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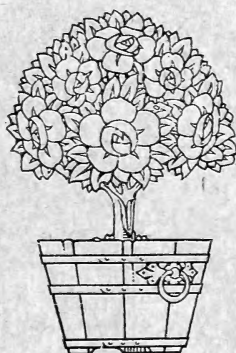
13

Griffing's Instructions

FOR

Selection and Preparation of Soil

Pruning and Planting Care of Trees and Plants



COMPLIMENTS OF

Jasper C. Carter

Dade City, Florida

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Jacksonville, Florida

Selection of a Site for Trees or an Orchard.

In selecting the location for trees or a site for an orchard either for commercial purposes or for home use, the best land on the farm or plantation should be selected. Land that will make the best corn, cotton and other crops, will make the best orchard. Rolling land with sandy loam on the surface and clay subsoil is as a rule the best ground for an orchard, or for trees of any kind. Do not plant valuable trees in fence corners or in some field you consider too poor to cultivate and which you expect to abandon the next season, and expect good results from your trees. Select good land, plant according to instructions, care for the trees and the results will more than repay you for the use of the best land on the farm or plantation.

Soil. Soils vary greatly, especially in Florida and near the Coast in the other South Atlantic and Gulf States. One ten acre tract may be ideal fruit land, and surrounding it hundreds of acres worthless for fruit or nut culture. A rich sandy loam underlaid with a grey, yellow or reddish subsoil, draining readily, with clay from one to five feet below surface (from one to two feet being preferable) is ideal soil conditions. We do not mean to say that fruit and nuts can be successfully grown only on this class of land. These are ideal conditions, and success will be more uniform and easily obtained where they exist. In sections where little or no clay is found, select the best sandy loam top soil with grey, yellow or reddish subsoil, always watching for good drainage for a depth of $2\frac{1}{2}$ to 3 feet below the surface. Some land with a chocolate subsoil is good, but as this chocolate subsoil usually indicates hardpan, care should be exercised in selecting an orchard site with chocolate subsoil. Avoid land with a strata of hard pan impenetrable to water lying from 12 to 18 inches from surface; as a rule such land is a failure for most fruits and not as good for pecans. Land with a white sand subsoil running into a quick sand from 18 inches to 3 feet below surface should positively be avoided. In the rich lands of the Mississippi Valley, Louisiana and Texas, care should be given to drainage and where possible the stiff Gumbo and Hog-wallow land should be avoided except for Hardy Citrus fruits which seem to give good results on the heaviest soils. In these sections, the lighter, more alluvial soils will give best general results. Wherever you plant, be mindful of drainage; don't think because you have seen or heard of certain kinds of trees thriving in the river bottoms subject to overflow, that trees will grow in a mud hole. Usually where such trees are found in the bottoms they are on the river bank or near gulches affording most ideal drainage; when water is high and bottom overflows, the water is alive, active, full of air, a tree can not live in dead, stagnant water any more than a fish.

Drainage. The importance of drainage is so great that in addition to the mention of it in several places in these instructions we add this special paragraph. Land may be poor, you can fertilize it and make it productive. It may be high and thirsty, but by irrigating you can grow fine trees and plants. But if low, wet and soggy you cannot make trees or plants grow successfully without thorough draining. In addition to a good system of main ditches on land that is low and wet and subject to seepage a deep water furrow should be kept open between each row of trees, and the trees planted on a ridge several feet in width or on a large flat mound 6 to 10 inches above the general level of the ground.

Tile drainage is advised on all low, wet or seepy ground where planter is financially able to use it.

GRIFFING'S PRUNING AND PLANTING INSTRUCTIONS

Distance For Planting.

Hardy Citrus Fruits	15 to 20	feet apart each way.
Semi-Tropical Citrus Fruits	20 to 30	" " " "
Kumquats	10 to 15	" " " "
Pecans	40 to 50	" " " "
Japan Chestnuts	20 to 25	" " " "
Japan Walnuts	20 to 25	" " " "
Peaches and Plums	15 to 20	" " " "
Pears and Apples	20 to 30	" " " "
Persimmons	15 to 20	" " " "
Mulberries	25 to 40	" " " "
Figs	12 to 15	" " " "
Grapes, Bunch Sorts	8 to 10	" " " "
Grapes, Arbor Sorts	20 to 30	" " " "
Pomegranates	10 to 15	" " " "
Loquats	15 to 20	" " " "
Shade Trees, in rows	25 to 40	" " " "
Evergreen Ornamentals	15 to 25	" " " "
Conifers		In groups as desired.
Shrubby		In groups as desired.
Hedge Plants, in rows	10 to 15	inches
Border and Windbreak Trees, in rows	3 to 5	feet apart
Roses, Bush Sorts	2 to 3	feet apart
Roses, Climbers	6 to 8	feet apart



Distance		Number of Trees or Plants to the Acre		No. of trees.
apart—feet		No. of trees.	Distance apart—feet.	
1x 1	.....	53,560	15x15	196
2x 2	.....	10,890	18x18	134
3x 3	.....	4,840	20x20	108
4x 4	.....	2,722	25x25	69
5x 5	.....	1,742	30x30	45
6x 6	.....	1,210	35x35	35
8x 8	.....	680	40x40	27
10x10	.....	435	45x45	22
12x12	.....	302	50x50	18

Ready for Tree Planting. Don't Forget the Water Bucket.

INSTRUCTION FOR CARE OF TREES ON ARRIVAL.

Planting and Pruning at Time of Planting

Failure to get satisfactory results in planting trees received from the Nursery can be largely avoided if a few simple rules for pruning and planting are observed. In most cases failure may be traced to a lack of knowledge of the care of trees upon arrival, proper pruning and planting.

Every planter whether a commercial orchardist or a lady planting a few roses in her garden should have the place for each tree or plant selected and the ground properly prepared before arrival of the trees or plants from the Nursery. In orchard planting, the ground should be thoroughly broken, pulverized, harrowed, leveled, surveyed or laid off with a small stake standing where each tree is to be planted. For the home ground, or yard, the ground should be well spaded and pulverized.

