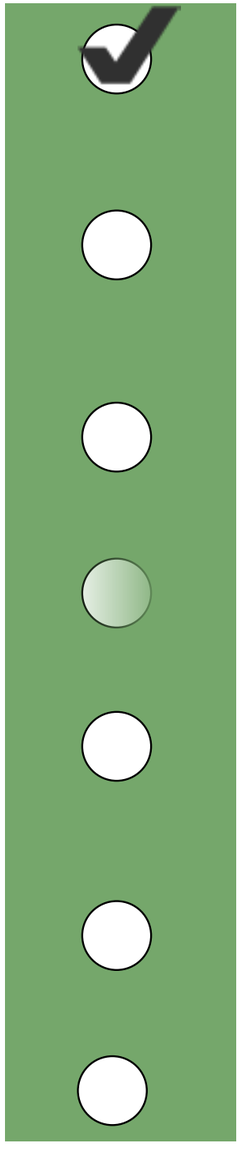
The Planting Process



PLANTING PLAN SITE VISIT

You and a KCCG staff member will walk through a potential planting site and create a planting plan that matches the mission and vision of your new orchard. All planting sites must have a water source and at least 8 hours of sun exposure.

APPLICATION & COST ESTIMATE

Fill out an enrollment form to join KCCG's Giving Grove program. You will sign off on the planting plan, including the cost estimate, tree guarantee, and steward responsibilities. Please let us know if the estimated cost represents a financial burden.

NEW STEWARD TRAINING

KCCG will provide training on the yearly maintenance and upkeep of your orchard. Attendance in this training is a requirement for the installation of your orchard to occur.

SCHEDULE PLANTING DATE & ORGANIZE VOLUNTEERS

We recommend recruiting one volunteer per tree being planted. Confirm a planting date (and bad weather date) with our staff that works for your group of volunteers. Allow approximately 3.5 hours for a typical 15-tree planting.

PREP PLANTING SITE

Your Giving Grove program manager will provide guidelines on preparing the planting site prior to the planting date. We will coordinate logistics of any materials to be purchased beforehand, but please contact 811(Dig Safe) to mark all utilities prior to planting date.

PLANTING DAY!

We will provide all tools and materials needed to plant the orchard, including compost, soil amendments, and mulch. We will demonstrate and assist throughout the entire duration of the planting.

INVOICE

After the planting, we will send an invoice to pay either in person or online.

It doesn't stop there! Our staff will continue to support you throughout the life of your orchard.

How to Prepare for your Orchard's Planting

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Planting Day Job Assignments

MANY HANDS MAKE LIGHT WORK, AND THE SAME GOES FOR ORCHARD PLANTING! We recommend one volunteer per tree to make planting day more manageable.

Check out these planting day tasks that should be assigned to volunteers:

PLANT MATERIAL & TOOL DISTRIBUTION: This person(s) is responsible for soaking bare root trees in water for 30-60 minutes prior to planting during spring plantings. For fall plantings, wheel barrows can be used to move potted trees to the proper hole. Use the site plan when determining the place of each tree, shrub, or bramble. Each hole station should be equipped with 1 sod shovel, 1 round-point shovel, 1 drain spade, and 1 rake.

SOD REMOVAL & HOLE DIGGING: This person(s) will cut and remove sod at each hole. Then dig the tree hole in a barrel-shape to the depth of the tree's pot or size of the root ball (in the case of a bare-root tree). (See directions on next page.) The process will be described on the day of the planting.

SOIL AMENDMENTS: Soil sampling in advance of the project will help the local Giving Grove team determine what soil amendments will be necessary for the project Prior to placing the tree in the hole, amendments should be added to the hole and blended.

TREE PLACEMENT IN THE HOLE: If using cloth bags instead of pots, the bags should be removed in a manner that protects and preserves the bag for reuse. Instruction for properly placing a tree in the hole will be given the day of the planting, but detailed instructions are provided on the next page. Please remember to place the tree so that the top portion is perfectly vertical and not leaning.

MULCHING: This person(s) will deliver one full wheelbarrow of mulch to each tree hole. The mulch should be mounded around the tree trunk in the shape of a donut. Please avoid "volcano" shaped mounds.

WATERING: At the end of the planting, this person(s) should water each tree with 5-10 gallons of water, distributed evenly across the entire hole. A second watering should occur 4 days later. Then water weekly either by rain (at least .75") or 5-10 gallons manually.

How to Plant a Tree

By properly planting a fruit tree, **YOU ARE GIVING THE TREE ITS BEST CHANCE TO BE HEALTHY AND FRUITFUL FOR YEARS TO COME.** Follow these instructions to properly plant a fruit tree. You may also visit the Giving Grove YouTube channel (**youtube.com/c/TheGivingGrove**) for step-by-step instructions for planting both bare root and potted trees.
A key to successful backyard orcharding is starting with the right tree. See our recommended varieties on our website: **www.givinggrove.org/orchard-varieties**

Step 1: Digging the hole

a) Remove the grass. Using a sod shovel, cut out a circle and then slice like a pizza. Remove each slice of sod, removing no more than 1" of soil with sod, and place in one pile.
b) Dig center of hole. Using a sharp shooter, dig out the center of the hole stopping about 6 inches from the edge of the hole.
c) Dig the edges of the hole. Using a round point shovel, dig out the edge of the hole being careful to keep the shovel blade perpendicular to the hole's edge in order to prevent "glassing" of the edge. The hole should be barrel-shaped and the depth of the rootball.

Step 2: Add compost and soil amendments

(KCCG staff should determine the mix and measurements of the amendments and compost)
a) We commonly add compost, mycorrhizal fungus, sulfur, and bone meal as soil amendments.
b) Sprinkle the amendments in the hole and mix in the hole.

Step 3: Add the potted or bare root tree to the hole

a) If using a potted tree, stand tree upon the bucket. With the help of 2 people, pull the cloth from the pot straight down (not curling) off of the root ball. Lift the tree making sure the root ball separates from the bottom of the cloth pot.
b) If using a bare root tree, create a mound (pyramid shape) of soil in the center of the hole.
c) Place tree in hole.
d) Stabilize the tree by placing soil under the root ball and around the base of the root ball to make sure the trunk is straight. (With bare root trees, spread the roots in all directions.)

Step 4: Fill the hole

a) While one person holds the tree and roots in place, move soil around the root-ball.
b) Still holding the tree and roots in place, use the shovel to break up soil and place back into the hole.

Step 5: Mulch

a) Add one wheelbarrow-full amount of mulch to each tree.
b) Mulch ring should extend to the edge of the hole and should be 3-4" deep at the edge tapering to 1/2" deep at the tree trunk. The mulch ring should resemble a donut around the tree trunk.

Step 6: Water

Using a hose, water each tree with at least 5 gallons of water.

