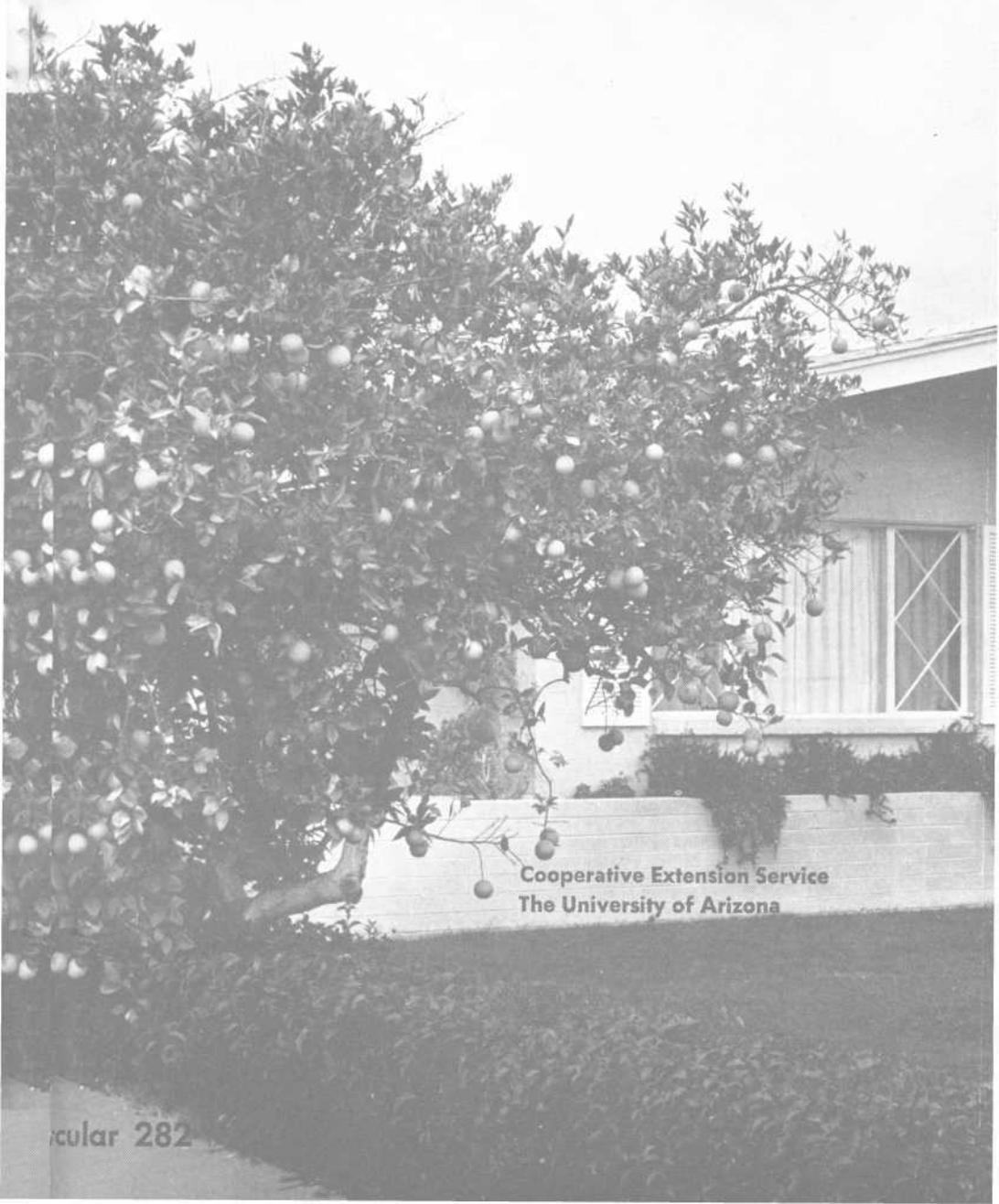


Home Citrus

In Central Arizona



Cooperative Extension Service
The University of Arizona

You'll find:

Varieties	on page 4
Selections and Planting of Young Trees	on page 5
Care of Young Citrus Trees.....	on page 6
Care of Mature Citrus Trees.....	on page 8
Insects	on page 12
Common Problems and Diseases.....	on page 12

*The University of Arizona
College of Agriculture
Cooperative Extension Service*

J. W. Pou, Director

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See your local County
Agricultural Agent or
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other farm and home
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Home Citrus

In Central Arizona

By

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THIS publication was prepared for the residents of Central Arizona who have or plan to have a home citrus planting.