If compost or fertilizer is to be used, it should be thoroughly spaded or worked into the ground at least ten days before the arrival of the trees or plants, so that if any heating manure, compost or fertilizer has been used, the injurious effect would have passed away before planting the trees. Use no fertilizer at time of planting.

CARE OF TREES ON ARRIVAL

On arrival of trees from the Nursery, if unable to plant immediately, they should be heeled-in as shown in Figure 1.

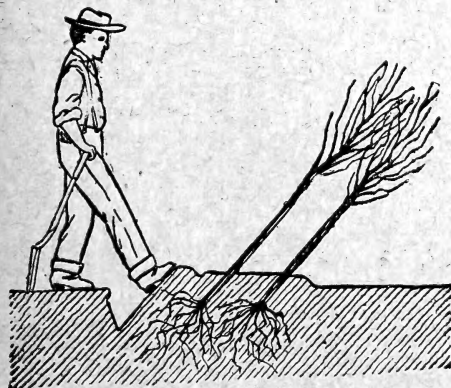


Figure 1—Heeling in Trees.

To do this properly, select a well drained, but moist piece of ground that can be thoroughly pulverized. Dig a short trench sloping on one side sufficiently deep to take in the entire root system. This trench may be of any desired length. Place the roots of the trees in the trench with the tops leaning up against the sloping side, spread out so that loose earth sifted over the roots and thoroughly wet will come in contact with all of the roots. Cover the roots with four or five inches of earth and pack firmly. Don't be afraid to tread this earth hard. If you have a quantity of trees, several rows may be placed one in front of the other as shown in illustration. In heeling-in the trees, care should be taken to see that the roots are well covered, moistened and the earth firmly packed. Trees taken care

of in this manner, will if necessary keep several weeks, but we do not advise or recommend the heeling-in of trees unless absolutely necessary. Should the ground be frozen upon receipt of the trees, so as to prevent heeling-in, or planting at once, or should there be frost in the box or bale, place the box or bale in a place free from frost in a cellar if available. Do not store near a stove or artificial heat. Keep the roots and tops of the trees moderately moist. Burying or covering the box or bale with 6 inches to one foot of earth is a good plan. Do not expose tree roots to frosty air, or remove them from the box or bale while there is frost in the packing. As soon as the frost is out of the ground, plant or heel-in immediately.

PRUNING AT TIME OF PLANTING
ROOT PRUNING

All broken or mutilated portions of roots should be cut off so as to leave ends sound and smooth. The mass of small fibrous roots should be largely removed, leaving the main or lateral roots that are of sufficient size to callous and send out new feeding roots. The fiber or hair root are the feeding roots, and in nearly all cases sluff off after transplanting. Lateral roots ranging from one sixteenth inch in diameter and upward commence to throw out new feeding roots almost as soon as trees are transplanted. In the South while most trees are inactive in the formation of new tops or leaves during the winter months, they are never inactive in the formation of new roots.

PRUNING THE TOPS OF TREES

This is the one most important feature in tree planting. The accompanying illustration (figures 2, 3, 4, 5, and 6) shows Pecans, Persimmons, Peach, Pear and Fig Trees in four of the grades as listed in the catalog, as they will be received from the Nursery. The solid lines marked across the trees in the illustration, indicate the point at which the trees should be cut off or pruned. These lines show the maximum amount of top that should be left. A far more severe pruning is advised and recommended by many, and no harm will be done if pruned much more severely. The same severe method of pruning applies to all classes of deciduous fruit, nut and ornamental trees. In the illustration for Figs (Figure 6), you will see a dotted line across the trees near the ground. If the planter desires the Fig trees to grow in bush form, they should be cut off at the point indicated by the dotted lines. Should the planter wish the Fig trees to grow in the arborial or tree form, they may be cut off at the solid line shown higher up on the trees. We recommend the bush form for Fig Trees in preference to the arboreal or tree form.

All broad leaved evergreen trees including Oranges, Grape Fruit, Lemons, Kumquats and other evergreen fruit and ornamental trees should have the foliage largely or entirely removed before digging from the Nursery and shipping. Illustration Figure 7, shows the general type of three grades of Orange or Grape Fruit trees as they are growing in the Nursery before digging, also the same trees after pruning and digging. Unless instructed to the contrary, we defoliate and prune in this manner. This method of severe pruning and defoliating has after many years of test, been proven best and safest. Occasionally we learn of good results from Citrus and broad leaved evergreen trees transplanted with the foliage left on. These cases, however, are exceptions rather than a rule. Where trees are properly defoliated before digging from the Nursery, conserving the vitality and vigor of the trees in the body and root much more uniform and satisfactory results may be expected.

Grape Vines should be pruned to one or two branches from six inches to a foot in length. This same method of pruning ap-

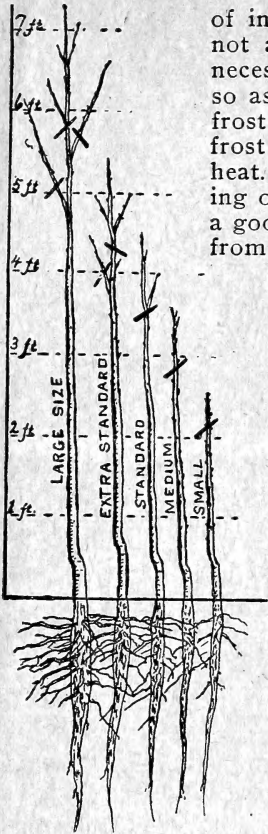


Figure 2 Pecan Trees

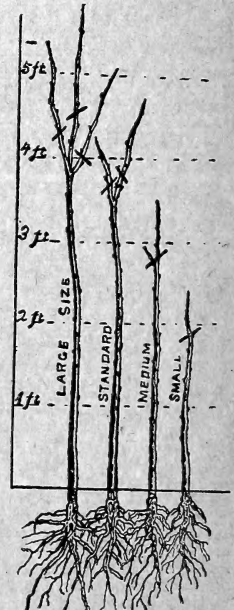
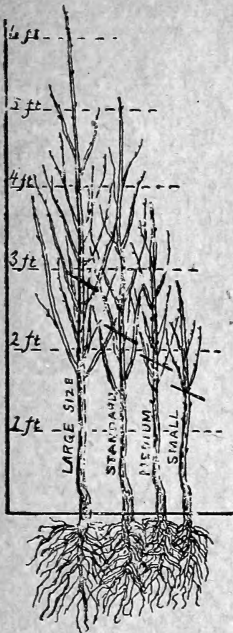


Figure 3, Persimmon Tree.