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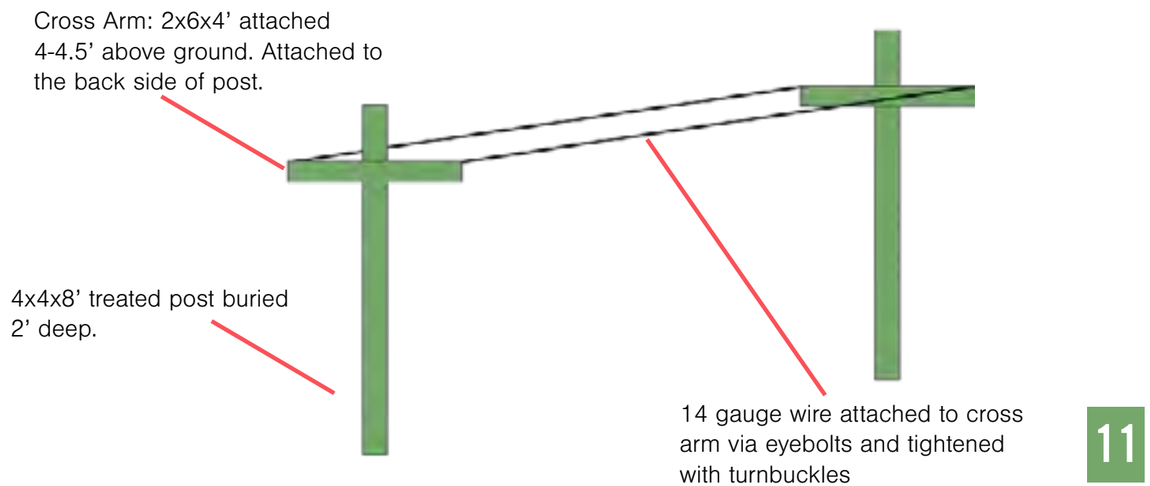
How to Construct a Raised Bed

Step 1: Using 2 people, move the lumber to the bed location.
Step 2: One person is assigned to the drill and insert 4 screws at each corner. Another holds wood steady.
Step 3: 1-2 people to shovel soil into wheelbarrows and dump soil into bed.
Step 4: 1-2 people to rake and level out soil.
Step 5: 1 person to plant berries in bed.
Step 6: 1 person to wheelbarrow and dump mulch.
Step 7: 1 person to spread mulch evenly around the raised bed.
Step 8: 1 person with hose to water.

How to Construct a Berry Trellis

1. Assemble the raised bed and place in its final destination.
2. Using a sharp shooter/drain spade and a post-hole digger, dig a 2' deep hole on the inside edge at the center of each end of the bed.
3. Place a 4"x4" post in the hole and using a level, ensure that the post is plum and flush with the raised bed wood.
4. Using 3" long wood screws, attach the post to the bed maintaining the upright position.
5. Using a 1/2 of a 60lb bag of concrete, pour a portion of the concrete in, add water, mix & repeat until the hole is filled with a concrete slurry.
6. Add the crossbar to the outside of the post using a level.
7. Attached eye screws on the inside of the cross bars. Add turnbuckles to one end.
8. Add wire between each eye screw/turnbuckle. Use the turnbuckles to pull each wire taut. Tighten wires after concrete has set- typically the next day.



Maintenance Calendar

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Orchard Maintenance Calendar

Use this calendar to time your monthly maintenance for your orchard. Some tasks may vary on timing depending on the last freeze. Consult your local KCCG for changes.

Month	Tasks	Notes
January	Complete a soil test (recommended every 3 years)	
Ave Precip 1.05"	Clean and sharpen tools to prepare for the season	
	Fertilize trees with a slow-release organic fertilizer (Jan-Mar)	
	Water trees if the month is dry and warm	
February	Prune apples and pears. Prune for structure and air flow and to remove dead or diseased wood.	
Ave Precip 1.55"	Spray dormant oil on fruit trees	
	Mow down or prune raspberry patch to just above the crown	
	Prune peaches at the end of Feb (or after risk of hard freezes)	
March	Expand mulch ring around trees	
Ave Precip 2.45"	Move metal tree tags to a smaller branch	
	Plant new trees and berries	
	Tip/prune blackberry laterals to 15" tall and remove all dead canes	
	Start spraying organic, holistic spray regimen from bud swell to the week after petal fall (Do not spray while blossoms are open.)	
	Remove tree wraps at the end of the month	
April	Continue holistic sprays	
Ave Precip 3.9"	Watch for signs of insect and disease issues	
	Pinch off fruits/flowers on trees under 2 years old to encourage root and shoot growth	
	Begin weekly watering regimen, if it does not rain	
May	On trees older than 3 years, thin fruits & leave 6-8" between fruits on peaches & 4-6" for apples and pears. Do not allow fruits to touch!	
Ave Precip 5.25"	Begin strawberry harvest	
	Apply Bt, Spinosad, or holistic spray to protect from Oriental Fruit Moth and Coddling Moth	
	Protect peach tree trunks from borers by spraying with neem, wrapping window screen around trunk, and plant chives or garlic near the base of the tree.	
June	Harvest serviceberries, cherries, and early peaches, like Harrow Diamond	
Ave Precip 5.50	Begin harvest of Natchez blackberries	
	Watch for Spotted Wing Drosophila on berries and soft fruits. Spray to treat.	
	Remove brown rot in stone fruits and spray sulfur as necessary	
	Watch for fire-blight on apples, pears, and Asian pears. Prune out any infection 6" below cankered bark	
	Protect fruits from Japanese beetle using row cover or spray with kaolin clay and neem. Use a large volume trap for large turf areas.	
	Train young trees with limb spreaders	

Month	Tasks	Notes
July	Rejuvenate June-bearing strawberries (late June/early July)	
Ave Precip 4.45"	Continue harvesting blackberries	
	Freeze, can, and dehydrate peaches	
	Harvest early season apples (Pristine) and pears (Harrow Diamond and Shinsui)	
	Start tipping new blackberry canes and tie to the trellis line July through September	
	Remove blackberry canes that are done fruiting	
	Harvest second round of ever-bearing strawberries	
	Water weekly throughout the growing season, if it does not rain at least 1"	
August	Prune water-sprouts and root-suckers on apples and pears. Also, prune to stunt tree growth including topping tree height, if desired.	
Ave Precip 5"	Harvest Asian pears (Kosui, Chojuro, Yoinashi) and European pears (Sunrise, Blake's Pride, Potomac) Note: Harvest European pears 1-2 weeks early as they can overripen on the tree.	
	Begin harvesting primocane (Caroline, Heritage) raspberries until hard freeze	
September	Harvest early figs, if it's a hot summer.	
Ave Precip 4.2"	Havest apples: Liberty, Jonafree, Enterprise	
	Harvest European and Asian pears: Warren, Shinko, Korean Giant	
	Harvest jujubes and pawpaws	
	Watch for borer damage on peach, cherry, and other stone fruit tree trunks. Dig out borers and spray area with neem.	
	Apply milky spore or predator nematodes for Japanese beetles	
October	Havest apples: Sundance	
Ave Precip 3.6"	Harvest pears: Kieffer	
	Havest Jujubes & Persimmons	
	Dehydrate apple slices. Make cider and pies.	
November	Wrap new trees with tree wrap to prevent rabbits and other rodents from chewing bark	
Ave Precip 2"	Cage blueberries to keep rabbits away	
	Mow around trees to chop leaves and remove pest habitat	
	Use fall holistic spray to help decompose leaves and kill over-wintering fruit pests	
	Aerate soil and add .5-1" compost around the tree drip-line	
	Spray fungicide to treat peaches for leaf curl	
December	Mulch over strawberry plants with 2-3" of straw (after hard freeze)	
Ave Precip 1.5"	Mulch trees with 2-3" of wood chips in 18" radius around trees	
	Cage and insulate figs with 2-4' of leaves before temperatures get below 15º	
	Expand mulch ring around trees	
	Water if dry and temperatures remain above freezing	