Homeowners with mature trees will find it a helpful source of information on irrigating, fertilizing, cultivating, pruning, and other cultural practices. For those about to establish a new planting, it contains helpful suggestions on varieties, selection of young trees, planting method, and early care.

Information in this publication is based on research at the University of Arizona Citrus Experiment Farm near Tempe, the experience of commercial growers, and field observations. Originally this material was compiled by Lewis Whitworth, later by Dan Hess—both former U of A County Agricultural Agents. Further revision has been made by the present authors.

Much of the material was furnished by Dr. Robert H. Hilgeman,



Superintendent of the University of Arizona Citrus Research Station, and by John H. O'Dell, Maricopa County Agricultural Agent in Charge.

Additional information on the care of citrus trees may be obtained from the County Extension Office in your area.

Varieties

Choosing the right variety of citrus for your home planting is an important part of satisfactory home citrus production. There are many varieties suitable for your particular needs.

Citrus leaves and twigs differ in resistance to injury from freezing. Varieties can be classified in the following increasing order of tolerance: limes, lemons, grapefruit, sweet oranges, sour oranges, kumquat, and calamondin.

ORANGES

Washington Navel

Ripens November to January. Large fruit. Excellent flavor and eating quality. Is generally a low yielding variety in home plantings.

Valencia

Ripens March to May. Medium size fruit. Excellent for juice or eating. Should be planted in protected area because fruit must remain on the tree during the winter. Good producer.

Dillar, Hamlin, Trovita

Ripens December to February. Small fruit. Good eating, excellent for juice. Good producer. Best adapted for home plantings. This group is referred to as sweet orange varieties.

TANGERINES AND MANDARINS

Clementine (Algerian Tangerine)

Ripens November to January. Fruit deep orange, loose-skinned, with few seeds and excellent flavor. Irregular yields. After a tree is 3

or 4 years old it develops a high resistance to freezing.

Dancy Tangerine

Ripens February through April. Small fruit and tart. Heavier yield than Algerian. The tree is highly tolerant to cold but the fruit freezes easily. May lose crop from freezing before it is ripe.

Kinnow Mandarin

Ripens February through April. Large yellow-orange fruit with an excellent flavor. Vigorous tree but tends to bear well only every other year. Trees frost tolerant but fruit may be frozen before ripe.

LIMES

Bearss Seedless

Ripens July through November but some fruit all year. Larger, less acid than Mexican lime. Best variety for this area, but both fruit and tree very susceptible to frost injury. Should be planted only in the warmest areas.

Mexican

Ripens August through October. Fruit smaller, more tart than Bearss. Freezes very rapidly. Not recommended in Pinal or Pima counties.

GRAPEFRUIT

Marsh

Ripens in November. Fruit normally less likely to be frozen than oranges. Can be left on tree until July. Vigorous growth. Good for home plantings. Nearly seedless.

Redblush

Similar to Marsh except that flesh and peel are pink. Little or no difference in flavor.

LEMONS

Eureka or Villa Franca

Ripens in October. Fruit can be picked green. Tree and fruit moderately susceptible to frost injury. Recommended only in protected areas.

KUMQUAT

Kumquat

Ripens November through March. An exotic fruit with very pleasing flavor. Medium-sized tree. Trees are extremely frost tolerant but fruit is very susceptible.

Selection and Planting of Young Trees

Regardless of variety, the best trees to plant are 1 or 2 year old trees. Such trees will be 3 to 4 feet tall, with a trunk about $\frac{5}{8}$ to 1" in diameter. Larger trees may not be as satisfactory unless a large ball of soil has been taken with the roots.