Peach Trees
Figure 4

plies to all climbing vines in ornamental department as well as for Grape Vines

Coniferous Evergreen should be pruned but very little at time of planting. The shearing away of about one-third of the foliage is usually advisable.

Roses: Figure 8 shows an average field-grown two-year-old Rose Bush as they appear in the Nursery before pruning and digging. The accompanying illustrations shows the rose bush after pruning and digging and made ready for shipment. To the lover of Roses, one who is ambitious to get immediate effects in the Rose garden, one who has visions of large beautiful plants full of fragrant blossoms, may deem this a severe treatment, but if you will remember that the Rose is a scantily rooted plant, not making the great mass of lateral and fiber roots, many trees and plants do, and that the ability of the rose bush to bloom and produce flowers, depend upon its ability to produce new growth, you will understand why this severe pruning is best. Many other shrubs, plants and vines should be treated in this manner for best results.

WHEN PRUNING IS ABSOLUTELY NECESSARY

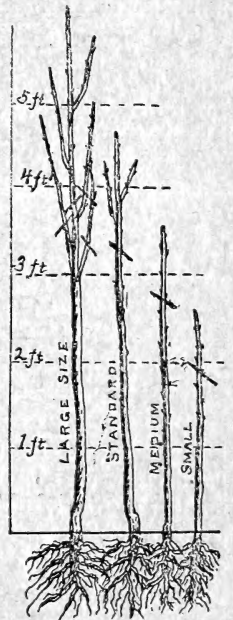
In many cases where very severe pruning is absolutely necessary for the success of the trees and plants, we prune before digging and shipping from the Nursery. In such cases the size of the tree and plant is measured before the pruning and digging is done.

WHEN TO PRUNE

The pruning of trees shipped with the entire top intact, can be done either before the trees are placed in the ground or immediately afterwards. Some people prefer to wait until planted, so that they may trim the tree to grow into the desired form, but in all cases it should be done immediately. Do not wait several days, as the top left is exhausting moisture and strength from the body and root of the tree.

PLANTING

In planting, or placing the trees in the ground, care should be taken to cut off all broken and mutilated roots with a smooth upward cut as explained under paragraph "Root Pruning". Dig holes large and deep enough to admit the roots without cramping. Place the tree in the hole the same depth that it originally grew in the Nursery. The black line across the bottom of Figures 2 to 6 near the roots show the depth this class of trees grow in the Nursery and the depth to which they should be planted in the orchard. Spread out the roots in their natural position with the hand. See Figures 9 and 10. Fine, moist, pulverized earth should be sifted in and worked around the finer roots and the hole largely filled with this class of soil, after which pour in from one to three buckets of water according to the size of the tree and the amount of earth to be moistened. Use the water whether the ground is moist or not. It pulverizes the lumps and settles the soil around the roots better than it is possible to do in any other way. Finish filling the hole with earth, hilling it up to two or three inches above the level of the ground and pack the earth firmly with the feet. Do not be afraid to stamp it. The harder you pack the dirt around the tree, the better. After this packing, rake a little loose earth around the trees to act as a dust mulch, and make a ring a distance of fifteen or twenty inches from the tree so that it will retain and run water that may fall, toward the tree. This completes the planting. If, however, it can be conveniently had, we advise mulching the trees with straw, leaf mould coarse stable manure, or other decaying matter, to the depth of three to five inches.



Pear Trees
Figure 5

SPECIAL INSTRUCTIONS WITH REFERENCE TO PECANS

In planting Pecans, dig holes deep enough to admit the entire tap root without cutting off, and sufficiently large to admit the lateral root without bending. (See Figure 11). The dotted line indicates the hole before the earth has been filled in around the roots. Pack the earth from the bottom to the top of the hole with a rammer the same as you would firm earth in a post hole; water freely. These holes should be from eighteen inches to two feet across the top and sufficiently deep to allow the tree to be planted the same depth it originally stood in the Nursery row.

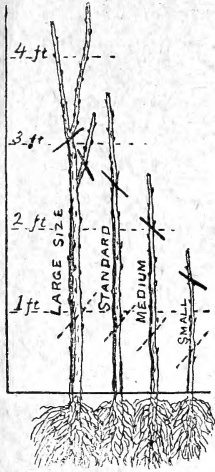


Figure 6
Fig Trees.

Marl may be used instead of clay. The bed should be prepared at least a week before planting the bushes. If horse stable manure is used it should be two weeks. Water freely but be sure the ground is well drained.

Roses usually give better results when planted about 24 to 30 inches apart in a well prepared bed than when planted singly in the open yard.

Shrubbery and Shade Trees should have a space from four to eight feet across thoroughly spaded, enriched and mellowed for each tree or plant. If compost, manure or fertilizer is to be used the places for the trees should be prepared a week before planting. **Use no fertilizer at time of planting.** Trees and shrubs may be planted in unfertilized ground, which may be enriched afterwards, by mulching with manure or by use of commercial fertilizers. See under head of fertilizers. Special care should be taken in planting evergreen shade trees, shrubbery and conifers that the roots never become dry and that the ground is kept thoroughly moistened and well packed.