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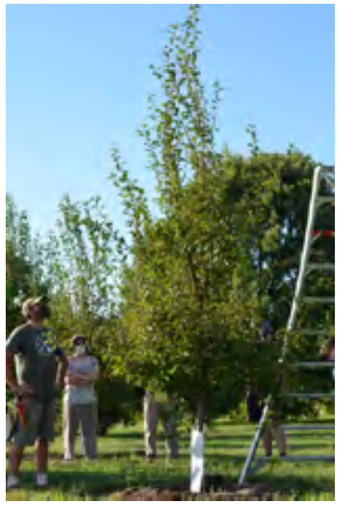
Pruning Guides

Dormant & Summer Pruning

Why Prune?

Prune your trees! If you do not prune, your trees this will look like this (see photo). Trees with this structure do not produce good fruit.



Prune your tree to:

- **REMOVE DEAD, DISEASED, & DAMAGED:** Removing dead, diseased and damaged wood helps prevent the spread of disease and infection in trees.
- **TREE STRUCTURE:** Appropriate structure will complement the natural growth habits of the tree and allow the tree to support a full fruit load.
- **PRUNE FOR SUNLIGHT AND AIR FLOW:** Opening up the interior of the tree to sunlight helps with the flower bud development and more even ripening of fruit. Air, similarly, needs to be able to move through your tree. Humidity can build up in the interior which spreads disease.

When you should prune?

Dormant pruning should take place before buds begin to swell. This usually means late January through early March. Most tree diseases are dormant during winter limiting their spread. By waiting for the late January to early March time frame the tree will heal as it starts to wake up and grow in the spring. Avoid pruning during precipitation to prevent the spread of disease and rot. Also, avoid pruning in temperatures below freezing.

Do not prune in the fall or early winter (October through December), the tree does not have time to heal before cold temperatures arrive.

EQUIPMENT NEEDED

- By-pass Hand Pruners (Felco 2)
- Limb Spreaders
- 70% Isopropyl Alcohol & Cloth
- Tie Tape
- Pruning Saw (Silky, Corona)
- Orchard Ladder
- Pole Pruner (Jameson, Corona)
- Loppers (Corona)

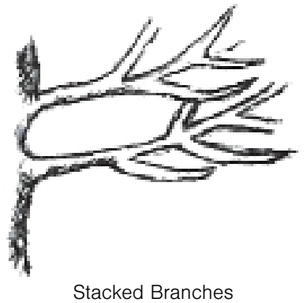
Structures

Not all fruit trees have the same structure. It is important to follow the appropriate growth pattern to best support your trees' health and fruit production.

Central Leader

For apples, Asian and European pears, this is the main form that is followed. A strong central leader growth habit typically 1 main trunk with tiers of branches, scaffolds, spaced equally along the trunk. These scaffolds usually consist of 3-5 branches connected to the central leader at 45°-60° and roughly equally spaced.

Central Leader Structure

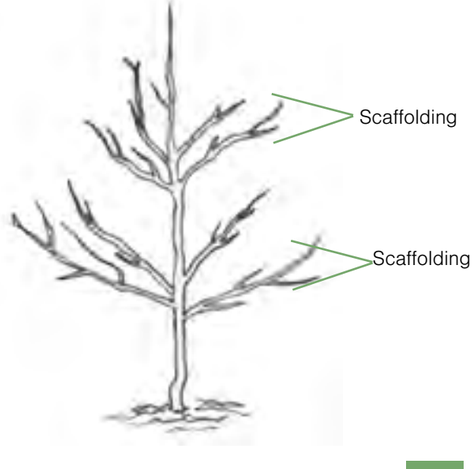


Stacked Branches

Branching should start about 30-36" inches off the ground with each scaffold having its branches grouped within about 15"- meaning, there should be 15" of space between each layer of branching. Avoid stacking branches (pictured left) as they will shade each other out.

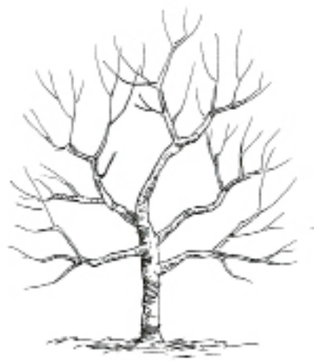
Examples of Scaffolds:

- Scaffold 1: 30-42" above ground (2.5-3.5')
- Scaffold 2: 54-72" above ground (4.5-6')
- Scaffold 3: 90-108" above ground (7.5-9')



Modified Central Leader

While the central leader method is preferred for pears and apples, fruit trees are known not to cooperate. A modified central leader will do the job and many apple trees fall into this category. Use the same scaffold system as regular central leader.
Most cherries, plums, and apricots are also pruned this way.



Modified Central Leader Structure

Open Center/Vase Structure

Open Center/ Vase Structure

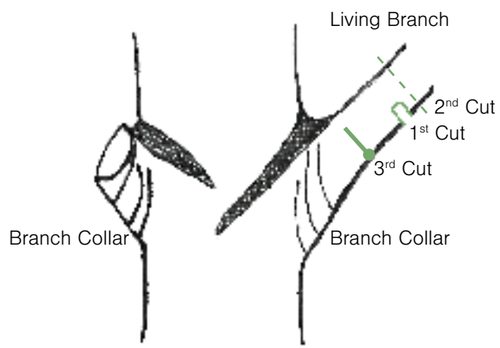
Open center or vase is used to encourage trees to spread branches allowing more light to the interior. Branching should still start around 30-36” off the ground but should split into several different directions. This method is often used with stone fruit, primarily peaches.