When selecting trees, pay special attention to the condition of the root system. The ball should be at least 8" in diameter and wrapped in burlap or tar paper. If the ball is small in comparison to the top or has been broken, don't purchase the tree.

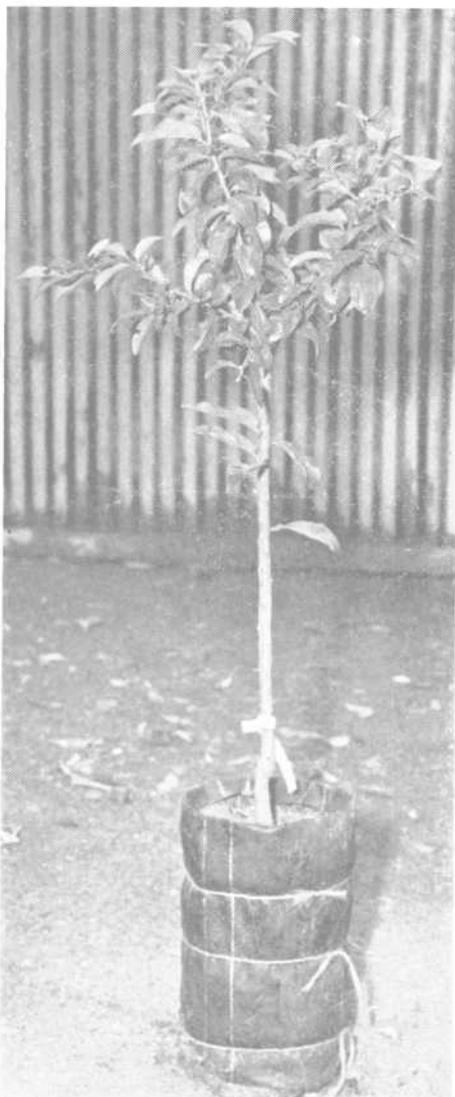
At present, citrus trees are budded on sour orange or rough lemon root-stock. Sour orange is generally considered best for home plantings.

Nucellar strains of most varieties are now available or will be shortly. So far as is known, these trees are virus-free and therefore are considered more desirable than standard varieties.

Plant citrus trees in March or early April after danger of frost has past. Unless a hedge effect is desired, space trees at least 15 feet apart.



Select trees for planting that have at least an 8-inch ball of dirt on the roots well wrapped with burlap or tar paper.



To plant, dig a hole about 12 inches wider than the ball. Ordinarily this hole will be about 2 feet wide and about 14 inches deep. In poor soils, it is wise to make the hole larger and back fill with good soil to the desired depth. If this is done, irrigate and allow to settle thoroughly before planting the tree.

Place the balled tree in the hole without removing the burlap or tar paper. Set it so the bud union will be 3 or 4 inches above ground after settling.

Next, loosen the covering around the ball of roots. Burlap can be left in the hole, but tar paper should be removed. Fill in uniformly with soil, firming it as the hole is filled. Leave a shallow basin to facilitate irrigation, which should be done immediately after planting.

Do not place fertilizer of any kind in the hole during the planting operation. Severe burning can result from this practice. Instead, place an inch-deep mulch of well-rotted barnyard manure or grass clippings on top of the soil afterwards.

After irrigating, whitewash or protect the trunk of the young tree with heavy wrapping paper or sim-



Protect the trunk of a young tree by wrapping it with heavy paper to prevent sunburning. Tie the tree to a small stake for support.

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Care of Young Citrus Trees

The planting and care of young citrus trees is not difficult, but several important factors must be considered to insure success.

Location is of prime concern. In some sections of Central Arizona, winter temperatures are too cold for citrus. In others, the soil is too

salty. Make sure citrus will grow in your area before starting a planting program.

It is also important to select a suitable variety, one that will fill your needs and at the same time require a minimum of care. In most cases, it is wise to select one of the standard commercial varieties which are known to do well in this area.

