

GROWING KAFFIR LIME TREES IN THE BAY AREA: ONE GARDENER’S GUIDELINE (FOR BROWN THUMBS)

Table of Contents

BASIC NEEDS	1
KAFFIR LIME IS A TROPICAL PLANT	1
BEWARE OF ROOTSTOCK TAKING OVER!	2
KNOW WHERE THE GRAFT IS ON YOUR KAFFIR LIME PLANT	2
BUY A LARGER, MORE ESTABLISHED PLANT	2
LET YOUR BABIES MATURE BEFORE LETTING THEM HAVE BABIES.....	3
BUY AND PLANT YOUR KAFFIR LIME TREE DURING THE WARM MONTHS	3
WHERE TO SITE YOUR KAFFIR LIME TREE.....	4
PLANTER OR GROUND?	5
GROWING KAFFIR LIME IN A PLANTER.....	5
PLANTING IN THE GROUND	7
HOW OFTEN SHOULD YOU WATER YOUR KAFFIR LIME PLANT	7
EXTRA PROTECTION FROM WINTER COLD.....	9
DO NOT PICK LEAVES BUT PRUNE YOUR TREE.....	9
FEED YOUR PLANT: IT IS A LIVING THING	10
“WHY ARE THE LEAVES ON MY PLANT TURNING YELLOW AND DROPPING”	11
“MY KAFFIR LIME TREE IS LARGE AND HEALTHY BUT IT’S NOT FRUITING”	12
WHAT TO DO WHEN BUGS AND FUNGAL DISEASES ATTACK	12
HOPE FOR BROWN THUMBS.....	14

GROWING KAFFIR LIME TREES IN THE BAY AREA: ONE GARDENER'S GUIDELINE (FOR BROWN THUMBS)

by Kasma L. Clark

As with growing any plant successfully, keep in mind that there are many different micro-climates in the Bay Area, so growing a kaffir lime tree in Concord or inland areas can be quite a different experience than growing one in Oakland, San Francisco or other coastal areas. There can even be different micro-climates in your very own garden. A kaffir lime tree can flourish beautifully in one part of the garden and die in another part of the garden with you following exactly the same expert advice.

With this in mind, perhaps the most important thing you need to do to successfully grow a kaffir lime tree is to get to know your particular plant and the particular location in your garden where you are going to place it. Let the plant communicate to you what it needs at that particular site. If I have to limit myself to just one single advice, this would be it. Period. End of story.

But many of you don't speak kaffir lime and aren't seasoned gardeners and probably prefer the security of more tangible guidelines to get you started in the right direction. I hope to give you enough of an earful of suggestions to pursue your new gardening interest. However, you should never follow any guideline, including the one below, religiously; fundamentalism is as bad for a kaffir lime plant as it is for humans. When I garden, I subscribe to very much the same philosophy as cooking: taste and adjust; a recipe on a printed page serves only as a guideline. In the case of growing kaffir lime, observe and adjust. Don't blindly follow instructions on a printed page or suggestions you hear from someone else, no matter how expert he/she may be, when your observation tells you otherwise. Rules are made to be broken. Sometimes.

Just as I don't have any formal culinary training and yet can cook fabulous Thai meals, I don't have any formal horticultural training and yet have a luscious jungle of a garden. The advice below comes primarily from more than 20 years of my own gardening experience with a wide range of plants including many tropicals, as well as from the varied experiences shared by students who grow kaffir lime trees in their garden – some with joyful success and others dismal failure. We can learn just as well from our mistakes as from our triumphs.

BASIC NEEDS

As with all plants, a kaffir lime tree is a living organism and needs the following essentials in order to survive:

- food (proper nutrients and sufficient frequency of feeding)
- water (the right amount at the right time)
- good light for photosynthesis
- good air circulation so that it can "breathe" properly and become less susceptible to bugs and diseases
- companion plants to surround it with the humidity it loves and which is in low supply in California summer air
- warmth during the cold months of the year
- shelter from cold winds in winter and warm, drying winds in summer
- TLC from its owner

KAFFIR LIME IS A TROPICAL PLANT

One of the most important things to know when growing a plant is to find out what its natural native habitat is, because by doing so, you are more likely able to keep it happy. Kaffir lime trees grow in very hot, humid countries where monsoonal rains drench the soil daily for nearly half the year. So growing a kaffir lime plant is going to be different than growing a Meyer lemon, a mandarin, a navel orange, or other temperate climate citrus.

Of course, you won't be able to duplicate such conditions exactly, but the closer you can provide such conditions, the more likely your kaffir lime tree will thrive. California, though, does have pretty nice weather most of the year, so you might just be able to easily coax your kaffir lime plant to adjust and stay around a while, like many Thais have. Fortunately, the kaffir lime tree you purchased from a local nursery is not seed grown and, therefore, not fully tropical. It has been grafted onto dwarf rootstock of a temperate climate citrus that will help it survive better in your cooler, dryer California garden. But unfortunately for some, this very same rootstock can turn out to be a killer if you don't watch out.

BEWARE OF ROOTSTOCK TAKING OVER!

This is a very common problem, especially with those purchased as very young plants in 1- or 2-gallon-size pots, and even for 5-gallon size plants that haven't yet developed a sturdy woody branch structure when placed in a far-from-ideal situation at a time of year when conditions in the garden are drastically different from the nursery where it had lived all its life. I've heard plenty of stories from students who were amazed how vigorously their plant had grown and doubled, tripled or even quadrupled in size in just a few months, but wondered why it hadn't yet developed any of the double leaves with that wonderful kaffir lime aroma. And a few were even puzzled why the fruits on their tree smooth-skinned, though they'd grown as large as an orange or grapefruit! Well, I've had to break the bad news time and again: the tree you had nurtured was not a kaffir lime tree but a rootstock tree!

I've even had a student drop off a huge tree in my yard because he didn't want to take care of it any longer since the leaves just didn't taste like kaffir lime and he'd given up on Thai cooking. I ended up chopping the monster into pieces and dumping this murderer into the green bin to be hauled away. Yes, the rootstock can simply turn into a monster and kill its kaffir lime partner without you even knowing it – if you're not observant.

KNOW WHERE THE GRAFT IS ON YOUR KAFFIR LIME PLANT

So, it's very important that you take notice where the graft is on the plant you purchased (usually a few inches above soil level; you'll notice a change in the color and texture of the bark) and NEVER allow any growth to come from below the graft. When a vigorous branch appears all of a sudden from the lower part of the tree, check the leaves and make sure they are double and have that unique kaffir lime fragrance; if not, cut the branch off immediately! Don't be curious thinking that the branch will eventually mature into kaffir lime like the other branches, 'cuz every minute you allow it to stay on, this monster will zap the energy and strangle the dear life out of its true kaffir lime partner. If you are vigilant during the critical period of your plant's adjustment to your garden, the monster will eventually resign itself to the darkness of its underground dungeon and do what it does best in the underworld.

