BACKYARD FARMING

Make your home a homestead

FRUIT TREES BERRIES & NUTS

"EXPERT ADVICE MADE EASY"

Kim Pezza

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INTRODUCTION

In developing one's homestead or urban farm, fruits, nuts and berries make for an attractive second or third year addition. You might think you'd need to allocate quite a bit of space for the successful production of any one of these additions, that's not necessarily true. Although any orchard, be it large or small, will without a doubt require plenty of space, individual trees and bushes typically need no more space than they themselves take up—same as any other tree or bush you may choose to plant.

And even if you truly don't have a lot of yard space to devote to a longer term planting like trees or bushes, you will find that there are many types of fruits and berries that work well in containers. What makes this so attractive—besides the fact that you don't need garden space or large yards when using containers—is that it allows gardeners in colder climates to grow tropicals and other season-specific plants, which would otherwise not work within their climate type. By making the plants "portable" and able to go indoors during weather they would otherwise not survive, you greatly expand their growing environment.

Another great thing about fruits, nuts and berries is that they are often found growing wild on properties in rural areas, saving the rural homesteader time and money, while providing a valuable addition to their garden. Of course, it is very important that you are well-informed when you go wildcrafting (harvesting from the wild); along with the many edibles out there, there are also many varieties of wild fruits and berries that can be harmful, even deadly. Never ingest a wildcrafted fruit or berry without first verifying that it is safe to do so. However, when properly instructed on how to hunt

and what to look for, wildcrafted or wild harvested fruits, nuts and berries can be just as tasty, if not more so, than their domestic counterparts.

Just like growing your own vegetables and raising your own livestock, growing fruits, nuts and berries allows the gardener full control over the planting, growing, raising, harvesting and preserving of the resulting food. They are given the choice as to whether to grow organic, non-organic or somewhere in between. With all of the varieties available, the question won't be what to put in, but which one—and how many!

Eaten fresh, preserved or cooked; made into jams, jellies, ice cream, and candy; served as main dishes or desserts; you will find as many uses for your harvests as your imagination allows. As well as providing a number of different ways to satisfy those out-of-season cravings, fruits, nuts and berries will become important members of your garden virtually from the moment they're introduced. So, sit back, relax, and let's take this opportunity to explore these sweet and crunchy treats—that you can grow yourself.

MEET THE EXPERT

Kim Pezza grew up among orchards, muck land, dairy and beef farms, having lived most of her life in the Finger Lakes region of New York State. She has raised pigs, poultry and game birds, rabbits and goats, and is experienced in growing herbs and vegetables. In her spare time, Kim teaches workshops in a variety of areas, from art to making herb butter, oils and vinegars. She continues to learn new techniques and skills and now spends time between her grandparent's mid 1800's farm in New York and in Southwest Florida, the first and oldest cattle area in America and origin of the American cowboy.

CHAPTER 1

A BRIEF HISTORY OF CULTIVATING FRUIT TREES

As most of us grew up with some type of fruit, nut or berry in the home, we tend to take these amazing foods for granted, and rarely think about where they came from.

Fruit Throughout History

Fruit was quite commonly depicted in the art of ancient Egypt and Mesopotamia. However, it is the Warka (or Uruk) vase which holds the distinction of containing what is thought to be the earliest known fruit pictorials. Found in Uruk, believed to be among the first cities in the world's history, this 3 feet tall Mesopotamian vase is believed to be over 5000 years old. Made from alabaster and therefore highly prized, the vase played a special role in the sacred marriage rite. Unfortunately, the vase was broken into pieces during looting after the Iraqi war; it is currently scheduled to be repaired. This is not the first time the vase has suffered breakage, however; there is evidence of the vase having been broken and repaired a few times before. The vase depicts a wedding procession, with a number

of suitable offerings to be placed before the gods to plead for good fortune in the coming marriage. Chief among these are cultivated fruits and grains, indicating that the value of these foods was recognized as far back as the dawn of human civilization.

The Uruk vase displays one of the earliest known depictions of human cultivation, showing that humans have been growing and tending fruit trees for centuries.

Wildcrafting

Wildcrafting is, in basic terms, the act of gathering food and herbs from the wild; in other words, foraging. The original “trip to the grocery store,” many still practice wildcrafting today, especially those fortunate enough to have wild foods on their property.