Irrigation

During the first year, irrigate the young tree every week to 10 days in the summer and at least once every 4 weeks in the winter. During the second year the irrigation interval can be increased to 10 days to two weeks in summer and once every 4 to 6 weeks in winter. Maintaining a light mulch of 1 to 2 inches of loose grass clippings, straw or other organic materials in the tree basin will help to conserve moisture.

Young trees should have a grass-free basin around them to facilitate irrigating. This basin ordinarily should be at least 3 feet in diameter and 3 to 4 inches deep. When irrigating, fill this basin slowly.

Cultivating Young Trees

Cultivate or otherwise stir the soil around young trees only enough to maintain the basin and keep it free of grass and weeds. Do not allow Bermuda grass to grow within two feet of the trunk for the first few years. Maintaining an adequate mulch will help.

Pruning Young Trees

Remove any suckers arising on the trunk or below the bud union. Also trim off any badly-placed

growth that interferes with other branches. Other than this, do not prune young citrus trees.

Fertilizing Young Trees

Immature citrus trees respond readily to fertilizer in most soils, but care should be taken not to give them too much. It could cause severe leaf-burn and possibly defoliation.

For the first two or three years, put on a shovelful of well-rotted barnyard manure twice annually in the basin. In addition, sprinkle on one or two tablespoonfuls of commercial fertilizer. The latter should be done four times during the growing season just before an irrigation. No commercial fertilizer should be applied in the late summer or fall. Late fertilization may force out new growth which is very susceptible to frost injury.

Frost Protection

Some type of frost protection is necessary from November through March during the first two or three years after planting. A simple method is to wrap the trunk and main branches with corn or sorghum stalks.

The type of material doesn't matter too much. The important thing is to protect the trunk and main branches of the young tree, leaving part of the leafy portion exposed to sunlight and air.

When using corn stalks or similar material, stand them around the trunk and tie loosely with twine. Next, mound the soil up around the stalks to a depth of 12 inches or more. Be sure to remove this mound of earth in spring when danger of frost is over.

Young trees also have been successfully protected from frost injury by covering them with a large cardboard box or hanging a light bulb in the branches on cold nights. If a cardboard box is used, be sure to remove it during the day.

If the tree is frozen, do not prune the frozen parts until new growth starts in the spring. After new growth begins, the exact portions killed by frost can be more clearly seen and should then be pruned off.



Protect your young tree from frost by covering it with a large cardboard box or by wrapping the trunk and main branches with corn stalks or other similar material, as at right.



Care of Mature Citrus Trees

Irrigation

It is impossible to set up a citrus irrigation schedule that will suit all conditions. Soil type, quality of water, amount available, method used, age and condition of the tree, and other factors all must be taken into consideration.

As a general rule, however, home citrus plantings need a deep soaking irrigation (8 to 10 inches of water if possible) in late December or early January. Follow this with a normal irrigation (4 to 6 inches of water) in mid-March and again in late April.

During the hot months from mid-May through September, a good irrigation every 10 days to 2

weeks is generally needed. Another irrigation in late October or early November should provide enough moisture to finish out the year.

As stated before, this pilot schedule may not fit all circumstances. Time the irrigation by the condition of the tree or trees rather than the calendar. A slight wilting of the leaves indicates that a tree does not have enough water and irrigation is needed at once.

Form a Basin

When trees are watered from a hose it is important to have a basin around the tree. The basin should be 3 to 4 inches deep and extend out from the trunk of the tree to the drip-line. Apply water

Provide a basin under your tree to hold irrigation water. It should be 3 to 4 inches deep and extend out from the trunk of the tree to the edge of the branches.



on a regular schedule as suggested under the irrigation section of this bulletin. Let the hose run slowly into the basin for several hours or until sufficient penetration is assured.

Do not over-water. This is a common problem where citrus trees are planted in the lawn area. Too much water or light, frequent irrigations can cause a condition known as iron chlorosis. When this happens, the leaves turn yellow with green veins. Improper watering also may cause root decay.