Pruning Techniques

Limbs less than 1 inch

To remove a branch less than 1” in diameter, you can make a single cut with your bypass hand pruners just outside the outermost ring of the branch collar (swollen area of compressed rings of bark tissue at the base of a branch). Do not cut through the branch collar. The tree will not heal properly.
Avoid leaving a stump when making pruning cuts. If more than 1/4” of wood is left outside the branch collar, the wound would not heal correctly. This increases the risk of attack by insects and diseases.

Limbs greater than 1 inch



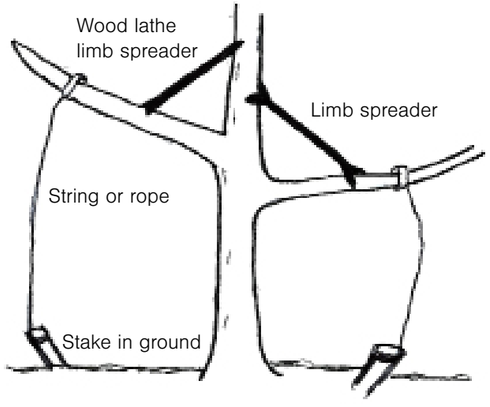
To remove a branch greater than 1” in diameter, a three cut approach is best. This method requires a pruning saw.
The first cut should be made on the underside of the branch, a few inches from the branch collar and go about 1/3 of the way through the branch. This prevents the weight of the branch from tearing the bark and branch collar.
The second cut is made a couple inches farther from the branch collar to remove weight.
Cut all the way through the branch on this cut.
The third cut should be the same as the cut made on a branch less than 1” in diameter, just outside the branch collar.

Branch Angles

Good branch angles are between 45° and 60°. Branch angles less than 30° are weaker with bark getting pinched between the branch and trunk. This is easily split with the weight of a decent fruit load. This issue is most common with Asian and European pears.

Shaping Methods

Spreading, bending, tying, splinting: Tying branches and using limb spreaders and hanging weights all help to alter the branch angle of a limb. These are easiest to use while a branch is still supple (usually the first 1-3 years of growth).



Splinting with bamboo: Splinting a tree with bamboo and tie tape can help straighten a crooked tree and re-establish a central leader.

Before bamboo splint

After bamboo splint

REMEMBER: These are not permanent fixtures in your tree. They need to be taken out or adjusted about every 9 months.

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Thinning

Before

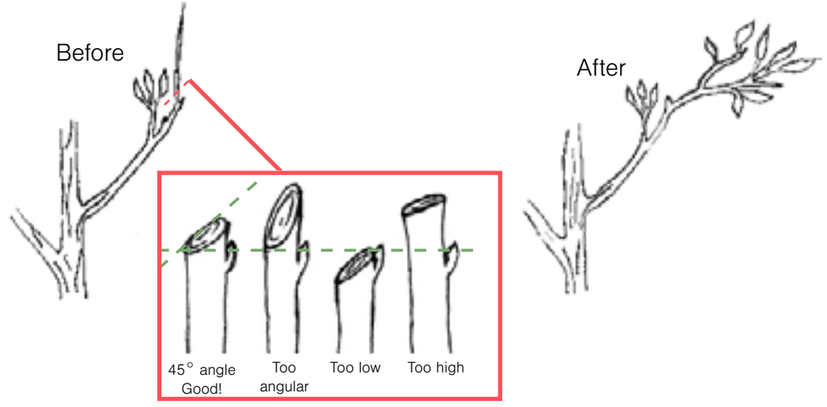
To allow more light and air into the interior, cut small side branches back to their point of origin on the parent branch. This is practiced not only on twigs but on crowded limbs.

This European pear was about 2 years old at the time of this pruning. Without pruning, the tree becomes chaotic with lots of vertical growth. Pruning and limb spreading allows for growth to be directed into a few branches that will be the scaffold. By eliminating quick growing, largely vertical growth, the tree can put more of its energy into strong scaffolds.

After

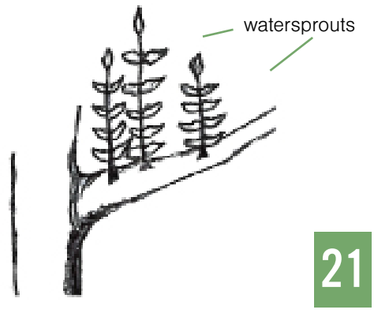
Tipping

To introduce or induce horizontal branching, identify an outside bud pointing in the direction you want your branch to grow. Make the cut 1/4” above that bud and at an angle parallel to the direction of the bud.



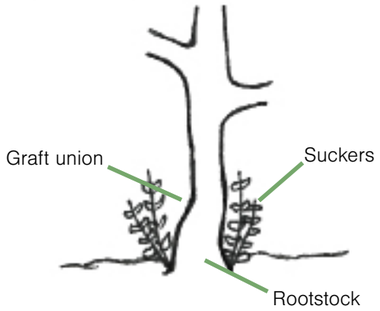
Watersprouts

Watersprouts are long vegetative growth that typically run parallel to the central leader. These shoots draw energy away from fruit producing areas of the tree, shade out the important scaffold branches, and often never produce any fruit.



Rootstock Suckers

Rootstock suckers grow from below the graft union and “suck” energy away from foliar and fruit growth. These can be removed any time of year.



Blackberries

A trellising system is recommended for growing blackberries. This system will guide the grower on which canes will produce fruit from year to year.

In dormancy, blackberry canes should all be tied to the same line of the trellis. In early March, just before their buds break, cut lateral growth on these canes back to 12”-15”. This ensures nutrients can travel to the end of the canes, giving you larger and more flavorful berries. Prune out any dead wood that was not removed the previous summer.

New canes emerging in the summer should be tied to the opposite line of the trellis, and tipped 6-8” beyond the line. These new canes will be next year’s fruiting canes.

Raspberries

Raspberries should be taken back to the crown (1-2” above the ground) in February. This can be done using hand pruners or with a lawnmower with the deck set as high as it will go.