However, when foraging for wild foods and herbs, the importance of caution, proper preparation and safety is paramount. Wildcrafting comes with many responsibilities,

including taking only what you need and not over-hunting, leaving endangered species alone, and not pulling plants out by the root or taking entire plants, allowing the plant to restore itself. In the event that you find yourself in need of the root or the entire plant, take only one or two plants; not all of them at once. If the plant has seeds, plant the seeds on or near where the plant was removed, to keep them going.

Finally, it is important to remember that while wildcrafting can be fun, it can also be dangerous if you do not know what you are doing. Never forage in a new area until you know what you are doing *and* can identify what you are harvesting. There are more and more classes popping up on the topic; or, if you know someone who knows what to look for when foraging, have them take you along on one of their hunts, or ask them to tag along on one of your's, so that they can teach you the craft.

When foraging, remember to always verify the identity of anything wild that you harvest. Many wild fruits and berries contain compounds that can be toxic to humans when consumed. Photo by Foam under the Creative Commons Attribution License 2.0.

A Brief History of Domestication

Although it is believed that most fruit, nuts and vegetables were first wild crafted or wild harvested, records trace early domestication back to Asia and the ancient Mediterranean. The date palm,

originally from Iraq, is thought to be among the earliest cultivated species having been grown everywhere from Mesopotamia to Egypt since 4000 BCE. It is believed that certain fruits and citrus, such as apricots, apples, pears and bananas, were domesticated first in Asia, with some first grown over 4000 years ago. Dates, olives, grapes, figs and pomegranates were domesticated in the Mediterranean between 6000 and 3000 BCE, with some of the earliest examples from Mesopotamia estimated at approximately 4000 BCE.

It is difficult to pinpoint the exact origin of the modern orchard. It can be assumed that orchards came about alongside the domestication of various trees, which made large-scale tending more feasible. The first apple orchard in the United States is believed to have been in Boston, planted by the Reverend William Blaxton in the year 1625. Little is known of this orchard, save that it primarily cultivated the Yellow Sweeting apple, one of the first American apple varieties. Having always been representative of a significant investment (both of time and money) it is unsurprising that local or privately owned orchards were a rarity, existing primarily on the properties of affluent citizens. Likewise, it comes as no surprise that even in modern times, the orchard is thought of as a commercial venture, with most orchards being owned and operated by national distributors.

In addition to the domestication of the various trees necessary to sustain an orchard, orchards also require a significant investment of money and manpower. For example, it was a practice in the late seventeenth and early eighteenth centuries for larger orchard owners to pay children a few coins to harvest the ripened fruit.

By contrast, perennial favorites like blueberries and blackberries are relative newcomers to the domestication scene. Although the blueberry (as well as the cranberry and Concord grape) are native to the North American continent, it was not until the nineteenth and twentieth centuries that they were finally domesticated and made available for commercial sale. Commercial orchards of all sizes still exist around the world, growing not only those fruits native to the specific country or area, but also new varieties that have either been developed for or have been adapted to specific areas. Sometimes, as problems arise with one fruit (as when disease all but wipes out a fruit), another may be selected to take its place. It could be a new variety of the same fruit, one which is more disease resistant, or an entirely different fruit (or nut) which will survive better under

current conditions. Meanwhile, other fruits and nuts, many of which seem commonplace to us, continue to be harvested in the wild to this day.

So, grab a comfortable seat and begin contemplating your future backyard farming prospects with fruits, nuts and berries.

CHAPTER 2

BASICS OF GROWING FRUITS, BERRIES AND NUTS

There are countless varieties of fruits, nuts and berries. Some we are quite familiar with—most people grow up alongside apples, peaches, strawberries, bananas and oranges. Others come late to our vocabularies and kitchens, such as kiwi and pomegranate. Still others have only recently seen use in American kitchens, such as the lychee or the star fruit.

This book will cover some of the most common fruits, nuts and berries the average homesteader will consider when looking to incorporate bushes and trees into their garden. In addition, we'll be touching on some of the more "exotic" varieties available, for those looking to find new challenges for their backyard gardens. Keep in mind that no specific fruit, nut or berry will be any more beneficial for your garden than any other. However, just as with vegetables, you need to consider location and whether or not the fruit, nut or berry will get along with its neighbors (companion planting). If you are looking to attract a certain pollinator to your garden, you will need to make sure that you are purchasing the correct plant, as some plants may be preferred over others by certain pollinators. You

can find this information either online, through your local nursery or through an extension office.

Today, the majority of commercially grown fruits, such as apples and oranges, come from carefully constructed and tended orchards. Photo by Jeff Kubina Levy under the Creative Commons Attribution License 2.0.