Irrigation Is Important

Remember that irrigation is one of the most important phases of citrus culture. A tree needs an adequate supply of moisture at all times, including the winter months when lawns may not need irrigating. Rainfall should be disregarded as a source of water for citrus trees in this area.

Much has been said about the danger of irrigating citrus trees during the blooming period. An irrigation at this time can cause excessive blossom shedding if the tree or trees are stressed for water, but it seldom happens when they receive adequate moisture prior to blossom time.

Fertilization

Citrus trees do not have to be fertilized heavily, but regular applications of nitrogen in one form or another are usually needed. In most cases nitrogen will be the only nutrient required. Potassium and



phosphorus are generally adequate in Central Arizona soils, but most soils require nitrogen.

You can tell if a tree needs nitrogen by its condition and the color of its leaves. Trees in the same planting may vary in their nutrient requirements. For this reason, individual treatment may be necessary.

One Pound of Nitrogen Per Tree

A mature tree in good healthy condition will need an annual application of one pound of actual nitrogen each year. February is the best time to make this application when commercial fertilizer is used.

When a tree appears to be run-down with leaves sparse and yellow-green in color, it needs to be fertilized more heavily and at more frequent intervals. Increase the amount of actual nitrogen to

about 2 pounds a year. Divide this into 3 equal applications; one in February, May, and July. Do this each year to maintain color and vitality.

If a lawn is growing around the tree, extra nitrogen will be needed. Bermuda grass is a heavy feeder of nitrogen and will compete with the tree for any that is available. To offset this and make sure the tree gets enough, put on an additional $\frac{1}{2}$ pound of actual nitrogen along with the regular nitrogen applications.

Nitrogen can be added to the soil in the form of animal manures, commercially prepared chemical fertilizers, or by means of a combination of the two. The commercial fertilizers are generally preferred. Recent research indicates that excessive use of animal manures may induce chlorosis in citrus and therefore should be used sparingly.

Use Commercial Fertilizer

Any commercial fertilizer that contains nitrogen may be used. However, keep in mind it is the actual percentage of nitrogen and not the total pounds of material that counts. Ammonium sulfate and ammonium nitrate are satisfactory materials. They are easily applied, and the nitrogen they contain is readily utilized by plants.

Ammonium sulfate is safer to use because it is less likely to burn the roots. However, ammonium nitrate can be used for the February application because in cold weather plants are able to more readily absorb the nitrogen in this form.

The following chart lists some of the more commonly used fertilizers and the amount needed to equal 1 pound of actual nitrogen.

Fertilizer	% Nitrogen	Approx Amt To Equal 1 lb Actual Nitrogen
Calcium Nitrate	15%	6½ lbs.
Ammonium Sulfate	21%	5 lbs.
Ammonium Nitrate	33%	3 lbs.
Urea	44%	2½ lbs.

How to Apply

Commercial fertilizers should be applied by broadcasting evenly on the ground around or beneath the tree just before a heavy irrigation. The irrigation is vitally important. It takes the nitrogen and other plant nutrients into the soil where they are picked up by the roots. If a light irrigation is applied the commercial fertilizer may be concentrated in one area and cause damage to roots and burning of leaves.

When using ammonium sulfate or ammonium nitrate, a pint equals about a pound. Thus, five pints of ammonium sulfate or three pints of ammonium nitrate would equal about a pound of actual nitrogen or enough for one mature tree.

The practice of placing fertilizer in holes or trenches around the tree is not recommended. It results in a concentration of materials in a small area, which may cause root burn.

If barnyard manure is to be used, apply about 100 pounds per tree every 2 or 3 years. This amount should be spread evenly under the tree and irrigated into the soil in September or early October.

Cultivation

Weed growth close to citrus trees around the home can best be controlled by hoeing or hand cultivation. If there are too many trees for this type of cultivation, small

tractor cultivators or weed oils with no tillage of the soil may be used. Any other chemical weed killers are not recommended. Never allow weeds to grow to such an extent that they become competitive, particularly around young trees. It is especially important to keep Bermuda grass away from young trees. Keep a cultivated area 6 to 8 feet wide around young trees. This area can be planted to flowers if desired.