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Variety Specific Pruning Tips

- **APPLE-** Preferred structure depends on the variety of apple, but modified central leader works for most. Spreading branches is recommended. Thin fruit to 5” apart.
- **PEAR-** Central leader or modified central leader is the preferred tree structure. Spreading branches is necessary. Lateral branches should be equally spaced around the trunk with 6-8” between them. Thin fruit to 5” apart.
- **ASIAN PEAR-** Central leader or modified central leader is the preferred tree structure. Spreading branches is necessary. Use caution when spreading limbs. They tend to break before they bend. After 5 years, fruit buds tend to produce inferior fruit and new laterals are encouraged to take place of older wood. Thin fruit to 5” apart.
- **PEACH-** Preferred structure is open vase. Last to prune in the dormant season. Do not prune during the summer. Peaches only fruit on second year wood. Remove up to 50% each year. Thin out twigs that are shorter than 12” and crowding twigs. Proper fruit twigs are 12-18” and pencil thick. Thin fruit to 6”.
- **TART CHERRY-** Preferred structure is modified central leader. Thin out crowding in the interior.
- **SWEET CHERRY-** Preferred structure is modified central leader. Head leader to create side-branching.
- **BUSH CHERRY-** Use thinning cuts for a less busy effect. This increases light and air circulation to the interior of the plant. Selectively remove stems that are 4-6 years old as they are less productive.
- **JUJUBE-** Train as a multi-trunk with branching starting 3-4’ above the ground. Minimal pruning except to limit height, crossing branches, or over-weighted limbs.
- **APRICOT-** Open center or modified central leader is the preferred tree structure.
- **PERSIMMON-** Modified central leader is the preferred tree structure. Shorten long willowy shoots.
- **PAWPAW-** Minimal pruning needed. Keep root suckers at bay. Tree naturally has a central leader. Spread laterals to help with sunlight.
- **FIG-** In spring, after bud break, remove trunks that have died; this may mean down to the ground. Remove smaller trunks and excess growth throughout the season allowing for 10-12 main trunks.
- **HAZELNUT-** Prune to 5-9 trunks. Limit suckers.

REMEMBER: ANY PRUNING IS BETTER THAN NO PRUNING!

Pest Management

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Pest Management

Managing pests is an essential orcharding tasks. While most pests are easily managed, if they are allowed to spread freely with no management they can destroy an orchard. Managing pests in an orchard will change over time. In years 1 & 2, we recommend removing all fruits so that the tree can grow a strong limb structure that can successfully bear the weight of the fruit. But some pests will still persist, so weekly scouting is a must.

Years 1 & 2 Standard Recommendation

1. Horticultural oil
2. Treat pest, disease, and/or fungus specific events with Monterey Fruit Tree Spray Plus (for more fruit spray options, see the Resources section)

Year 3 & Ongoing Standard Recommendation

1. Holistic Spray Regime (see pages 27-28) or Monterey Fruit Spray
2. Tree pest, disease, and/or fungus specific events with products for each specific issue

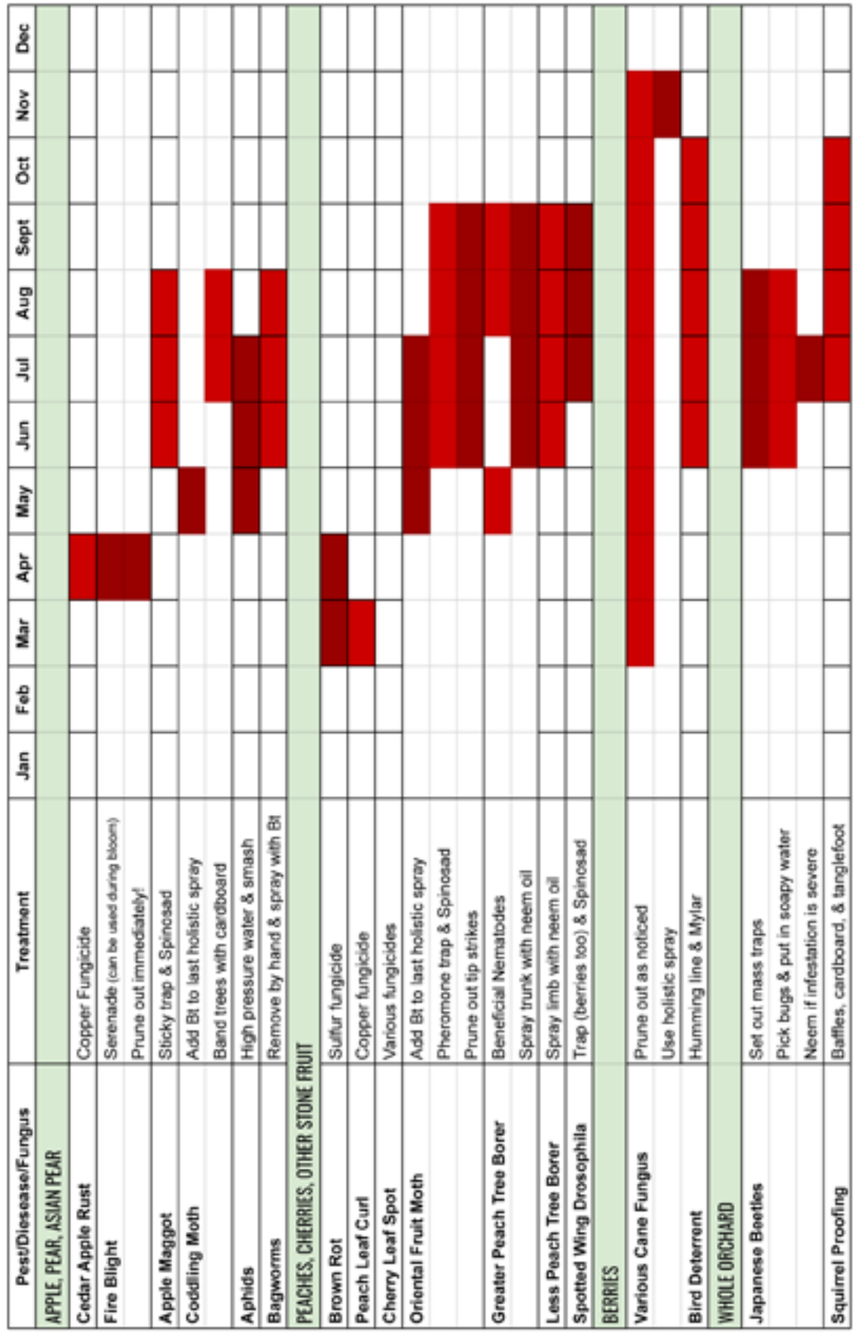
Pest Management Calendar

On the following page is a calendar for treating pests and diseases. Some pests and diseases, once identified, cannot be treated until the dormant season. Conversely, some pests and diseases should be addressed immediately. Use this calendar to determine when and if a pest or disease should be treated.

QUICK TIP!

Identifying pests and diseases can be difficult. For help with identification, please reference the Resources page of GivingGrove.org. There you will find photos that can help you identify the pest found in your orchard. If you still can't identify the pest or disease, contact your local Giving Grove program manager.

Use this calendar to determine how and when to treat pests and diseases in your orchard.