Once your kaffir lime plant has matured and developed a good woody branch structure above the graft, the monster will have been tamed and will not surface again unless your plant is badly stressed by poor care, adverse environmental conditions, or complete neglect.

BUY A LARGER, MORE ESTABLISHED PLANT

Because of the above problem, I have been advising students to buy larger, more established kaffir lime plants, such as one that is at least a 5-gallon size. That way the kaffir lime portion of the plant can more easily control the vigorous rootstock without being overtaken by it.

Most of my students who've had a kaffir lime plant die on them within a year of purchase happened to have purchased it as smaller 1- to 2-gallon-size plants. My suspicion is that because the plants were still quite young, they were less able to handle the culture shock that came from suddenly being removed from the security of the greenhouse nurseries where they were born and raised and thrown into a completely new and unfamiliar environment. On the other hand, larger, more established plants, such as 5- to 7-gallon sizes, are more likely able to cope with adverse conditions they find in your garden.

Although they do mail order, Four Winds Growers, the main producer of kaffir lime plants in northern California, recommends that you go to Orchard Supply (OSH) and have them order you one if there's not one already in their nursery. This way you won't have to pay for shipping. Four Winds sends many kinds of specialty citrus trees to OSH on a very regular basis. OSH also has a generous replacement policy: if any

plant you purchased from them should die on you at any time for any reason, they will simply replace the plant no questions asked. And I've heard that kaffir lime is one of the plants that frequently is sent back to be replaced.

You can also order a kaffir lime tree through any nursery that carries citrus trees.

LET YOUR BABIES MATURE BEFORE LETTING THEM HAVE BABIES

If you purchased your kaffir lime plant as a small baby with just a few short, flimsy branches and it begins to flower and fruit profusely within a few short weeks or months in your garden without putting out any significant new branch or leaf growth, don't rejoice just yet. Such behavior might just turn out to be a distress signal. It's like orchid growers trying to force an orchid to bloom out of season or for a show. What they do is stress the plant enough to make it think that it might die. The orchid will spend whatever energy it has left to force out an especially spectacular flower spike in hopes of attracting pollinators to help produce the seeds that would carry on its life line.

Your kaffir lime plant might very well be doing just that: using all the energy it has to produce enough fruit so that there would be seeds to carry on its gene pool. Instead of letting the fruits develop, it might be better for the plant's health in the long run to pick off the flowers and young fruits, or at least thin them down to just a few. At the same time, try your best to give the plant as ideal an environment as you can, coaxing it to adjust and settle in to its new home. It takes energy to adjust to a new environment; even humans get exhausted when they move to a new town they've never visited before. You can help divert the energy your tree is expending in fruit production into adjusting to its new environment. Let your baby kaffir lime plant grow up a little before letting it have its own babies (i.e., fruits/seeds). Just as having a baby can stress you out, so can fruiting cause a lot of stress on a small kaffir lime plant. I've known some students whose joy of seeing their baby tree produce abundant fruits turned into dismay when the tree died shortly after the fruits ripened. So helping your tree practice birth control while it's still young may eventually lead it to grow into a healthier and happier adult.

Since most of you will need leaves more frequently than limes anyway, my suggestion is to let your kaffir lime tree settle in to your garden before letting it do any heavy fruiting. I would give it a good year or two to develop a healthy, bushy branch structure before letting it fruit. For a young plant, fruiting can divert energy away from growth and development. And that's not what you want.

BUY AND PLANT YOUR KAFFIR LIME TREE DURING THE WARM MONTHS

I advise students to buy their plant during the warm months of spring, through summer and into early fall as during those months, your garden is likely to be warmer and sunnier, coming closer to approximating the conditions at the nursery where they are born and have grown up in. The plant will also have time to adjust and do some growing in its new home before the dreaded months of winter set in.

While autumn is regarded by seasoned gardeners as the best time of year for planting since it allows plants to settle in and establish a good root system during winter to support the growth that comes in the spring, this is not necessarily a good thing for young tropical plants new to your garden. As mentioned somewhere above, the rootstock is more vigorous than the kaffir lime portion of the plant and during the cold months of winter this temperate underground partner continues to grow stronger while the tropical kaffir lime top is weakened by exposure to the cold. This might just give the monster underground the opportunity to strike out and take over. Of course, a larger, more mature plant that has been given enough time to acclimate to your garden can benefit from fall planting.

Remember that the climate in Thailand is very hot – most of the year above 90 degrees F and very humid. It is nearer the equator, so the days are nearly the same length year round and never as short as it gets here in the winter and as long as it gets here in the summer. The season when the ground is drenched with daily monsoonal rains is the hottest months of the year. The raindrops may be warm but give the lush vegetation of the tropics a refreshing respite from the heat. But here in northern California, the raindrops are freezing cold and fall at the coldest time of year when the sun's rays are weak and the days are dark and short. Not at all what a tropical plant finds refreshing!

Therefore, planting a kaffir lime tree during the summer months in the Bay Area isn't a problem at all, as long as you acclimate it to the location before you disturb the roots. Place the plant at the location you wish to plant it for a week or two and see whether it has any objections before you decide to start digging the soil.

Of course, if the location is in full all-day sun without any other plants nearby, it probably won't be a good idea to plant during a very hot day, not so much because of the heat, but because there is very little humidity in California heat, especially in inland areas. Also, most nurseries have their plants sheltered by some afternoon shade (incidentally, the "mother" trees at Four Winds Growers are under the shelter of a tall, open-sided, shade-cloth tent year-round), so it's important to gradually acclimate your plant by giving it some shade during the hottest part of the afternoon and gradually exposing it to more sun over a period of a couple of weeks until it has "hardened" to full sun exposure. If you don't take the care to acclimate your plant to a sunny location, the leaves are likely to get scorched and the health of the plant jeopardized.

For instance, give your plant only morning sun for a few days, then increase the amount of sun by an hour every few days until it is accustomed to full-day sun. Do your planting late in the day, after the sun is no longer on the plant, or in the early evening. This will give the plant a chance to settle in before the hot sun and dry heat hit it the next day. If you live in inland areas, you might want to shelter the plant for a few days after planting from the hot mid-day sun to allow it to completely settle in before it is exposed to full sun. Of course, do all this during a week when there's not a heat wave! or when you don't need the fan on to keep from sweating inside the house.

My preference for tropical plants is spring planting and a kaffir lime tree is very much a tropical plant in spite of the temperate climate roots it has been given. As the weather begins to warm up, kaffir lime trees awaken from their semi-dormant state and start their growth spurt. Acclimating the plant to a location is less critical as the sun is still at a fairly low angle and not searingly hot and relative humidity is still high. With a long growing season ahead, the plant will have plenty of time to settle in and establish itself in the garden before the next round of cold winter weather blows in.