The following chapters will break down and discuss the various types of fruits, nuts and berries available, depending on space and climate. However, there are many more fruits, nuts and berries that you may be interested in looking into, including:

Staghorn Sumac	Chilies
Wild Grape	Cranberries
Coffee	Quince

Cashew	Eggplant
Ground Cherry	Apricot
Mango	Pecan
Kumquat	Fig
Pistachio	Watermelon
Tomato	Cantaloupe

You may find that you already have one or more of these growing in your yard, field or woods (depending on the plant or tree). Most of the options on this list are quite commonly found in yards and gardens, depending on your location and climate. If there is one that you do not have available but are interested in cultivating, good nurseries will have them available. Keep in mind that even this is not a comprehensive list, and that there are many varieties and variations out there to choose from. For a more complete list of available fruit trees and bushes in your area, please see your local extension office.

Key Terms and Definitions

This book will be making use of certain key terms useful in understanding how fruits, nuts and berries are grown. These terms are here defined for your convenience.

Hybrid: A hybrid is the offspring resulting from a crossbreeding of two different breeds (varieties), genus or species. Seeds from hybrids are usually not saved by the home gardener, as they normally will not produce a plant with the same characteristics of the parent, if they produce at all.

GMO (Genetically Modified Organism): Contains genes from unrelated species. These genes will have been inserted artificially through genetic engineering techniques.

Open Pollination: Pollination of plants is done through natural means (bird, insect, wind, etc.). As these plants are pure, meaning not a hybrid or a GMO, seeds saved from these plants will produce a new generation of the plant with the same characteristics of the parent.

Pollinators, such as this bee, play a crucial role in plant propagation, ensuring that the necessary pollen from compatible plants reaches its destination. Photo by Christine Majul under the Creative Commons Attribution License 2.0.

Now, let's take a look at the basics of fruits, nuts and berries in a bit more detail:

Fruits

What exactly is a fruit? To the average person, the term "fruit" will normally bring to mind the fleshy, edible parts of a plant, be they sour or sweet. The culinary definition of a fruit, which is slightly more robust, is a sweet tasting plant product (unlike a vegetable, which is more savory than sweet). However, the botanical definition of fruit includes such things as bean pods, tomatoes, corn kernels,

nuts, eggplant, cucumbers, sweet peppers and pumpkins, many of which we normally think of as vegetables.

The technical definition of a fruit is as follows: “The part of the plant that develops from a flower, and which provides a vehicle for the plant to disperse its seeds. It is the end product of the maturation of one or more flowers on a tree or plant, where the gynoecium (or “female parts,” while the androecium would be “male parts”) of the flower(s) form all or part of the fruit.” In simpler terms, the fruit is the end product of the successful fertilization of the flower of a tree or plant.

It is worthwhile to note at this time that, contrary to popular belief, nuts are *also* considered to be fruits. We will delve a bit further into this later, but the basic reason for this is that a nut is simply a fruit that is dried with a seed.

There are three modes of fruit development:

Apocarpous: Where the fruit develops from a single flower, with one or more separate carpels. A carpel is an individual, seed bearing female reproductive organ in the flower, composed of an ovary, stigma and style. One or more carpels make up the pistil.

Syncarpous: Where the fruit develops from a single gynoecium, with two or more carpels fused together.

Multiple: Where the fruits form from many different flowers.

There are also three main fruit groups:

Simple Fruit: Develops from a single carpel, or occasionally from fused carpels, called a compound, with one pistil. Examples of simple fruit include peas, lemon and peanuts.

Aggregate Fruit: Develops from a number of separate carpels, but from one flower. Examples of aggregate fruit include raspberries and strawberries.

Multiple or Composite Fruit: Develops from many carpels with many flowers. Examples of multiple or composite fruit include

pineapples and figs.

The Anatomy of a Fruit

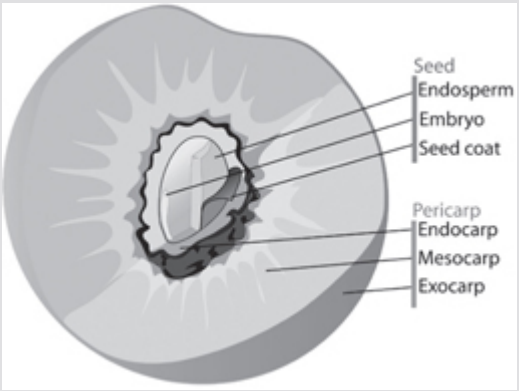
Fruits also have a basic anatomy. The basic anatomy of a fruit includes:

Endocarp: This is the part that is directly around the seed. It may be hard, papery or stony.