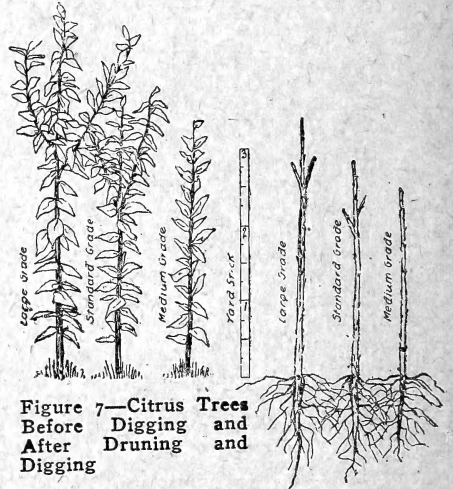


Figure 7—Citrus Trees
Before Digging and
After Pruning and
Digging

Planting Balled and Burlaped Trees and Palms

In planting Coniferous Trees, Orange, Grape Fruit and some kinds of Broad Leaved Evergreen Trees and Palms; received with ball of earth held in place by burlap sewed or tied around the roots; they should be placed in a hole (without removing the burlap) dug deep enough for the tree to stand same depth that it originally grew in nursery, and wide enough to allow the cutting loose the sewing or cords holding the burlap in place, and pushing it down from the sides to the bottom of hole, (leaving it there). Fill in fine earth around the sides, water freely and trample hard same as with other trees. Sometimes several small size Coniferous or Evergreen trees are tied together with burlap and packing covering the roots. In such cases separate trees and plant singly.

Planting Trees and Plants that Have Been Grown in Pots

Hole should be made deep enough to receive tree or plant to from one half inch to an inch deeper than it was growing in pot according to size of tree or plant. Press earth firmly around side and water freely. Shade for a few days if planted in dry exposed place. Do not crumble or break the little ball of earth away from the roots.

Planting Berries

Northey Berries and Dewberries should be planted in rows from 4 to 6 ft. apart in the row. A wire or slat trellies should be provided for vines to be tied to. Along the side of a wire fence is an ideal place. Trim back to a few inches and plant same as general instructions for other trees and plants.

Strawberries: Plant in rows about 3 feet apart and one foot apart in the rows if on well drained land; if on damp, moist land make beds 4 feet wide and plant 2 rows 12 to 15 inches apart on top of each bed, planting 12 inches apart in the row. Have ground mellow and fine; plant so that bud will

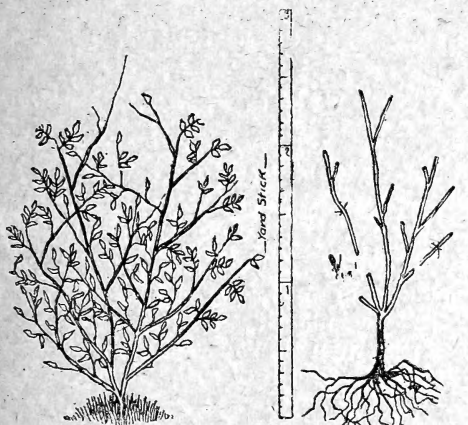


Figure 8—Rose Bush Before Digging, and After Digging and Pruning

be about $\frac{1}{4}$ inch above ground level. Be careful not to cover the bud.

PLANTING HEDGES

Plow or dig trench where hedge is to be planted deep and broad enough to receive the roots of plants without cramping. In planting spread out roots, work soil among them and water freely. Fill up trench and tramp firmly same as for other trees. Hedge plants should be set from 10 to 15 inches apart.

PLANTING BEDDING AND MISCELLANEOUS PLANTS

Have your beds or ground well prepared and made rich from 10 days to two weeks before planting if possible. Put the little roots in the ground same depth they originally grew, carefully spreading them out and press earth firmly around them; water freely

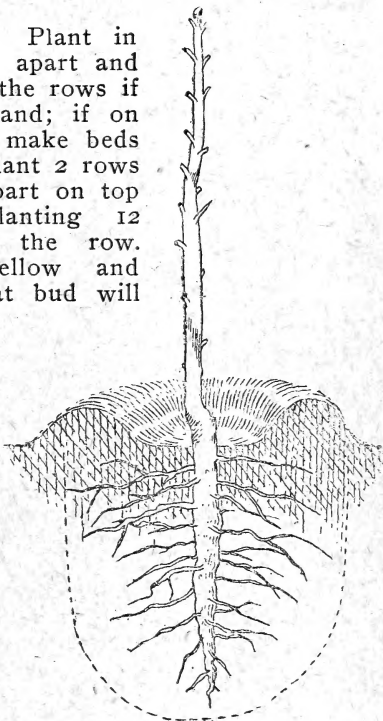


Figure 9—Note position of roots and how basin of Earth should be made

and if tender, soft plants, shade for a few days.

BLASTING HOLES FOR TREES

If planting on ground that is hard, either clay, rock or hard pan, making it difficult to dig sufficiently deep and large holes with the spade, and which would prevent the proper spread of the roots the blasting of the holes where the trees are to be planted is desirable. In doing this blasting, the charge of dynamite should be placed at least 18 inches below where the lowest root would come in the hole. Use a sufficiently large charge to break and thoroughly crack the ground

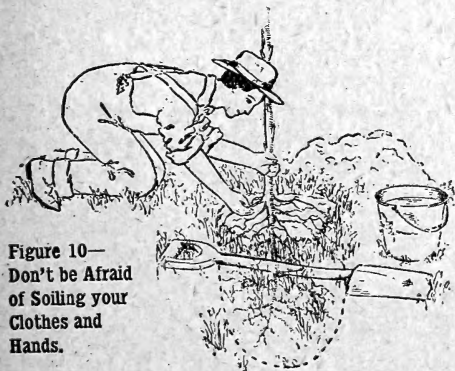


Figure 10—Don't be Afraid of Soiling your Clothes and Hands.