WHERE TO SITE YOUR KAFFIR LIME TREE

Kaffir lime trees can take full sun if there is sufficient humidity. They can also do quite well in partial shade and probably prefers it in hot inland areas where humidity can be very low while the sun is scorching hot in the summer. Keep in mind that full sun in Walnut Creek is not the same as full sun in San Francisco, where morning and evening fog brings moisture to the air and daytime temperatures are generally much lower. They can even do well in dappled shade if there's a lot of bright reflected light. One of my kaffir lime trees, for instance, is as happy as can be in a narrow border in between my house and the next door neighbor's. It gets maybe two to three hours of direct sunlight a day in summer and none at all from late fall to late spring when the angle of the sun is low, but is exposed to plenty of very bright reflected light all day long from the white paint of the two houses. In this sheltered location with warmth radiating from the walls of the two houses, it doesn't even look unhappy during the winter and begins its growth spurt very early in the spring when most of the garden has barely awakened. It puts out plenty of long thick branches lush with huge leaves that now supply most of my classes with the leaves we need to make scrumptious Thai feasts.

From my own experience, I find that my kaffir lime trees actually do better in partial shade in Oakland and like to be surrounded by companion plants, whether it is grown in the ground or in a planter. That's because grouping plants together creates more humidity for the plants, which is especially important for tropical plants. A kaffir lime tree in a planter on a hot patio in full sun all by its lonesome self will most likely not have a very long, happy life even if you water and feed it properly. As mentioned earlier, the 'mother' trees at Four Winds in Winters, CA (near Davis) from which branches are cut and grafted to make new kaffir lime plants, are under the shelter of a tall, open-sided shade-cloth tent year round. I think it is 30 percent shade and certainly not full sun. The shade cloth protects the trees from the extremes of arid summer heat and damp winter cold.

I think the ideal location would be one where the tree gets morning and mid to late afternoon sun, with dappled shade during the middle part of the day when the sun is hottest. In such a location there would be less fluctuation in temperature for the tree during the day and the mid-day shade gives a little more humidity to the plant during the hours when it's driest. Humidity levels generally are higher in the shade than in the sun.

Because the tropical kaffir lime resents the cold, some people have suggested planting it against a south-facing wall which would give out radiant heat at night to keep it warm during the winter. South-facing walls also get lots of hot, direct sunlight during the summer months, so make sure not to plant your kaffir lime tree too close to the wall as this can reduce air circulation and humidity. Air circulation is particularly important on hot summer days inland when there is little humidity, or else you might find your plant succumbing to insect infestation and outbreaks of fungal diseases. It's best to site the plant at least a few feet out from the wall, close enough to get warmth during the winter months but far enough out so that the wall does not overheat the plant during summer heat waves, dry out the air surrounding it and block off gentle breezes it needs to breathe properly. Your tree will also need space to spread out and grow into, so think ahead before you plant. A fully matured tree can be as tall as 10 feet even on dwarf rootstock and can have a spread of as much as 5 feet. Of course, you can always prune the tree down to the size you wish it to be if space is limited in your garden.

PLANTER OR GROUND?

Like other big plants, a kaffir lime tree would probably do better planted in the ground than in a planter. The roots have more room to spread out and grow deeper to support proportional top growth, thereby allowing the tree to reach its full potential. Because the roots are not above ground like in a planter, they are more protected from winter cold as well as extreme summer heat. A larger root system is likely to produce a healthier plant that can withstand occasional bouts of adverse environmental conditions better than one grown in a planter. Overall care could be easier as the tree would require less frequent watering and feeding and is also less likely to be over-watered. It can be easily placed on an automatic irrigation system along with other plants in the same border, such as drip irrigation or soaker hoses. Proper siting in the garden may give your ground plant better air circulation to prevent insect and disease problems than one in a patio container close to a wall, solid fence or other structures which may block air flow.

So if there's room in your garden and the soil in your garden is fairly loamy and well-drained (or can be easily amended with organic compost to improve drainage as well as moisture retention), then you might want to consider working the kaffir lime tree into your landscaping. Planted among other plants with similar needs, it can grow into a beautiful tree (or bushy shrub if you prune it down to size) with shiny dark green leaves and attractive fruits.

But if you have little garden space or none at all save for the deck or patio, you can successfully grow a kaffir lime tree in a planter by taking special care in seeing that all its basic needs are met. Growing in a container gives you the advantage of being able to move it around to showcase the plant where you wish it, or move it to a shadier place in the summer and a more sheltered location during the winter to protect it from the cold. But you will need to exercise care not to over-water and to feed it regularly as the roots are confined and cannot reach out for nutrients in garden soil supplied by organic matter, micro-organisms and worms.

GROWING KAFFIR LIME IN A PLANTER

Many people inexperienced in container gardening make the mistake of placing their newly acquired kaffir lime plant in as large a pot as they can accommodate on their patio, thinking that the plant will grow into the pot and will then live there permanently. This is generally not a good idea. The root system of the plant is still small and when it is constantly surrounded by wet soil that does not dry out quickly since there's nothing there to use up the moisture, it becomes very susceptible to root rot. Often the top of the soil may feel dry, which prompts you to water the plant, but is soaking wet beneath the roots. The size of the planter should be proportional to the size of the plant if you are to avoid the problem of over-watering the plant.

Always pot up in a planter just one size bigger. If your kaffir lime plant comes in a 1-gallon container, you can probably keep it in that size container for a few months, or even a year, until it has shown some significant top growth. Then you can pot it up to a 2-gallon-size container and keep it in that container for a year or two, or until the plant puts out enough growth to warrant repotting into the next size pot. Eventually you'll have your kaffir lime tree in the maximum size container in which you wish to grow it. From then on, you should prune your tree regularly to a size that is proportional to its root system. This balance between the root system and the top growth is important to maintain the health of the plant, giving it the strength to withstand occasional bouts with sudden heat waves or freezing weather. A healthy plant also will be less likely to be attacked by insects and fungal diseases.

The type of planter you place your plant in, whether it is made of plastic, wood, terra cotta, or glazed ceramic, makes a difference in the type of care you give the plant. Plastic and glazed pots hold moisture longer, which means you won't have to water as frequently, but the roots can be hotter in the summer if the pots are dark in color and exposed to all-day sun. Hot roots and too much moisture can cause root rot and other fungal problems. Terra-cotta pots, on the other hand, are porous and allow moisture to seep and evaporate through their pores. The outside of the pots stay moist, moderating the temperature of the roots from too much fluctuation through the day. This evaporation also creates surrounding humidity for the plant. You are less likely to over-water a plant in a terra cotta container than a plastic or glazed one as the water drains out not only through the drain hole in the bottom of the pot but some of it also through the pores. Wood planters work similarly to terra cotta but generally do not last as long.