Pruning

Mature citrus trees need little or no pruning, other than the periodic removal of dead wood. Suckers that cannot be trained into productive branches should also be removed. Suckers are the long, vigorous shoots originating from the main trunk or the base of limbs.

Be sure to eliminate all suckers arising from below the bud union. These suckers are the same variety as the root stock.

Although citrus trees ideally should have a skirt of branches hanging all the way to the ground, most homeowners will want to cut away this growth. Severe pruning of this type should be done only in the spring after all danger of frost has past. Since citrus trees are very susceptible to sunburn, it will be necessary to whitewash the exposed trunk and limbs after pruning.

Lemon trees grow more rapidly than other citrus varieties. A moderate annual pruning by cutting back the the very long, vigorous shoots will help keep the tree within bounds and produce larger, better quality fruit.

Transplanting

Moving mature citrus trees is not generally recommended. Unless

very carefully done, they do not recover. Full recovery and regrowth requires several years after transplanting. The advantage of the large tree is that it is not likely to be frozen as severely as a young tree.

Cut Back Top

If circumstances make it necessary that mature trees be moved, cut the top back one-third to one-half to compensate for loss of roots. Also whitewash the trunk and remaining branches.

A large portion of the root system should be kept intact when moving a mature tree. A ball of soil must be kept around the roots during the moving operation and drying kept to a minimum.

It is advisable in most cases to hire a commercial tree moving firm or nurseryman to do the operation. Transplanting should be done during February for best results.

Harvesting

Time and length of the harvest period depends on the variety. It is generally true of all varieties, however, that after the fruit becomes edible it continues to improve in eating quality for some time until it reaches its maximum flavor. After this point, it begins to deteriorate on the tree. Before the fruit reaches this point it should be picked and used.

Fruit may be picked during the period when it is edible and stored for later use. Fruit to be stored should be clipped from the tree leaving the "bottom" attached. It should be handled very carefully to prevent bruising. A temperature of 50' to 60' F. is satisfactory for storing most citrus fruit.

Insects

Home citrus plantings in Central Arizona seldom if ever are injured by insects. Thrips, aphids, or grasshoppers may injure small trees; cottony cushion scale occasionally attacks large trees, but that's about all.

Citrus Thrips

Tiny, fast-moving, yellow insects barely visible to the naked eye. They generally appear at blossom time in spring and again in late summer. These insects feed on new growth and small, pea-sized fruit causing crinkled, leathery leaves and scarred fruit. This injury is harmful to young trees, but is of only minor importance on large trees. Citrus thrips are easily confused with the flower thrips, which cause no damage to citrus. To control them, apply Dieldrin spray according to manufacturer's directions.

Aphids

Small, soft-bodied pests varied in color. Generally found clustered

on new growth. Can show up any time of year, but worse in spring and early summer. Saps vitality of young trees. No problem on older plantings. To control, spray tree thoroughly with malathion. One and one-half teaspoonfuls of 50% malathion concentrate in one gallon of water is the recommended mixture.

Grasshoppers

Eat large irregular sections out of leaves on young trees. Seldom ever injure large trees. Usually appear in fall. To control, apply Dieldrin spray.

Cottony Cushion Scale

White, waxy insect resembling tiny inverted seashell. Exudes honeydew which soils fruit and leaves. Most prevalent on grapefruit and lemons. Generally kept under control by natural enemies. Call your County Agricultural Agent if they seem to be getting out of hand.

Cottony cushion scale is also found on pittosporum.

Common Problems and Diseases

Iron Deficiency or Chlorotic Leaves

Yellowing of leaves is a common problem on citrus in Central Arizona and usually indicates a deficiency of iron. A few leaves are first affected. If not remedied, more leaves become chlorotic and the tree gradually declines and small limbs and large limbs finally die.

With iron chlorosis, the leaves are yellow-green with green veins.

It generally is caused by improper watering, which interferes with the ability of the tree to absorb iron from the soil.