GRIFFING'S PRUNING AND PLANTING INSTRUCTIONS

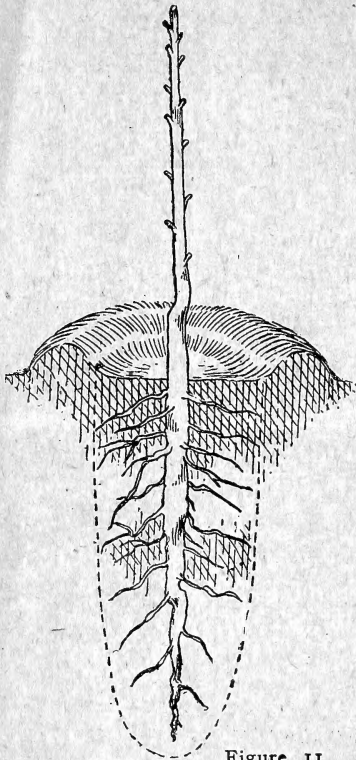


Figure 11
Properly Planted Pecan Trees

around where the trees are to be planted for several feet. If a sufficiently large charge is not used to crack the ground in the large space, the blasting may be a detriment in place of a help. Where small holes are blasted, the holes fill with water during wet seasons causing the roots to sob and decay. But if large holes are blasted, there will be little or no difficulty from this cause.

If the Following Simple but Necessary Rules are Followed and Kept in Mind, You Could Hardly Help but Succeed

First. Never allow the roots of the trees to become dry.

Second. Remove broken or mutilated roots with a sharp knife.

Third. Firm or pack the earth around the roots of the trees using water in settling the soil around the roots.

Fourth. Plant the trees the same depth that they originally stood in the Nursery.

Fifth. Mulch the trees either with loose earth, straw or other material.

Sixth. Have the ground properly prepared and give the trees good attention after planting.

Seventh. If tree is planted in an exposed place where it is liable to be run over and broken down, protect it. (See Figure 12.)

FERTILIZERS AND FERTILIZING

With few exceptions aside from some portions of Louisiana and Texas, the soil in the South adapted to fruit culture is thin and light, requiring some fertilizer for satisfactory results. The following table will show amount required per tree on average soil in Florida and the Lower South. If your land is naturally fertile or has been made rich by compost, stable manure, leguminous and cover crops, the minimum amount will probably be sufficient for good results, or, possibly none will be required the first or second year, while on the lightest sandy soil amounts in excess of the maximum may be required for good results.

Where (G) appears in the table indicates that a special wood producing or tree growing fertilizer should be used with an analysis of 4 to 5 per cent, ammonia, 7 to 9 per cent Phosphoric acid, 4 to 5 per cent. Potash. Where (F) appears a special fruit developing fertilizer analyzing 3 to 4 per ct. Ammonia, 7 to 9 per ct. Phosphoric Acid, 10 to 12 per ct. Potash should be used.

	1st Year.	2nd. Year.	3rd. Year.
Oranges, Grapefruit, Lemons and Limes	1 to 4 lbs., G.	2 to 5 lbs., G.	3 to 6 lbs., F.
Kumquats -----	½ to 2 lbs., G.	1 to 3 lbs., F.	2 to 4 lbs., F.
Pecans and Nut Trees -----	2 to 4 lbs., G.	3 to 5 lbs., G.	4 to 8 lbs., G.
Peaches, Plums and Figs -----	1 to 4 lbs., G.	3 to 6 lbs., F.	4 to 8 lbs., F.
Pears, Apples & Mulberries -----	1 to 3 lbs., G.	2 to 5 lbs., G.	3 to 6 lbs., G.
Persimmons -----	1 to 3 lbs., G.	2 to 5 lbs., F.	3 to 6 lbs., F.
Grapes -----	1 to 2 lbs., G.	1½ to 3 lbs., F.	2 to 4 lbs., F.

Ornamental shade and other trees and shrubbery listed requires the tree-growing fertilizer in varying quantities according to land and character of tree or plant. No set rule could well be applied, they should have sufficient to keep them in vigorous growing condition.

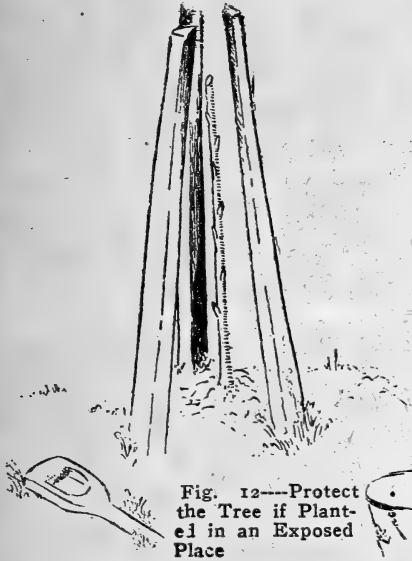
Subsequent fertilizing should be sufficient to keep the trees in a healthy vigorous condition and to mature the crops of fruit.

Care and Cultivation of Trees and Plants—Subsequent Pruning

Trees and plants after being started or headed at the point you wish them to branch, should be left to grow in their natural spreading form as much as possible. Trees usually require some pruning in the way of removing straggling or drooping

GRIFFING'S PRUNING AND PLANTING INSTRUCTIONS

branches and chafing limbs, aside from this and the rubbing off of sprouts on the trunk below where you want them to branch, is all the pruning we advocate. If you wish to shape the head of the tree, this can be done by pinching or breaking off the tender ends of all classes of trees except shade trees for yard or street purposes. The following is about the height we advise branching or heading trees:



Orange and Grapetruit -----	18-24 in. high
Lemons and Limes -----	18-24 in. high
Figs Arboreal form -----	18-30 in. high
Figs Bush form -----	6-10 in. high
Japan Persimmons -----	18-30 in. high.
Apples -----	24-36 in. high.
Mulberries -----	4-6 ft. high
Pomegranates -----	6-12 in. high
Guavas, Common Florida -----	18-24 in. high
Cately Guavas -----	10-15 in. high
Tropical Fruits -----	18-36 in. high
Kumquats -----	18-24 in. high
Pecans -----	3-5 ft. high
Walnuts -----	3-5 ft. high
Chestnuts -----	3-5 ft. high
Plums -----	18-30 in. high.
Peach -----	18-24 in. high
Pears -----	24-36 in. high
Loquats -----	24-30 in. high
Mangoes -----	3-4 ft. high
Avacado Pears -----	3-4 ft. high

The foregoing height indicates the maximum number of inches or feet from the ground. Lower branching is advocated by many and we offer no objection to it.