Whatever planter you select, make sure it has a large drain-hole on the bottom. Place a curved piece of broken terra cotta over the hole with the curved side up before filling with potting soil. This way you won't lose as much soil through the hole over time with all the watering while at the same time allowing the water to drain out. You will also prevent compacted soil over time to clog up the drain hole.

It's even better if your container has three drain holes. You can drill extra holes with an electric drill. There've been occasions when a vigorous plant has plugged up a drain hole with its roots and drowned itself during the frequent winter rains without you even knowing it. So if your plant has been in the same container for years, you might want to tip it over every once in a long while to make sure no growth is coming through the drain hole that might block drainage. If there is, simply cut back the root before it gets thick and woody. Pruning back the plant regularly to be proportional to the size of the container will usually keep the roots within bounds. A tree generally produces the roots it needs to support the plant growth, so when your plant grows too large for the container, the roots will want to break out of the container somehow and the drain hole is the easiest route out.

Always use a good potting mix with plenty of organic matter to make it well draining. Don't just buy the cheapest brand. Not all potting mixes are created equal. Search for a reputable organic potting mix at a reputable nursery. Never ever use garden soil for any plants grown in a pot. It is too heavy and the particles too fine to drain well in a planter with only a small drain hole. Plant your tree with the trunk a little above the surrounding soil to protect the crown of the plant (point where trunk meets soil) from excessive moisture which could be detrimental to the health of your tree. Water immediately after planting to settle the soil around the rootball. I like to add a few drops of "SUPERthrive!" (a vitamin and hormone booster available at most garden centers) to the water, which really does help the plant recover quickly from the trauma of transplanting.

Try to do your transplanting in the late afternoon when the sun is no longer on the plant, or in the early evening. This will give the plant a chance to settle in to the location and container and rest a little from the trauma of transplanting before the hot sun hits it the next day. You can also choose to do the transplanting on an overcast day, or if you simply don't have time to do it but on a sunny morning or afternoon, then it's important that you place the planter in a shady corner and wait until evening to move it to the sunny location you intend to grow it. (Read the section "Buy and Plant Your Kaffir Lime Tree During the Warm Months" above for information on acclimating your plant to the location before transplanting.)

Because the rootball of a container plant is entirely above ground, it is more exposed to the elements than one that is grown in the ground. It will be colder in the winter and hotter in the summer and the great fluctuation in temperatures can affect the health of the plant. In the hot summer, you can move your plant to a location where it can receive some shade during the hot mid-day sun. In the winter, you'll want to move it to a location with as much sun as possible, such as against a south-facing wall. In damp, cold weather, air circulation is less critical than in dry, hot summer heat; besides, there always seems to be more than enough wind every time it rains. In frost-free areas, it doesn't even need to be a south-facing wall; any wall of the house will provide some warmth to the plant to see it through the winter. Placing the container under the eaves of the house will also keep the plant warmer and drier (which it prefers when it is cold) since it won't be continually drenched by rain, but you'll need to check on it every once in a while to make sure the soil doesn't completely dry out. If you have a lot of other container plants on your patio, you can surround your kaffir lime container with the other containers to give it a little insulation.

Although experts will tell you that you can grow a kaffir lime tree in a container indoors, I do not recommend it as you are not an expert and your tree will likely be very susceptible to insect problems due to poor air circulation and low humidity levels inside the house, especially in the winter when the windows are closed to keep out the cold and the heater is on which dries out the air. If you do move your kaffir lime plant inside the house for the winter, you would want to place it in an unheated room, near a bright, sunny window which you would want to crack open a little during the day time to provide air circulation. You can also provide supplemental air circulation with an electric fan. Do not point the fan directly at the plant, but at a wall or the ceiling to bounce the air onto the plant. You should be able to see some of the branches or leaves softly swaying to the gentle breeze from the bounced air.

PLANTING IN THE GROUND

Dig a hole twice as wide as the pot the plant came in and a few inches deeper. Shovel a generous helping of organic compost into the hole and add back an equal amount of garden soil. Mix well and firm down with your foot. Remove the plant from the pot and place it in the center of the hole. The plant should sit a little above ground level so that when you water it after planting, it will settle down to ground level and not below. If not, add some more soil and compost mixture to the bottom of the hole and tamp it down again.

When the level of the plant in the hole is satisfactory, fill in the hole around the plant with amended garden soil (i.e., garden soil mixed with a generous amount of compost). Firm down the soil around the plant with your hands or foot, then water well to settle the soil. I like to add a few drops of "SUPERthrive!" (a vitamin and hormone booster available at most garden centers) to the water when watering in the plant. This really does help the plant recover from the stress of transplanting.

Some people like to plant their citrus higher above ground level in a mound to improve drainage, especially if their garden soil is clay heavy. If you do this, make sure the crown of the plant does not get covered. Form a little bit of a "trench" (more like a shallow indentation in the soil) at the edge of the mound so that when you irrigate, there is as little run-off as possible. This way your plant will receive the water you intend to give it rather than the soil beyond the plant.

Try to do your planting in the late afternoon when the sun is no longer on the plant, or in the early evening. This gives the plant a chance to settle in to the soil before the hot sun hits it the next day. You can also choose to do the planting on an overcast day, or if you simply don't have time to do it but on a sunny day, then it's important that you rig up some kind of shade for the plant immediately after planting and allow the plant to sit out in the shade for the rest of the day. (Read the section "Buy and Plant Your Kaffir Lime Tree During the Warm Months" above for information on acclimating your plant to the location before transplanting.)

Your newly planted kaffir lime tree will probably need more frequent watering until it has completely settled its roots into the garden soil. To encourage deeper root growth as the plant matures, irrigate deeply but less frequently. This will help your kaffir lime tree become more drought tolerant and more able to withstand the stress of heat waves or occasional neglect.

HOW OFTEN SHOULD YOU WATER YOUR KAFFIR LIME PLANT

How often to water your kaffir lime tree depends on many factors. Is it grown in the ground, or in a planter? If it is in a planter, it depends on whether the planter is made of plastic or terra cotta and on how big the planter is in relation to the size of the plant. It depends on whether the plant is in full sun, part sun or shade and on the changing sun patterns through the seasons. If it is in the shade, is it dry shade or damp shade? It depends on whether the plant has companions to create humidity for its surroundings. It depends on how well draining and moisture retentive the soil is. It depends on the season and the weather. It depends on whether you live west or east of the Caldecott Tunnel. It depends on whether you live in the fog belt or in a sunny district in San Francisco. Etc., etc., etc.

I had a student once who eagerly reported that she never had to water her kaffir lime plant and it did great... before she moved and her plant almost died from thirst. That's because she formerly lived in the fog belt of San Francisco where the plant was getting sufficient moisture from condensed fog to thrive in the shady garden. Her new home, on the other hand, had a sunny garden most of the year.