In most cases, this type of chlorosis can be cleared up by changing the irrigating schedule. Give the tree plenty of water but at longer intervals between irrigations. Frequent irrigations only make the condition worse.

In severe cases, it is necessary to treat the trees with iron sulfate or one of the new iron chelate

compounds. Place the iron sulfate in a shallow circular trench around the tree or broadcast it around the entire tree from the trunk to outside the drip and apply 4 to 6 inches of water. From 20 to 30 pounds is enough for an average-sized tree.

When using iron chelates, sprinkle the material over the entire tree basin and irrigate thoroughly. Use $\frac{1}{4}$ to $\frac{1}{2}$ pound of Sequestrene 138 Iron Chelate or 1 pound of Sequestrene 330 Iron Chelate if the tree is 10 years old or older. For smaller trees, reduce the amount accordingly.

Mottled Leaves

If other types of mottled leaves appear, they may be caused by zinc deficiency or too much salt or boron. Take several of these leaves to the local County Agricultural Agent for identification.

Nitrogen Deficiency

A gradual, over-all yellowing of the leaves, veins and all, with or without excessive leaf drop, generally means the tree needs nitrogen.

If an over-all yellowing occurs rather suddenly or only to those leaves on one limb or portion of the tree is affected, it indicates trouble with the root system. It could be gophers or possibly a disease called brown rot gummosis. See page 15.

Leaf Drop

Citrus trees are evergreen. That is, they do not lose their leaves in fall and then put on a new crop in spring. Rather, they shed their leaves gradually, replacing them with new ones as they go along. This leaf drop normally is heaviest

in spring but occurs to some extent all year.

Extremely hot weather accompanied by drying winds occasionally causes heavy leaf drop in late summer or early fall. This is called mesophyll collapse and is most likely to affect leaves that developed during the summer on the northeast side of the tree.

Nothing can be done about it, and it seldom amounts to a serious problem. In severe cases, however, small twigs may crack, gum, and die back. Grapefruit trees seem most susceptible to this type of injury. Over-fertilization may cause citrus trees to lose their leaves. This is especially true of young trees.

Lack of nitrogen or water may also bring on excessive leaf drop. Frost injury is another cause of leaf drop. Citrus foliage takes on a droopy, wilted look when damaged by frost.

Frozen leaves may not change much in color but shrivel and drop before they dry. In other cases they dry on the frozen twigs and remain on the tree for an extended period. Later on they fall, leaving naked, dead twigs generally in the upper portion of the tree.

Small trees and mature lemon and lime trees are extremely susceptible to frost injury.

When one limb or one side of the tree loses its leaves and the rest of the tree seems unaffected, underground trouble of some sort is indicated. This may be gopher damage, disease, or even mechanical root injury of some sort.

Fruit Drop

Only a small percentage of the fruit set on a citrus tree at blossom time ever reaches maturity.

About 98 percent of the blossoms and young fruit fall off in late May or early June.

This is normal. If it didn't happen, the tree would break down under the load and the fruit would be small and inferior.

The amount of spring drop depends on the weather and on the condition of the tree. If May and early June are unseasonably warm, with temperatures of 105° F. or higher, the drop may be abnormally heavy. The same may be true if the tree is stressed for water or if a large part of the old crop is still on it. It should be remembered, however, that a light set usually results in larger fruit.

Navel orange trees may lose some of their fruit later in the season as the result of a disease called alternaria, or black rot. No treatment or preventative measure has yet been developed to overcome this problem. Valencia oranges occasionally split and fall off the tree during rainy periods following extremely hot weather.

Over-fertilization when the fruit is small may cause excessive fruit drop.

Gumming

This condition, which is rather common on grapefruit, may be caused by mechanical injury, or a disease called Rio Grande Gummosis. In any case, sap oozes from a crack or fissure in the bark of the trunk or a large limb, leaving a gummy deposit on the limb and ground beneath.

No treatment is needed except to make a few holes in the gum deposits to allow sap to exude. This condition should not be confused with Brown Rot Gummosis disease where portions of the lower trunk or roots are affected.