Trees having been pruned according to instructions for pruning at time of planting, should, when they have started in the spring, and made several inches of growth, have all the sprouts removed with the exception of those you wish to form the tree. The lowest sprout should be left at the height you wish tree to branch. Select three or four sprouts starting from different sides of the tree and if possible select sprouts so as to have from 8 to 12 inches between the bottom and the top branches. This will prevent making a forked tree, that might split under heavy load of fruit or by windstorm. For later pruning see what we say in the opening of this subject.

Grapes of the Scuppernong or Muscadine Type should have one or two sprouts trained to a stake to the height of 6 or 7 foot. An arbor about twenty foot square for each vine should be constructed at this height and the vine allowed to spread over the top of same. No subsequent pruning needed. The Trellis varieties of Grapes should be cut back within 3 or 4 inches. Not to exceed two sprouts should be allowed to grow to the height of about 2½ to 3 foot. These should be tied to a stake on which cross arms have been nailed or upon which wires have been stretched, from the top of these sprouts the branches should be trailed along the cross arms or wires. Each spring the vines should be cut back to within four or five eyes of where the main upright vine reached the cross arms or trellis wires. The new growth thrown out each spring should be trained along the cross arms or trellis wires. Grapes produce fruit on the new growth. The fruit of trillis varieties of grapes should be thined to from four to six bunches, the second year, 8 to 12 bunches, the third year from 15 to 20 bunches, subsequent years. Grape pruning should only be done in the winter, during dormant periods, but vines may be shaped during growing period by pinching tender ends.

Cultivation

For the first two years we advocate frequent, shallow, clean cultivation. The third year cultivating should commence in January or February with a shallow plowing, followed by frequent shallow cultivations until the middle of summer, after which the orchard should be planted with beggar weed or other leguminous crops. If planted on low, damp ground, be sure that the drains are kept well opened, and see that the water furrows between the trees are plowed out good and deep. Fertilizer for the first two years should be spread on the ground in a circle three or four foot in diameter

and worked in with a hoe or rake. Subsequent fertilizer should be applied in March and June spreading over the ground for a space of several feet around the trees and cultivated in with cultivator. If trees are planted in a field where crops are grown, leave a space of from 6 to 8 foot in each direction from the tree. The small trees are worthy of the ground. Do not plant small grain in an orchard. Cotton or ordinary garden crops do no injury to young orchards unless planted in close proximity to the trees.

Shade or Ornamental Trees planted along the streets in yards or gardens, should be liberally fertilized and a space from 4 to 6 foot in diameter kept thoroughly cultivated by hoeing for the first two or three years. Do not plant small trees under the shade or in close proximity to large ones and expect them to give you satisfactory results.

Rose bushes should be cultivated frequently by shallow hoeing and liberally fertilized. About two thirds of the top of Rose Bushes should be removed at least once a year, preferably during the fall or early winter. Remember that a Rose Bush's ability to bloom depends upon its production of new wood growth.

Bedding plants of all kinds should be thoroughly worked by shallow cultivation and given plenty of water and fertilizer.

Insects and Remedies

No plant exists that does not in some manner furnish food for something else. Hence all fruits and plants are subject to attacks of insects and fungi. The remedies here given are brief but if carefully and persistently applied, will in most cases prove entirely effective. The following are some of the insects and diseases most apt to appear in the lower South:

Borers: This small white grub attacks Peach, Plum and some other types of trees near the crown. Their presence may be known by the gummy substance oozing out around the ground. Dig them out with a sharp-pointed knife and remove all dead wood. As a preventative from further depredation, apply, twice a year, a quart of unleached ashes around the tree, or wash the tree with lye below the branches down as low as the wound extends. This is good for the tree whether there is anything the matter with it or not.

Pecan Borers: The Pecan Borer attacks the tree at various points along the body. Their presence may be known by the excretions of a gummy substance mixed with little shaving-like substance. In some instances only a slight depression or discoloration of the bark is noted. The borer should be removed with the point of a sharp knife or by inserting a soft annealed wire into the hole until borer is destroyed. If borer has gone deep into the tree, dip a little absorbant cotton in Bisulphide of Carbon, pack it into the hole and cork hole up securely.

Twig Girdlers: This is a beetle that lays its eggs on the ends of limbs of Pecans and Walnut trees, and in some cases, oak. After depositing the eggs she drops back a few inches and partially girdles the twig. The swaying of the twig by the wind causes the end to break off and fall to the ground. These ends should be picked up and burned each fall to prevent the larva hatching, burrowing in the ground only to come out in the form of a beetle another year to do further depredation.

Bud Worms: This is a small beetle, a little larger than the ordinary house fly. She lays her eggs immediately under the buds of Pecan trees and some other nut and shade trees. In spring when the sap commences to flow, the larva hatches and burrows into the bud, killing the germ. Their depredation can largely be controlled by spraying the trees, just before they commence to bud out, with arsenate of lead solution.

Case Rollers: This is a small beetle that deposits its eggs along the limbs after the growth has started on Pecans, Walnuts, shade and some fruit trees. They continue their depredation for a period of three or four weeks. They may be controlled by spraying the trees with arsenate of lead solution.