Of course, if there's a heat wave, you would want to water your container-grown kaffir lime tree daily, especially if it is in full sun and you live in the East Bay. Keep in mind that full sun in the spring is very different from full sun in the summer in the same location. The needs of the plant will change and you should adjust your care schedule accordingly. If mornings are mostly overcast in early spring or late fall when the days are shorter and evenings cooler, you might be able to get by with watering only once a week. And during the dark, rainy winter months when the plant goes semi-dormant (i.e., not producing any new growth), you won't need to water at all if there's a drenching rain at least once every two weeks and mostly cold days in between. In short, you have to determine what your particular plant needs in its particular location, with particular weather conditions, at a particular time of year. By no means should you stick to a rigid once a week or twice a week schedule the year round.

The best way to find out when your plant needs water is to check the soil. Scratch the surface of the soil and if it has dried an inch below the soil surface, then give the plant a drink. After a while, you may not need to check the soil any more and will automatically know how often to water based on the time of year or particular weather conditions in your area.

Make sure each time you water to give the soil a good soak. This means you should see water draining out from the drain holes if the plant is in a container. But at the same time, if the pot is on a saucer, make sure it isn't sitting on standing water for any prolonged period of time, as this can cause root rot. If your kaffir lime tree is large, my advice is to put the planter on a stand with wheels. This way you won't need to use a saucer and it'll be easier for you to move the planter around. If you must use a saucer to protect your wooden deck, a simple solution is to raise the container from the saucer with bricks. The water that collects in the saucer beneath the bricks will provide some humidity for the plant without the roots becoming waterlogged.

Garden soil generally holds moisture longer so you won't need to water as frequently. You can also cover the surface of the soil with a couple of inches of mulch to reduce water loss from evaporation, making each watering last longer. You usually have less of a chance of over-watering, especially when there are other plants and trees nearby to help use the water. Of course, a lot depends on the condition of the soil in your garden. Heavy clay soil stays very wet for a long time and is easily compacted which restricts root growth. On the other hand, sandy soil drains swiftly and holds little moisture, so roots can dry out quickly. Loamy soil containing a good amount of organic matter is the best for growing most plants as the organic matter contributes to both the moisture retentiveness of the soil and to proper drainage that keeps roots from being waterlogged. In loamy soil a kaffir lime tree will develop a stronger, deeper and more drought tolerant root system.

Larger, more mature kaffir lime trees actually are pretty forgiving if you occasionally over-water, so don't let yourself get too insecure about whether you are doing things right. For years, I watered my pot-grown kaffir lime tree on the sunny brick patio daily from mid-spring to mid-fall on sunny days and every other day during strings of overcast mornings. It did just fine and looked healthy, putting forth several sturdy new branches each spring and producing sizable crops of three to four dozen good-size fruits each year. A few of the limes grew as large as small tangerines. But last autumn when a group of advanced students and I visited Four Winds for an annual kaffir lime picking party, a serious discussion brought up over-watering as a primary cause of problems for amateurs trying to grow citrus and a cautionary advice was given that pot-grown kaffir lime trees shouldn't be watered more than twice a week.

So I got a little insecure and starting in the spring this year I cut down on my watering frequency to about twice weekly, checking the soil each time before I watered. Guess what! this was the first spring my tree flowered pitifully and had barely fruited at the start of July when in previous years it would already have limes the size of plump cherries. This was also the first spring I saw occasional leaf drop and the plant looked a little less happy. So I resumed daily watering despite what the experts say! In just a few brief weeks, the new leaves came in much larger and the tree bloomed profusely and had limes the size of peas by July's end. In spite of its temperate climate roots, my tree seems to behave more like the kaffir lime trees in Thailand which are drenched by monsoonal rains daily during the warmest half of the year. It lives in a terra-cotta pot which I think is much more forgiving about being watered frequently.

My other kaffir lime tree, planted in the ground in a shady border along the side of the house, gets watered once every three days on the same drip irrigation line as other plants on the narrow strip. It is as happy as can be although by textbook accounts it could be said that I am giving it too much water. So the standard

advice to water pot-grown citrus twice a week and ground-grown citrus once a week doesn't seem to hold water with my trees. That's why I started this guideline saying that you need to observe and determine for yourself what your particular tree likes in your particular garden.

EXTRA PROTECTION FROM WINTER COLD

If you live in a frost-free area, following suggestions already given in the above sections is generally sufficient to see your kaffir lime tree through the Bay Area winter. With its temperate climate root system a mature kaffir lime tree is pretty hardy and can withstand brief periods of freezing weather, especially if it is in a sheltered location, such as near a wall of the house or by a fence surrounded by other large plants. Spreading a thick layer of mulch around the plant can give the roots extra warmth, but be careful not to have the mulch cover the crown or touch the trunk of the tree. During those nights when there's a frost warning, you can provide extra protection by simply throwing a light blanket or flannel sheet over the tree in the evening, removing it the following morning as the weather warms to give the tree the light it needs.

In inland areas where night-time temperatures frequently plummet below freezing, you might need to rig up something for the season to provide extra warmth for your plant. Four Winds suggests stringing outdoor Christmas tree lights which you can turn on during those frosty nights. Another suggestion is to rig up a frost protection cloth above the plant. I've not needed to do either and am away in Thailand during the coldest part of winter anyway. My house sitter is given instructions to throw a blanket over the potted plant on the sunny patio which is surrounded by other potted plants near the greenhouse wall. The other tree which is planted in the ground between my house and the neighbor's does just fine without any special treatment even during extended periods of frost as the walls of both houses radiate enough warmth to keep temperatures above freezing.

Although stringing Christmas tree lights sounds charming and festive, I think the practicality of such a suggestion would have to first be taken into consideration. It depends a lot on where your tree is situated in your garden – whether it is near a properly grounded electrical outlet. If not, you need to consider whether you want to run a long, heavy duty extension cord from the house out to the tree and do it in such a way that the cord doesn't look unsightly in your garden or be where someone might trip over it. In my situation, if I had to make a choice, I'd probably go for the easier route of sheltering the plant with a frost cloth, which is much like throwing a blanket over the plant. Stringing lights on a large tree isn't as easy as it sounds; there are thorns to avoid and you'd have to be careful that none of the lights touch a branch as that can burn the bark should the lights be left on for too long. Damaged bark can invite insect pests. Then you'd have to carefully remove the lights in the spring as it would look silly to keep the lights on all year.

But of course, it's a personal choice how you wish to provide your tree with that extra protection during frosty nights.

DO NOT PICK LEAVES BUT PRUNE YOUR TREE

It seems so idyllic to be able to pick leaves fresh from a kaffir lime tree just when you need them for your Thai dishes. But if you do this all the time, you'll find that your tree starts looking a bit lean with few leaves left on the lower branches. That's because when you pick a leaf, the plant doesn't get a message to replace that leaf with another one in the same spot. The growth continues to take place on the end of the branches.