Pest/Disease/Fungus	Treatment	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
APPLE, PEAR, ASIAN PEAR													
Cedar Apple Rust	Copper Fungicide												
Fire Blight	Serenade (can be used during bloom)												
	Prune out immediately!												
Apple Maggot	Sticky trap & Spinosad												
Coddling Moth	Add Bt to last holistic spray												
	Band trees with cardboard												
Aphids	High pressure water & smash												
Bagworms	Remove by hand & spray with Bt												
PEACHES, CHERRIES, OTHER STONE FRUIT													
Brown Rot	Sulfur fungicide												
Peach Leaf Curl	Copper fungicide												
Cherry Leaf Spot	Various fungicides												
Oriental Fruit Moth	Add Bt to last holistic spray												
	Pheromone trap & Spinosad												
	Prune out tip strikes												
Greater Peach Tree Borer	Beneficial Nematodes												
	Spray trunk with neem oil												
Less Peach Tree Borer	Spray limb with neem oil												
Spotted Wing Drosophila	Trap (berries too) & Spinosad												
BERRIES													
Various Cane Fungus	Prune out as noticed												
	Use holistic spray												
Bird Deterrent	Humming line & Mylar												
WHOLE ORCHARD													
Japanese Beetles	Set out mass traps												
	Pick bugs & put in soapy water												
	Neem if infestation is severe												
Squirrel Proofing	Baffles, cardboard, & tanglefoot												

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Holistic Spray

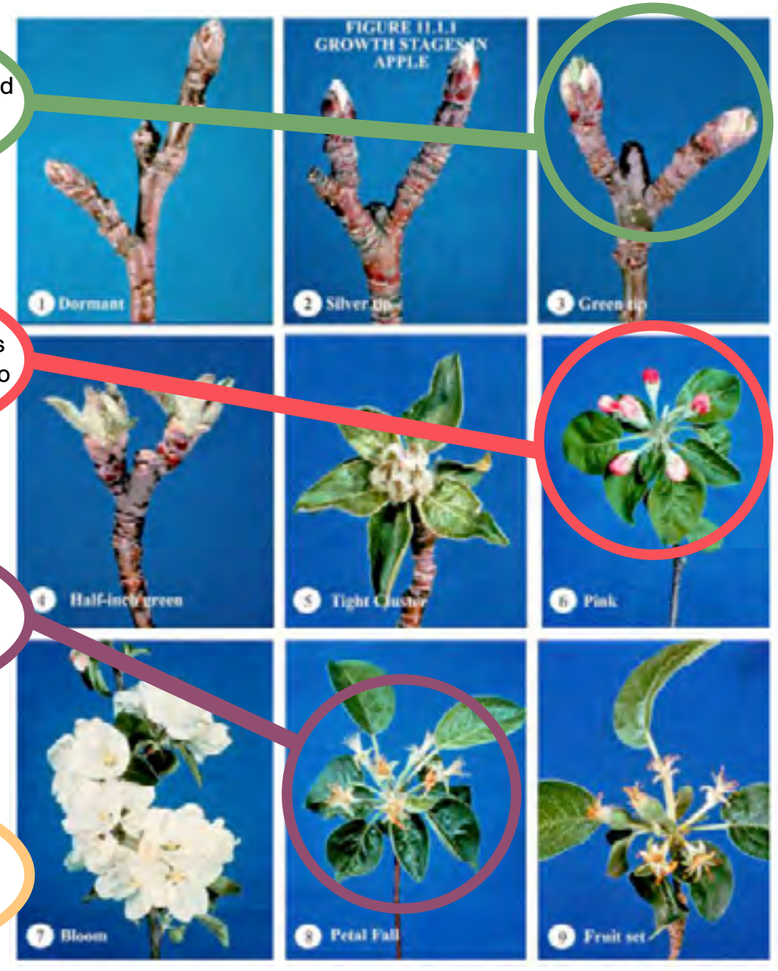
Prevention is better than a cure when it comes to pest and disease management. The Giving Grove has adopted an approach developed by Michael Phillips to help manage pest and disease in your orchard. This spray should be applied 5 times in a year, 4 separate times through the spring and once in the fall (apple and pear trees typically require additional sprays). (The first spray in the spring and the fall spray use a 1% neem solution. The remaining spring sprays use .5% neem solution [pg 28].) The timing is determined by the bud development of your trees:

Spray #1- When green tip of bud is 1/4-1/2" visible.

Spray #2- When leaf tissue has filled out and pink buds begin to show

Spray #3- When flower petals have fallen off of the fruit bud.

Spray #4- Spray 10-14 days after Spray #3.



*Spray #5 will be used in the fall, late October to December.

Holistic Spray Recipes

1% Neem Holistic Spray Solution

This solution should be used for the first spray of the spring and the fall spray.
(Select recipe based on your sprayer size)

FOR A 1 GALLON SPRAYER (YRS 1-3 COVERS APPROX. 5 TREES, YRS 3+ COVERS APPROX 2 TREES):

Ingredients
- 2.25 Tbsp (1.25oz) Neem
- 1 tsp liquid dish soap (Dr. Bonner's or Dawn recommended)
- 3 Tbsp (1.5oz) BioAg probiotic
- 5 Tbsp (2.5 oz) liquid fish (in the fall season, double the amount of liquid fish)

FOR A 2 GALLON SPRAYER (YRS 1-3 COVERS APPROX. 10 TREES, YRS 3+ COVERS APPROX. 5 TREES):

Ingredients
- 5 Tbsp (2.5 oz) Neem
- 2 tsp liquid dish soap (Dr. Bonner's or Dawn recommended)
- 6 Tbsp (3 oz) BioAg probiotic
- 10 Tbsp (5 oz) liquid fish (in the fall season, double the amount of liquid fish)

FOR A 4 GALLON SPRAYER (YRS 1-3 COVERS APPROX. 20 TREES, YRS 3+ COVERS APPROX. 10 TREES):

Ingredients
- 10 Tbsp (5 oz) Neem
- 5 tsp liquid dish soap (Dr. Bonner's or Dawn recommended)
- .75 cup (6 oz) BioAg probiotic
- 1.25 cup (10 oz) liquid fish (in the fall season, double the amount of liquid fish)

Directions:

1. If neem has been in a cool area or outside, bring inside to warm up overnight or heat under warm/very warm water.
2. Determine correct recipe based on sprayer size.
3. Combine soap with neem and stir vigorously to break down consistency.
4. Add liquid fish and BioAg (effective microbes) with soap/neem solution in sprayer.
5. Add warm water to sprayer to fill sprayer and shake tank vigorously.

To apply:

1. In the spring, apply when buds tips are showing 1/2 inch of green. In the fall, apply once between late October and early December.
2. Cover buds, trunk, branches, and any cracks/crevices in the tree structure. If spraying in the fall, also spray the remaining leaf matter on the ground.