Caterpillars, (Web Worms): Caterpillars, more frequently called web worms, appear in the Persimmon, Pecan, Walnut, Hickory and other shade and forest trees. They may be detected by webs growing in the trees, filled with small grayish worms. If these are left alone for a few seasons, they become quite destructive, often entirely defoliating the trees during the summer. The web nests should be destroyed as soon as noticed, by burning out, or twisting them out with a long forked stick or pole.

GRIFFING'S PRUNING AND PLANTING INSTRUCTIONS

Plant Lice: This is a small insect appearing on Rose Buds and other tender plant growth. Spray with tobacco solution or whale oil soap solution.

White Fly: The Citrus Fly is a small moth with white or grayish wings about the size of a gnat. They deposit their eggs on the under side of the leaves of Citrus and some other evergreen trees, China trees and Privet hedges. The larva hatches on the underside of the leaf and is covered with a waxy scale like formation, growing through the larva and pupa stage up to adult age under this waxy scale, sucking the sap from the leaves. The presence of the Larva on the under side of the leaf cause a honey dew to form which coats the upper side of the leaves, causing them to become black and smutty. If you do not happen to see the fly when in the adult stage flying among the trees, you can detect the diseased trees by the smutty appearance of the foliage. Three generations of the white fly appear each season, one in March and April the second in July and August and the third in October. To control the white fly, spray the trees thoroughly, being careful to touch the underside of every leaf with the spray fluid, about a week after the flies have disappeared, with Resin Wash, Whale Oil Soap solution, or Schnarrs Insecticide. We recommend the latter as a most effective spray for white fly.

Orange Scale: This scale appears on the body, smaller limbs and the leaves of Orange and other Citrus Trees. It may be detected by a greyish scaly appearance of the trees which if rubbed with the finger nail, will rub off. The scales being about a sixteenth of an inch in diameter, sometimes in oblong form. This scale can be controlled by the use of Whale Oil Soap solution or Schnarr's Insecticide. We recommend Schnarr's Insecticide for all Orange Scale.

San Jose Scale: This scale insect is probably more widely disseminated than any other injurious insect, and may appear in any orchard in any section of the country at any time. Peach, Plum, Apple, Pear and numerous other deciduous fruit and shade trees may be attacked. Years ago, before remedies for controlling this insect were known, it did considerable damage to orchards. Experience has proven that by spraying the infected trees once or twice during the winter with lime and sulphur solution, and during spring and summer with whale oil soap or Schnarr's Insecticide, that it can be thoroughly controlled. The Lime and Sulphur solution should be used only during the winter months when there are few or no leaves on the trees. The presence of the San Jose Scale on the trees may be noted by a rough appearance of the new growth just as it is ripening or maturing, causing little indentations and discolorations of the bark in which you will find small scale like formation from a sixteenth to an eighth of an inch in diameter that can be rubbed off with the thumb nail.

Root Knot or Nematode: This is a microscopic insect found in nearly all of our Southern soils, and which multiplies rapidly if trees or crops on which it feeds are planted consecutively in a field. The Root Knot sometimes attacks Peach, Figs, Mulberry and Plum trees. To avoid having your young orchard attacked with this insect, which may be in your soil, we would advise planting this class of trees on new or virgin land if possible. If impossible to plant on new or virgin land, select a portion of your farm that has not recently been planted with cow peas or sweet potatoes, as these crops furnish the best known food for this insect. Land recently planted with these crops is apt to be infested with them. If your trees are planted on virgin land, or on an open portion of the plantation where those crops have not been planted for several years, there is little danger of injury from the Root Knot or Nematode.

Grape Mildew: This is a mildew that attacks bunches of Grapes just before ripening. Spray with bordeaux mixture.

Brown Rot: This is a rot that attacks Peaches and Plums just at ripening in many fruit growing sections during the rainy season. It is caused by fungus spores thrown off by decayed or rotten fruits left on or under the trees from previous season. We would therefore caution anyone growing Peaches or Plums to see that all rotten fruits were removed from the orchard each season, and not allow it to decay on the trees or underneath them. If this Brown Rot should appear to a slight degree in the orchard, we would recommend spraying the trees two or three times during the following winter with Bordeaux Mixture. Also spray when the fruit is about one half grown with a somewhat weakened solution of bordeaux mixture. By keeping all decayed and dried up fruit picked off and up from under the trees and by following the foregoing system of spraying, little or no danger need be feared from this fungus.

Pear Blight: Pear blight is caused by bacteria in the sap of the tree. No curative remedy has ever been found for Pear Blight. It can be largely controlled and pre-

GRIFFING'S PRUNING AND PLANTING INSTRUCTIONS

vented, however, by fertilizing and cultivation of the trees with fertilizer largely composed of potash and Phosphoric Acid. This class of fertilizer promotes hard wood growth and fine wood fiber. After Pear Trees obtain a bearing age, we recommend little or no cultivation of the orchard, but liberal fertilizing with a fertilizer of a high percentage of Potash and Phosphoric Acid. Should blight appear in your orchard, trim off each spring all of the dead limbs, being sure to cut back to thoroughly healthy wood, and see that all dead and diseased wood is removed. We have known of orchards treated in this manner, bearing heavy annual crops of pears while other orchards in the same vicinity highly cultivated and fertilized with nitrogenous fertilizer were destroyed.

Curculio: (The insect that causes wormy peaches and plums). It is a small, grayish brown beetle, that stings the fruit from the time it is the size of a pea until they are nearly grown. The beetle punctures the fruit, laying her eggs in the puncture, where it hatches into a small white grub that destroys the fruit. Much of this small injured fruit drops to the ground allowing the larva to burrow in the earth where it passes through the pupa stages, emerging in a fully developed adult in sufficient time to lay eggs for another brood of worms to destroy the remainder of the fruit just at maturity.

One of the most effective remedies is to spread sheets under the trees, jarring the trees by a series of blows from a padded mallet, gathering up and burning the affected fruit and beetles shaken from the trees. Do this early in the morning every few days until fruit is half grown. Pick up all damaged fruit that may drop. Keep entire ground surface well cultivated.