So the advice is not to pick leaves but to prune. When you cut a branch back to a leaf node, the tree gets a signal that it needs to replace the limb. New growth will emerge from that leaf node and pretty soon you'll have new leaves to replace the ones on the branch you cut. Sometimes the tree might even produce two new limbs, usually from the two leaf nodes closest to the cut. It's best that you do this kind of harvesting mainly during the growing season (i.e., during the warm months of spring and summer when the plant is still capable of putting out new growth) and refrain from doing so in the dead of winter, when the plant's energies are focused on survival. Pruning at that time, especially with a freeze coming, can be harmful to the plant. You shouldn't be picking single leaves either during the coldest part of winter as the leaves do serve as a blanket to protect life in the branches and the trunk of the tree. But of course, like everything else, this is just a generality for the Bay Area; if your tree is happy and warm in your garden even in the heart of winter when it continues to put out new growth, then you need not worry what time of year to harvest leaves.

Many inexperienced gardeners are very hesitant about cutting a branch of their precious tree. “What?! Cut a limb off my baby?” It’s really not like that at all. Look at it more like giving the plant a haircut. Just as haircuts can improve the vitality of your hair, so can pruning do the same for your kaffir lime plant. But do this pruning during the warm months when the plant is in growing mode. In the winter, it needs its “hair” to keep its neck warm.

When you prune for your leaves, you may end up with more than you need for the meal you are cooking, but kaffir lime leaves do keep well in the refrigerator, for nearly a month, or longer if you freeze them. And they do freeze well without losing much in the way of flavor and aroma. So prune in the spring and summer and freeze the extra leaves for your winter Thai cooking.

Pruning will help your tree grow bushier and more lush with leaves, so you’ll end up with more leaves in the long run for your cooking, as well as your friends’, neighbors’ and their friends’ and on and on. It will also help you shape your tree into an aesthetically pleasing plant to fit the space you have allotted to it. You can prune a branch back by as much as a third of its length, even more if your tree has grown much taller or wider than you wish it to be. Don’t just snip off the tips of tender branches as this will only make the plant grow top heavy. Top heavy branches can end up breaking off, tearing the bark and impairing the health of the tree.

Whether you need leaves or not, pruning can contribute to the overall health of your tree. You can open up the center of a tree that is thick with small branches and leaves in order to improve air circulation. A tree thick with leaves in the center may provide hiding places for bugs. Good air circulation during the hot, dry summer months can help ward off major bug infestation, as well as fungal diseases. Be careful when thinning a large tree as it has vicious thorns.

When you prune, try to cut back to an out-facing leaf node, which would direct new growth outward and away from the center of the plant. This not only will give the plant a more aesthetic appearance but will keep the tree from becoming too thick in the center, thereby closing off air circulation. Or, prune back to a node that faces the direction you wish the new growth to go. If your plant is bushier on the right side, you would want to cut back to a left-facing node to fill in the leaner side.

If the tree you’ve had for several years only has leaves on the end of the branches because you unknowingly have been practicing leaf-picking that has stripped the lower part of the branches, you might wish to rejuvenate your tree by pruning in stages. Cut one or two branches at a time back hard to a node (it’ll be a bump or eye on the branch as the leaf is no longer there) from which you wish to see the growth of new leaves. When new growth emerges, you can choose another branch or two to prune back and so on until the entire tree has been pruned. This way the tree will not be completely without leaves, which it needs for photosynthesis.

Generally, spring pruning increases the vigor of a tree while fall pruning controls the vigor of an over-vigorous plant.

Of course, if your plant is still very young, you should neither pick leaves nor prune it until it has developed a good branch structure with sturdy woody branches. Let your baby grow some hair before you give it a haircut. In the meantime, buy the leaves you need for your cooking or get some from a friend who has a mature tree and way too many leaves than he/she can use.

FEED YOUR PLANT: IT IS A LIVING THING

Just as you need to eat to live, so does your kaffir lime tree. But unlike you, it doesn’t like to gorge itself daily, so take care not to over-fertilize your plant, as this can bring about fast but weak growth that is very susceptible to damage from pests and diseases. Over-feeding, especially with concentrated synthetic fertilizers, can also cause leaf burn and root burn that can show up as dark margins/spots on leaves.

Most nurseries carry a special fertilizer blend for citrus trees. Follow the instructions on the box and your tree should be happy. Some organic blends, such as the “Citrus and Fruit Tree Food” made by E.B. Organics, contain not only the major nutrients nitrogen, phosphorous and potassium that promote lush foliage growth and support bountiful fruit production, but also essential micronutrients and spores of beneficial organisms to stimulate root growth, enhance nutrient absorption and promote drought resilience. Look

for them in reputable, well-stocked nurseries and garden centers such as Berkeley Hort (short for Berkeley Horticultural Nursery) in the East Bay.

Citrus generally likes a high nitrogen fertilizer during the growing season (i.e., spring to fall). Many citrus fertilizers let you feed your plant once a month during the growing season to give it a steady supply of the nutrients it needs to put forth growth. Some come as more concentrated, time-release granules for less frequent feeding. It's generally a good idea to stop feeding with a high nitrogen fertilizer when the weather cools in autumn, since you don't want to encourage tender new growth at this time but instead want to direct your tree's energies into shoring up for the cold winter.

Your kaffir lime tree can do just as well on a diet of other well-balanced fertilizers. For instance, the happy tree I have growing in the ground on the side of the house gets fed once a month from spring to fall with the same fertilizer its companions in the same border get. It's a water-soluble seaweed-based fertilizer with numerous micronutrients, called MaxSea, which I dispense with a hose-end sprayer to all my garden plants monthly. My kaffir lime tree loves it just as much as most of the plants in my garden. I literally can see them put forth a growth spurt within a few days of feeding. Some people use fish emulsion with similar success, so it's not essential to buy a specialized fertilizer.

Even if you have followed instructions and fed your plant regularly, there may be occasions when you might need to give it some other special nutrients, which may be lacking or have become depleted from the soil (see following sections). And there may be times when environmental conditions may affect a plant's vital processes that lead to its inability to effectively assimilate nutrients, bringing about worrisome symptoms of nutrient deficiencies.

“WHY ARE THE LEAVES ON MY PLANT TURNING YELLOW AND DROPPING”

If the yellowing is happening to new leaves at the tips of the branches, it likely means that your plant is not getting enough nitrogen, so you'd need to feed it with a high nitrogen fertilizer (the first number in a 3-number sequence on the fertilizer label). Sometimes it can also reflect a calcium deficiency. If your plant is already being fed regularly with a high nitrogen fertilizer that also contains a wide range of micronutrients, it could mean that the plant may be suffering from either drought stress or the stress of over-watering. Either extreme can upset a plant's photosynthesis since its roots might not be able to absorb the nutrients you feed it. Basically you'd need to bring it out of stress and into balance.