Sunburn

Citrus trees have thin bark easily damaged by exposure to the sun. When the low hanging skirt of branches has been cut away, the trunk, main branches, and other exposed areas must be protected in some manner. The most common practice is to paint them with whitewash or one of the commercial preparations sold for the purpose. **DO NOT USE WHITE LEAD OR PAINT!**

Sun injury is most likely to occur on the south and west side of the tree. Sunburned bark becomes hard and brittle and may peel off in large patches. Damaged areas should be whitewashed to prevent further injury.

Frost

Freezing temperatures can damage both the tree and the fruit of all citrus varieties, but some are more sensitive than others. Lemons, limes, and all young trees are extremely susceptible to cold injury. Large orange and grapefruit trees are quite tolerant to cold and seldom need to be protected. The fruit, however, is usually damaged when temperatures below 24° occur.

In Central Arizona, night-time temperatures can drop below freezing any time from mid-November to mid-March but are most likely to do so during January. During the winter months, a fruit-frost warning is issued daily over the radio for the benefit of commercial growers and homeowners in Maricopa and Pinal Counties.

When extended low temperatures are predicted, it is advisable to take protective measures. Sometimes, the fruit on mature trees can be saved by hanging a 150-watt light in the tree.

Small trees should be protected in one of the manners described elsewhere in this publication. Orchard heaters and similar protective devices are impractical for homeowners unless several trees are involved.

If the tree is damaged by frost, wait until new growth starts in the spring before pruning away the affected portions. Some branches may recover.

Brown Rot Gummosis

Brown rot gummosis is a fungus disease which kills the bark on the trunk at or near the bud union or the upper roots and can kill the entire tree. It is frequently a problem on citrus in residential areas, especially on trees that have had the bud union buried in the process of landscaping.

Dead and decayed patches of bark near the bud union indicate the presence of this disease. Occasionally cracks may extend upward from these decayed areas. Some gumming may or may not occur.

To prevent the disease, make sure the bud union is at least two inches above the soil or mulch. If the bud union is buried, uncover it and inspect it for signs of the disease. This can be done by nicking the bark with a knife around the trunk above and below the bud union. The bark should be green and healthy. If it isn't, cut away the dead areas and paint with a standard bordeaux solution.

Stubborn Disease

Orange trees in Central Arizona have what is called Stubborn Disease. It is especially prevalent on

Washington Navel trees but may occur on Valencias, Sweet Seedlings, and grapefruit.

It may begin to appear at any time during the life of the tree but is most likely to show up during a time of stress. Symptoms include multiple small brushy shoots, small leaves, brushiness, gradual flattening out of the treetop and early leaf drop in December. The fruit becomes coarse in texture, sometimes acorn-shaped, thin-skinned at the styler end, and few in number.

There are indications that seemingly healthy trees actually carry stubborn virus, and for this reason the transplanting of mature trees is seldom recommended.

Disease-free Nucellar strains of all the standard varieties have been introduced to central Arizona in an effort to prevent the further development of the disease. They are now available through commercial outlets.

Scaly Bark

This virus disease is found infecting older citrus trees in Central Arizona.

Early symptoms of scaly bark are usually small deposits of gum which appear on the trunk and main branches. These gum deposits give way to larger areas of dry, scaly bark. As these areas enlarge the tree becomes less vigorous and unproductive.

Since no satisfactory control has been found for the disease, infected trees should be removed after they become unproductive. The disease can be transmitted from one tree to another only by budwood.

Many other publications are issued by the Co-operative Extension Service. You may obtain copies from your County Agricultural Agent or County Home Agent at the local University of Arizona Extension office in your county. Here are a few of the titles:

Arizona Home Gardening, Circular 130

Home Storage of Vegetables, Circular 213

Flowers for Southern Arizona, Circular 243

Lawns for Arizona, Bulletin A-6

Indoor Gardening in Arizona, Bulletin A-7

Pruning Hedges, Shrubs, and Trees, Bulletin A-8