Another good plan is to keep hogs and poultry in the orchard. The hogs destroy the damaged fruit, the poultry destroying many of the insects in the larval, pupa and adult stages.

Spraying the trees with Arsenac of Lead solution every two or three weeks until it is half grown is also effective.

RECIPES FOR SPRAYING SOLUTIONS

The following recipes for making insecticides and spraying solutions are the same as used by the most successful orchardists throughout the country. Should any of our patrons wish more detailed information as to the mixture or use of these solutions, we will be glad to answer your questions to the best of our ability:

KEROSENE EMULSION

For White Fly and Scale Insects.

Kerosene.....	2 gallons
Whale Oil Soap.....	2 pounds
Water.....	1 gallon

Dissolve the soap in one gallon of boiling water, and while boiling, but removed from fire, add the kerosene oil, then churn thoroughly for 15 minutes until a good emulsion is formed for stock solution.

For winter spraying, use 1 gallon of the stock solution to 10 gallons of water, and in summer 1 gallon to 15 gallons of water.

LIME-SULPHUR SOLUTION.

Quick Lime.....	20 pounds
Sulphur.....	15 pounds
Water to make.....	50 gallons

Boil one to two hours with a small quantity of water, then dilute to 50 gallons with boiling water. Do not let mixture become cold. Spray while yet warm.

For winter and early spring use.

RESIN WASH.

For Winter Use Against White Fly and Scale Insects.

Powdered Resin.....	30 pounds
Caustic Soda.....	8 pounds
Fish Oil.....	4 1-2 pints
Water to make.....	50 gallons

Place the ingredients in an iron kettle and pour over them 20 gallons of water and cook well for at least three hours over a good fire. Add hot water, a little at a time, until there is at least 50 gallons of the hot solution, keeping the mixture thoroughly agitated.

For spraying, dilute the hot stock solution with an equal quantity of cold water.

BORDEAUX MIXTURE.

For Blight, Rot, Mildew, and Other Diseases.

Bluestone Copper Sulphate.....	6 pounds
Quick Lime, (unslacked).....	4 pounds
Water.....	50 gallons

Place the bluestone in a coarse sack, and suspend in a barrel containing 25 gallons of water. Slack the lime in a wooden bucket by adding water, a little at a time, and reduce the whole to a thin paste. Then place the whole in a second barrel, in 25 gallons of water. Allow sufficient time to cool, then agitate thoroughly before attempting to mix the two solutions.

In pouring the two solutions into the barrel they should be poured together in a united stream, at the same time thoroughly agitate the mixture in the pump barrel.

TOBACCO EXTRACT SOLUTION.

Blackleaf Tobacco Extract, or Nicotine.....	1 gallon
Water to make.....	50 gallons

For use on soft bodied insects the addition of 1 pound of Whale Oil Soap to each 50 gallons of spray has been found to be beneficial.

WHALE OIL SOAP AND SULPHUR—SODA SOLUTION.

For Scale.

Goods Caustic Potash Whale Oil Soap No. 3.....	12 to 15 pounds
Sulphur Soda Solution.....	1 to 2 quarts
Water.....	50 gallons

For use when it is desirable to spray for Scale and Mites at the same time, and for following a spraying with Bordeaux Mixture.

GRIFFING'S PRUNING AND PLANTING INSTRUCTIONS

GOOD'S CAUSTIC POTASH WHALE OIL SOAP, NO. 3.

For Scale Insects and White Fly.

Soap 12 to 15 pounds
Water 50 gallons

Mixes readily with water, either hot or cold. The above strength is recommended for scale insects.

For scale the most good can be accomplished if spraying is done at, or near the time when the insect is moving.

It is also effective against white fly if sprayed during early stages of the larvae.

ARSENATE OF LEAD SOLUTION.

For Cut Worms, Bud Worms and Other Eating Insects.

Arsenate of Lead 1 to 5 pounds
Water 50 gallons

Does not burn the foliage and is especially desirable for its sticking properties for all fruits and trees.

Easy to prepare and easy to apply.

SCHNARRS INSECTICIDE.

A preparatory solution manufactured by Schnarr & Yothers, Orlando, Fla.

Insecticides, insecticide material and spray appliances may be secured from

WILSON & TOOMER FERTILIZER CO., Jacksonville, Fla.

E. O. PAINTER FERTILIZER CO., Jacksonville, Fla.

SCHNARR & YOTHERS, Orlando, Fla.

J. STICKLER SEED CO., New Orleans, La.

RECORD AND RESULTS.

We wish that every planter would keep a memorandum showing date of planting, fertilizer used and dates of applications; methods and dates of cultivations. Methods, material used, and dates of spraying, if found necessary. Average size of trees at close of each year's growth, and a record of results.

You may find following blank helpful in keeping such a record

FIRST YEAR'S RECORD.

Date Planted ----- 191 -----

Fertilized -----

Cultivated -----

GRIFFING'S PRUNING AND PLANTING INSTRUCTIONS

Average size

Results in Fruit or Flowers

SECOND YEAR'S RECORD.

Fertilized

Cultivated

GRIFFING'S PRUNING AND PLANTING INSTRUCTIONS

Sprayed

Average size

Results in Fruit or Flowers

THIRD YEAR'S RECORD.

Fertilized

GRIFFING'S PRUNING AND PLANTING INSTRUCTIONS

Cultivated -----

Sprayed -----

Average size -----

Results in Fruit or Flowers -----

"Make friends of your trees and plants, live in your orchard and garden. Watch, love and nurse them, and they will smile on you, and even blush when you look at them, and bow down to you and say, 'Come, pick from us this burden of fruit and flowers, it is all yours, yours for the kind treatment you have given us.'"

Questions as to the future care and management of trees, not covered in this pamphlet will be answered for our customers to the best of our ability.