There're a number of products I know which are useful in helping restore vigor to plants when they are in stress. One is an organic foliar plant food called Wonder Grow, with nutrients derived from Norwegian seaweed and yucca extract. Another is “SUPERthrive!”, a supplement that contains 50 vitamins and hormones formulated to help plants flourish and survive conditions of over- as well as under-watering. Both will make the roots of your tree grow stronger and better able to survive both drought and damp conditions and to absorb nutrients in the soil.

In addition, products that contain live spores of the beneficial mycorrhizae fungus which stimulates root growth can help revitalize trees beset by root problems. Incidentally the citrus fertilizer made by E. B. Stone Organics mentioned in the foregoing section does contain mycorrhizae spores to promote strong, healthy roots. Another useful product is Dyna-Gro's “Pro-Tekt” which contains potassium and silicon to reduce stress caused by heat, cold, drought, insects and diseases. It improves heat and drought tolerance, increases resistance to environmental stress and enhances growth for healthier, stronger and hardier plants. I've used the latter with great success in helping my redbud tree recover from serious fungal disease that nearly killed it a few years ago. I now use it occasionally on plants that are susceptible to root rot as a preventative measure. Actually any of the foregoing products can be used regularly as a nutritional supplement to prevent problems before they arise.

If the yellowing of leaves is happening in between veins of older leaves on the lower part of the branches, it most likely means that your plant is experiencing an iron deficiency. You can buy a chelated iron supplement for citrus at the nursery to take care of the problem. Sometimes this symptom can also come about from a deficiency in other trace minerals the tree requires, such as magnesium, manganese or molybdenum. You might want to give your tree a supplemental feeding with a fertilizer that contains a wide range of micronutrients, such as a seaweed based fertilizer (seaweed contains over fifty natural, vital trace elements, minerals, vitamins and other nutrients essential for growing healthy plants). Other symptoms of

nutrient deficiencies include: brown spots on leaves (copper or molybdenum deficiency), leaves spotted and curled and leaf tips and edges turning yellow (potassium deficiency), and pale green or yellowish young leaves (sulfur deficiency). A tree that is generally healthy with plenty of new leaves but the leaves are smaller than normal may need more nitrogen and/or more water.

If both new and old leaves are yellowing and dropping off at a disturbing rate and there hasn't been an extreme heat wave or a freezing cold snap, you may have a serious problem. Your tree may be suffering from some kind of root problem, or it simply can be a sign of nutrient deficiencies in several of the major and secondary nutrients the tree needs to flourish. You might wish to consult a plant doctor (i.e., horticulturist or arborist) at a reputable garden center for his/her opinion and advice.

The major yellowing could be the symptom of fungal root disease brought about either by poor soil drainage or from excessive watering. It's also likely that your tree absolutely can't take the hot, dry heat where you've put it, or is terribly stressed by a recent prolonged heat wave that could have subjected it to alternating periods of dried-up and waterlogged soil. If it's grown in the ground, you might want to give it a solution of Dyna-Gro's Pro-Tekt, which is what I did with my redbud tree when it lost nearly all its leaves in mid-summer one year. Then monitor your watering so you don't give the plant any more water than it needs. Withhold feeding your stressed plant the usual fertilizer until it shows signs of recovery. This helps re-direct the plant's energies into healing.

If the tree is grown in a container, you could take the plant out of the pot, check the roots and the wetness of the soil. If the roots occupy just a small portion of the pot and the soil beneath is soaking wet, then root rot from excessive watering is indeed the problem. Gently remove as much soil around the rootball as possible without causing further injury, prune off the ends of roots that look rotted with sharp shears, and repot the plant in new soil mix into a smaller pot just large enough to accommodate the rootball. Water in with a dilute mixture of Pro-Tekt or SUPERthrive! and withhold feeding the plant until it recovers. Prune the tree back hard immediately after repotting so that it is proportional to the size of the remaining rootball. Keep your fingers crossed and hope for the best!

“MY KAFFIR LIME TREE IS LARGE AND HEALTHY BUT IT’S NOT FRUITING”

If you've had your kaffir lime tree for a few years and it has grown big, lush and healthy-looking with lots of deep green leaves, but it just won't flower and fruit, the problem might be that your plant is not getting enough light. The light can be either sunlight or very bright indirect light over most of the day. If your plant is in a shady spot, you might want to move it to a sunnier spot (do this gradually to acclimate the plant) if it is grown in a planter. If it is in the ground and is surrounded by other tall plants or is near a tree, you can prune the tree or surrounding plants to let in more sun.

If you think your plant is already getting enough light and still is not fruiting, then maybe it's the food you've been feeding it.. You might need to give your plant a fertilizer with a higher phosphorus (the second number in the three-number sequence on the fertilizer label) and potassium (third in the three-number sequence) content than nitrogen (the first number). These major nutrients are needed for fruit formation and for the proper ripening of fruits and seeds. Nitrogen, on the other hand, promotes strong, vigorous growth and when it's excessive in relation to the other two, lush, thick foliage growth can take place at the expense of fruit production.

WHAT TO DO WHEN BUGS AND FUNGAL DISEASES ATTACK

A healthy plant is less susceptible to pest and disease attacks, so keeping your kaffir lime tree well cared for is the best defense strategy. Besides feeding and watering, providing good air circulation by proper siting and pruning is an important preventive measure. Cleaning up debris around the plant, such as fallen leaves and fruits, reduces hiding and breeding places for pests and decreases the likelihood of fungal spores growing on decaying matter. But even with the best of care, there are environmental conditions we don't have control over which may encourage pests and diseases to visit your tree, such as stuffy heat waves when the air is dry and still. Bug attacks generally take place when the weather is warm and are usually, though not always, less common during the cooler months of the year.

Ants are attracted by sweet citrus blossoms and pretty soon they might decide to hang around and farm aphids and soft scales for the honeydew-like substance these bugs secrete. So one way of preventing insect

infestation would be to keep ants off your kaffir lime tree. Another good reason to keep these rascals off your tree is that they oftentimes pick up fungal spores on their feet as they soldier from plant to plant, thereby spreading diseases to otherwise healthy plants. You can use ant stakes, sprinkle borax or cinnamon around the perimeter of your plant, or use some other ant deterrent you find at your local Long's, Ace, or garden center. There are a multitude of products to choose from, some more natural than others.

Bugs, however, do not need ants to invite them to your tree. The most common insects attracted to kaffir lime trees are aphids, soft and armored scales and, although not as common, mealy bugs. Aphids like the sweetness of the blossoms and the delicious tender young leaves on the tips of the branches. Scales attach themselves to the undersides of leaves and along the branches and trunk of the tree and can be anywhere on the plant, though they love munching on the newly emerging leaves just as much as aphids. Often soft scales (they have soft bodies while armored scales are brittle) are accompanied by a greyish fungus that gives the leaves a black mildewy look. That's because the sweet honeydew they secrete are a perfect culture for molds. Mealy bugs are a big nuisance and hard to get rid of once they take up residence on a plant, but they usually aren't commonly attracted to citrus trees unless conditions are perfect for them. Some of the kaffir limes we picked most recently from Four Winds following a long, stuffy heat wave had mealy bugs attached to them, especially in the deep creases on the warty peel.