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.5% Neem Holistic Spray Solution

This solution should be used for the 2nd, 3rd, and 4th spring sprays.
(Select recipe based on your sprayer size)

FOR A 1 GALLON SPRAYER (YRS 1-3 COVERS APPROX. 5 TREES, YRS 3+ COVERS APPROX. 2 TREES):

Ingredients
- 1.25 Tbsp (.6oz) Neem
- 1/2 tsp liquid dish soap (Dr. Bonner's or Dawn recommended)
- 3 Tbsp (1.25oz) BioAg probiotic
- 5 Tbsp (2.5 oz) liquid fish (in the fall season, double the amount of liquid fish)

FOR A 2 GALLON SPRAYER (YRS 1-3 COVERS APPROX. 10 TREES, YRS 3+ COVERS APPROX. 5 TREES):

Ingredients
- 2.5 Tbsp (1.25 oz) Neem
- 1 tsp liquid dish soap (Dr. Bonner's or Dawn recommended)
- 6 Tbsp (3 oz) BioAg probiotic
- 10 Tbsp (5 oz) liquid fish (in the fall season, double the amount of liquid fish)

FOR A 4 GALLON SPRAYER (YRS 1-3 COVERS APPROX. 20 TREES, YRS 3+ COVERS APPROX. 10 TREES):

Ingredients
- 5 Tbsp (2.55 oz) Neem
- 2 tsp liquid dish soap (Dr. Bonner's or Dawn recommended)
- .75 cup (6 oz) BioAg probiotic
- 1.25 cup (10 oz) liquid fish (in the fall season, double the amount of liquid fish)

Directions:

1. If neem has been in a cool area or outside, bring inside to warm up overnight or heat under warm/very warm water.
2. Determine correct recipe based on sprayer size.
3. Combine soap with neem and stir vigorously to break down consistency.
4. Add liquid fish and BioAg (effective microbes) with soap/neem solution in sprayer.
5. Add warm water to sprayer to fill sprayer and shake tank vigorously.

To apply:

[The first spring spray uses the 1% neem solution listed on the previous page.]

- 2nd spring spray: Spray when colored flower buds emerge. Cover trunks, branches, and any cracks/crevices in the tree structure.
- 3rd spring spray: Spray after flower petals have fallen. Cover leaf canopy and developing fruitlets.
- 4th spring spray: Spray 10-14 days after applying the 3rd spray. Cover leaf canopy and developing fruitlets. For trees older than 3, consider adding Bt (thuricide) or Spinosad (look to directions on bottle for amounts) to the 4th spray as most fruit caterpillars are active now. For apple and peach trees, consider spraying every 10-14 days through the growing season.

Tip If there is solution leftover after application, save the solution for the next spray by storing in an area protected by the elements. Can be stored for up to 10 days.

Harvest Season

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Harvest Guide

After careful years of cultivation, your trees might finally be ready for harvest! Ripe fruit is easier to spot in some trees than others, so here is a guide to knowing when and how to harvest your fruit. Keep in mind that ripe fruits are often well-colored and easily plucked with little resistance. The ground color (the color of the fruit's skin disregarding any red areas) is often a good way to determine whether the fruit is ready to be harvested.

APPLES

While the earliest apple varieties ripen in July, others will continue to ripen through October.
Most varieties ripen in shades of red, yellow, or russet. Coloration does not always indicate the fruit is fully ripe, so be sure to check the ground color (or the color of the fruit's skin disregarding any red areas) and taste a sample before harvesting. The skin should be thin, the fruit crisp and juicy, and it should be non-astringent.

ASIAN PEARS

The earliest Asian pear varieties ripen in early to mid-July.
Asian pears are ready to pick and eat as soon as they color to shades of brown, russet, or gold and no longer green. The fruit will still be firm when picked and will detach easily from the tree. Fruits will be thin-skinned, juicy, with sweet and tart notes. Should be refrigerated immediately after harvest to retain firmness.

PEACHES

Most peach varieties ripen in July and August. Depending on the variety, a ready-to-pick peach may appear any shade between yellow and red, with no green on the skin. We recommend harvesting slightly early and letting the fruits ripen indoors (in refrigeration or room temperature) to save the fruit from hungry critters like squirrels, raccoons, or birds.

CHERRIES

Both sweet and tart cherries will begin to ripen in June. The deeper the red the more ripe the cherry. Tart cherries will pull off the stem when ripe, sweet will often have the stem attached. The stem is not necessary for ripening. Freezing and dehydrating are recommended to extend the life of the harvest, but remove the pit first.

JUJUBES

Early varieties (Lang) will ripen late August with all other varieties ripening in September and October. Jujubes will ripen from a light green to a red-brown color and will be crisp and sweet when mature and ready to pick. Shaking a tree will cause ripe fruits to fall. Smaller fruited varieties, like Lang and Coco, can ripen and dry on the tree. Larger varieties, like Li, should be harvested when ½- fully colored. Refrigerate until ready to prepare.

EUROPEAN PEARS

Early varieties are ripe in late July and others continue through September.
Pears should be harvested before they are fully ripe on the tree. When ready to harvest, the fruit will be firm and detach from bud when tilted up to a horizontal position. Harvest European pears when the color of the fruit changes from a deep green to yellow green. Allow to fully ripen in refrigeration for long term storage.

FIGS

The primary fig crop starts ripening in late August or September. Figs should be left to ripen mostly on the tree. Different varieties ripen to shades of purple, brown, or yellow. It is best to pick the fruit with the stem attached to delay spoilage. Figs will bruise easily, so it is important to handle with care and not pack them tightly on top of one another. Figs can continue to ripen after a frost, but cannot handle a hard freeze.

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Harvest Calendar

Fruit Type	Variety	May	June	July	August	Sept	Oct	Nov
CHERRY								
	Ranier							
	BlackGold							
	Carmine Jewel							
	Romeo							
	Juliet							
BLACKBERRY								
	Natchez							
PEACH								
	Desiree							
	Harrow Diamond							
	Redhaven							
	Contender							
	Messina							
APPLE								
	Pristine							
	William's Pride							
	RedFree							
	Liberty							
	Freedom							
	Enterprise							
	Sundance							
	Arkansas Black							
PEAR								
	Harrow's Delight							
	Sunrise							
	Blake's Pride							
	Moonglow							
	Summercrisp							
	Honeysweet							
	Warren							
	Shenandoah							
	Potomac							
	Kieffer							
	Harrow Sweet							
JUJUBE								
	Lang							
	Li							
	Coco							
	Shanxi Li							

Fruit Type	Variety	May	June	July	August	Sept	Oct	Nov
ASIAN PEAR								
	Shinsui							
	Shinseiki							
	Kosui							
	Nitaka							
	Chojuro							
	Yoinashi							
	Shinko							
	Korean Giant							
RASPBERRY								
	Caroline							
FIG								
	Hardy Chicago							
	Peter's Honey							
	Stella							

SHARE THE HARVEST!

Let's celebrate a bountiful year! Make sure to let your neighbors know the fruit is ready for picking by placing signs or ribbons in the trees indicating the fruit is ripe.

If you have an excess of fruit and require assistance with food distribution, please contact your program manager. Send photos and harvest stories to your program manager to share with other Giving Grove stewards.

Orchard Steward Handbook

Community Engagement

Community Engagement:

Build a village around your orchard!