Whenever you notice the first signs of bugs on your plant, immediately take action and nip the problem in the bud before a full-scale infestation takes over. If there are just a few bugs, you can simply remove them with your fingers and squish them to death. If you can't stomach such violence, then you can spray them to death.

There are many products available in garden centers for getting rid of these bugs, some safer than others for the sprayer as well as the people who are going to eat the leaves in Thai dishes. The safest is definitely pure neem oil. It comes from an edible, medicinal plant that is highly prized in age-old Ayurvedic Indian and Southeast Asian traditional herbal medicine. Thais love to eat the very bitter (the whole plant is bitter) tender flower buds with a sweet tamarind sauce which cuts the bitter, grilled catfish and sticky rice. It's really very good and very good for you and comes much closer to being a Thai national dish than pad thai! So when you spray with a dilute solution of pure neem oil (available under the Dyna Gro label), usually 2 oz. to a gallon of water, you need not worry at all if some of the spray gets on your hands or face, or if you breathe in any of the fine spray should a breeze blow the mist onto you. You might taste a little bitterness at the back of your tongue 'cause you've just gotten yourself a small dose of medicine. No protective clothing is necessary when using this spray.

I heard a rumour sometime back that pure neem oil had been difficult to find in garden centers because Southeast Asians were buying it to take as medicine, which prompted some state agency to regulate its availability in California. I haven't checked recently whether it's back on the shelves since the bottle I bought years ago has a long way to go before it empties out. I haven't been sipping it for health.

If you can't find 100 percent pure neem oil, there are a number of products that contain a 70 percent "clarified hydrophobic extract" of neem oil as their active ingredient, mixed with 30 percent "other" or "inert ingredients" (I wish they would list these so I know how much I need to protect myself when I'm spraying). One such product is called "Rose Defense" made by Greenlight and another is sold under the Garden Safe label as a fungicide. There're probably others.

Another 100-percent-safe spray is a completely natural product called Organocide. Robert at Hortus Botanicus Nursery in Fort Bragg, one of my favorite places to visit when I'm up along that part of the coast, swears by it for all his tropicals, including his large collection of carnivorous plants which resent any kind of insecticidal sprays. It's not available in the Bay Area, but can be purchased from the hardware store in Willits. It's a mixture of sesame oil and edible fish oils, without any unlisted "other" ingredients. Although it's perfectly safe to get the spray on you, you might not want it to since it has a rather strong fish odor. Your plant will smell fishy too for a couple of days after spraying, but the leaves are perfectly safe to eat the same day you spray and probably does best in a seafood dish! Michael always can tell when I've sprayed any of my plants with this oil; he says it makes the garden smell like a dead fish! But it's just for a day or two. I believe Organocide originates from Florida where it is popular among organic growers who have to spray when temperatures are high, something usually not recommended for other oil sprays. It's also formulated to treat citrus diseases. It works very well but tends to leave a sticky residue on your plant.

With oil-based sprays like neem, Organocide or a horticultural oil, it helps when you are mixing the oil with water to add a few drops of biodegradable dishwashing soap. Shake well and the soap will help act as an emulsifier. You should still periodically shake the bottle during the spraying session to make sure the oil is well mixed with the water and does not come out heavy in spots on your plant. Instead of buying an oil spray, some people say it's just as effective to use any cooking oil mixed with water and a few drops of dishwashing soap.

Both pure neem oil and its derivatives and Organocide are effective against insects as well as fungal diseases, which insecticidal soaps aren't.

Although insecticidal soaps are effective against a wide range of insects, you need to take more care in protecting yourself from the spray. They are usually made of derivatives of different kinds of oils but there usually is a very high percentage of "inert ingredients" which aren't listed and I'm a bit leery about unknown substances that might get on me while I'm spraying. One common product is sold under the Safer label as an insect-killing soap. I don't particularly like its smell which reminds me of something that might be harmful to my health. I would give the leaves a waiting period following spraying before they are used in cooking. On the other hand, leaves sprayed with neem oil solutions are perfectly safe for eating on the same day. Same for organocide, but the leaves will taste a little fishy.

Unlike toxic, chemical insect sprays, which kill insects both on contact and leave a poisonous residue that continues to kill insects that eat the leaves, edible oil-based sprays and insecticidal soaps kill insects on contact only by smothering them. Therefore, you may need to spray more than once to control the problem. Insects are good at hiding and some may escape your spraying to re-establish the colony. The eggs they lay in the soil may hatch into the next generation of adults in the colony. Others in residence in nearby plants may decide to move and take over the vacuum. It's usually recommended that you spray two to three times in intervals of 7 to 10 days to eliminate successive generations of the insects.

Fungal diseases usually manifest as spotting on the leaves or a filmy substance covering the leaves, causing them to change color, shrivel and eventually drop off. To prevent fungal spores from spreading, avoid wetting the leaves when watering the plant, especially late in the day. Fungi multiply in damp, dark conditions and do much of their spreading during the darkness of night when humidity is higher. That's why it's better to water early in the day than in the evening; this allows the leaves and the surface of the soil to dry before nightfall. As mentioned, neem oil-based sprays and Organocide will take care of both insect and fungal problems.

It's best to do your spraying either early in the day before the sun hits the plant and when the temperature is well below 80 degrees, or late in the day after the sun has passed. Ideally, the leaves should have dried before the sun hits them, or else they might become sun-scorched.

HOPE FOR BROWN THUMBS

I hope I haven't overwhelmed you with more information than you think you need to get started. Don't be discouraged just yet into giving up your desire to grow a kaffir lime tree for an easy source of fresh leaves for your Thai cooking. It's really quite easy once you've figured out what to do and takes only a few minutes of your time each week. As said at the very start, all it takes is to get to know your plant and give it what it needs.

So what if you've killed a kaffir lime tree before. You probably didn't know as much as you know now. Give it another try. Hopefully you'd learned from your mistakes. There're very few, if any, good gardeners who've never killed a plant before. Besides, plants don't really die. They just get recycled into compost to nourish future generations of plants. So don't feel bad chopping up a dead plant and putting it in the green bin or compost pile. Get a new plant and give it another go.

It's really very satisfying to see the small plant you bought and nurtured mature into a beautiful kaffir lime tree in your garden. It'll return the care you give it with an ample supply of lusciously aromatic leaves and lime peel to cook up scrumptious Thai feasts for your friends and family. Somewhere along the way you might find in your mind's eye that your brown thumb is turning as green as a (hopefully green and not yellow) kaffir lime leaf!