Community engagement is about creating a thriving and resilient community surrounding all our KCCG orchard sites where neighbors are aware of and informed of the orchard, stewards feel supported and equipped to manage the site, healthy fruit is produced and consumed by community members, and the orchard contributes to strengthening the sense of community. Some keys to enabling this engagement are:

- Encouraging the steward team to begin engaging the community from the very beginning, and not waiting until harvest time in later years.
- Coaching the stewards to build a formal 'engagement' plan. A proven tool is using the "asset based community development' (ABCD) approach for inventorying community assets, and creating a plan to take advantage of those assets. The forms on the following pages serves as a template for planning purposes. An example of a planning activity might include encouraging stewards to think about existing community events that would be appropriate for orchard promotion and education. Define one event each year to invite this event into the orchard space.

Ideas for Engaging Your Neighbors:

- Host a harvest celebration
- Host neighborhood events and meetings, block parties, concerts, and fundraisers.
- Partner with local organizations like schools, non-profits, communities of faith, homeowner associations, etc.
- Host volunteer work days (for pruning, harvest, weekly tasks, etc).
- Host a cider pressing event.
- Host a winter wassailing event- a traditional blessing of the trees.

Need help identifying volunteers in the community?

Strong communities are places where the strengths of local residents are identified, valued and used. That's why The Giving Grove has created the following worksheet to help identify your community's most valuable volunteers and to create a clear and concise plan for engaging your community.

QUICK TIP!

Encourage stewards to attend their neighborhood meeting and share about the orchard. While there, distribute harvest baskets to attendees and encourage them to pick fruit when harvest season approaches.

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Engage Your Community

Please fill out the following form, including anything in a yellow box.

GENERAL INFORMATION

Your Name:

Orchard Name:

Orchard Address:

City: State: Zip:

Primary Steward/Coordinator:

Secondary Apprentice:

Other Team Members:

Please select all classifications that apply to your orchard:

- ☐ Neighborhood
- ☐ Community Garden
- ☐ Community of Faith
- ☐ School
- ☐ Youth Service
- ☐ Senior Housing
- ☐ Transitional Living
- ☐ Local Organization
- ☐ Food Pantry/Kitchen
- ☐ Health or Medical Facility
- ☐ Municipality or Park
- ☐ Individual Landowner
- ☐ Other:

PRIORITIZING COMMUNITY ENGAGEMENT

Prioritize 1 to 5 of the following goals, 1 is the most important, 5 is the least important.

- ☐ Recruit additional help to maintain the orchard.
- ☐ Bring greater awareness to the orchard.
- ☐ Coordinate the best distribution of the harvest.
- ☐ Engage your community in an orchard event.
- ☐ Secure sponsorship for the orchard maintenance and/or activities.

COMMUNITY ENGAGEMENT GOAL SETTING

For your highest priority, write a specific engagement goal:

Who should be responsible to lead this effort?

Define the boundaries which our orchard supports?

Worksheet continues on next page

MAPPING & IDENTIFYING COMMUNITY ASSETS

For the following activities, use your Asset Based Community Development Map to identify any assets in your orchard's geographic location.

1. Individuals & Their Skills

List any community connections you may have to individuals and their area of expertise/skill. This can be neighbors, community or organization leaders, administrators, etc.

Name:	Skill:

2. Associations (religious, social, cultural, etc)

List any associations in your area that can act as possible connections to community engagement. You will need to reach out to these organizations to access their network and/or resources. Brainstorm ways you would like to connect to these association leaders and members, and how the orchard/garden will benefit their group.

3. Institutions (schools, hospitals, parks, libraries, businesses, etc)

List any institutions in your area that can act as possible connections to community engagement. You will need to reach out to these organizations to access their network and/or resources. Brainstorm ways you would like to connect to these institution leaders and members, and how the orchard/garden will benefit their group.

PLANNING YOUR NEXT STEPS

What is your next stage to engage your community?

How can the KCCG team assist?

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Resources & Websites

Recommended Reading

THE HOLISTIC ORCHARD by Michael Phillips (Holistic Orchard Network)

GROWING ORGANIC ORCHARD FRUITS by Danny L. Barney

THE BERRY GROWERS COMPANION by Barbara Bowling

THE PRUNING BOOK by Lee Reich

UNCOMMON FRUITS WORTHY OF ATTENTION by Lee Reich

INTRODUCING URBAN FOOD FORESTRY: AN APPROACH TO INCREASE FOOD SECURITY A Thesis Project

Fruit Tree, Sustainability, & Urban Agriculture Websites

(Hover over titles and click link with online version.)

Alliance for Community Trees
Grandpa's Orchard
Holistic Orchard Network
Kansas State University Extension
Lee Reich
Missouri Bontanical Gardens
Mother Earth News
NAFEX (North American Fruit Explorers)
Organic Fruit Growers Association
Penn State Extension
Project Learning Tree
University of Missouri Extension
Vegetable Gardener

The following compounds are used in organic fruit production

(Individual brands may vary and may or may not be certified organic)

Kaolin Clay
Spinosad
Bt
Pyrethrin Insecticidal Soaps
Neem
Baccillus subtillus
Copper
Sulfur

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Giving Grove Recommended Organic Insecticides, Fungicides, and Fertilizers
This list is not all-inclusive, but the items listed are in accordance with the OMRI (Organic Materials Review Institute) list of approved items for use in food production. They should also be readily found in garden centers.

Please note: Some products may not be OMRI certified, but may be certified through another Organic certification body.

Bt Products: For use on caterpillars, mainly moth larvae. The product is consumed by the pest and pest will die.

- Dipel DF, a powder that is mixed with water
- Thuricide*

Neem Products: A wide variety of uses but mainly used to disrupt insect feeding, maturing and reproducing, canbe used as a fungicide

- Ahimsa Organics Neem Oil*
- Monterey Fruit Tree Spray Plus*

Spinosad Products: For use on many soft bodied insects

- Monterey Garden Insect Spray*
- Natural Guard Spinosad

Horticultural Oil Products Can be used as a dormant and growing season oil to smother insect pests

- Monterey Horticultural Oil*
- Bonide All Seasons Horticultural and Dormant Oil

Insecticidal Soap Products

- Safer Insecticidal Soap

Other

- Surround, Kaolin Clay- A crop protectant for insects and sunburn

Fertilizers and Plant Nutrition

- Composted Chicken Manure*
- Composted Horse Manure
- Liquid Fish*
- Fish Meal
- Alfalfa Meal
- Bone Meal
- Soil Sulfur
- Kelp

Fungicides

- Bonide Liquid Copper Fungicide
- Bonide Sulfur Fungicide
- Various Bio Fungicides

***** Asterisk denotes products we periodically provide.

Where to Buy Products Above:

Arbico Organics
Peaceful Valley Farm Supply
Great Lakes IPM
or check your local garden centers