Exocarp: This is the skin or **rind** of the fruit.

Mesocarp: In fleshy fruits, the mesocarp is the fleshy tissue between the endocarp and exocarp.

Pericarp: This is a collective term, used to refer to all three parts of the fruit anatomy, together.



In addition to those parts that make up the flesh of the fruit, the seed itself is composed of the endosperm, embryo and seed coat.

Mature fruits are either fleshy or dry:

Dry fruits may be **dehiscent** (meaning that the fruit must open to release its seeds) or **indehiscent** (meaning that the fruit does not

open). Examples of dry fruit include strawberries, coconuts, beans, hazelnuts, wheat and beets, as well as both carrot and radish seed.

Examples of fleshy fruits (fruits where the pericarp and secondary parts develop into succulent tissue) include tomatoes, oranges, currants, eggplant, watermelons, apples and pineapples.

Berries

Berries are usually juicy, bright and round, and can be both sweet and sour in taste. They are the most common of the fleshy fruits. While they do not have a stone or pit, they do usually have seeds, and may have one or more carpels. The seeds are usually embedded in the interior flesh; however, there *are* examples of non-fleshy berries, such as peppers, where the seeds have air around them instead of being embedded. And, while many berries are edible, some, such as deadly nightshade, are poisonous, if not deadly, if consumed.

A *bacciferous* or **baccate** is a plant that bears berries. While also a fruit, the common definition of a berry is: “Any small, edible fleshy fruit where the entire ovary wall will ripen into the pericap.” The botanical definition is, “a fleshy fruit, which is produced from a single flower and contains an ovary, which may be **superior** (if the ovary is *above* where the perianth and androecim come together and attach) or **inferior** (if the ovary lies *below* where the other parts attach).” Examples of botanical berries include avocado, blueberries, bananas, goji and watermelon.

A baccate, or berry-bearing bush, can be found in both cultivated and wild varieties, both of which are equally useful to the home cultivator. Photo by Carole Grogloth under the Creative Commons Attribution License 2.0.

Epigynous or **false berries** (such as strawberries and raspberries) develop from inferior ovaries, while **true berries** (such as gooseberries and grapes) develop from superior ovaries. With a false berry, tissue from parts of the flower besides the ovary is included in the berry. This basically entails formation from the basal or sepals, petals, and stamens, while the floral tube becomes fleshy at maturity, which then unites with the ovary to form the fruit.

Hesperidiums are berries with thick rinds and a very juicy interior. Citrus, such as oranges, kumquats and lemons, are examples of hesperidium.

Both fruits and berries offer many health benefits. Rich in vitamin A and C, as well as folate and other essential nutrients, they are low in calories and fat, high in fiber and are a great source of simple sugars. Fruits, and especially berries, are also high in anti-oxidants (especially when compared to vegetables) such as poly-phenolic and flavonoids. It is also believed that fruits and berries may prevent some types of cancers, strokes and heart disease, as well as helping to control cholesterol and blood pressure.

Nuts

Nuts are, at their core, a dry fruit with a seed (usually a single seed, although there can occasionally be two), where the ovary wall hardened with the seed remaining attached. Most originate from pistils with inferior ovaries. The hard shells can also originate from a compound ovary. The common definition of a nut is any hard-shelled, generally edible kernel (sometimes called “meat”), while the culinary definition of the nut is “any large, oily kernel that is in a shell and used for food.” Common examples include pecans and walnuts. The botanical definition of a nut points out that nuts are also indehiscent, meaning that the shell does not open to release the seed. Although many seeds may commonly be called nuts, true nuts are those which meet the full definition of being indehiscent fruit.

Although they are readily known and recognized as a hard-shelled, oily plant product, nuts are technically a fruit, although they are rarely thought of as such. It has been found that some nuts, such as acorns, wild almonds and water chestnuts, were a major part of the diet of early humans over 780,000 years ago. Tools developed to open nuts have been discovered dating back to the Pleistocene period. In fact, it has since been discovered that our ancestors consumed far more nuts, insects and root vegetables than they did fruit.

Today, nuts are eaten raw, roasted, pressed into oil or used in cooking. However, they are most healthy in their raw form. Nuts serve as an important source of nutrients for both humans and animals, due to the high oil content. Nuts are high in nutrition, as they were originally intended to serve as the energy source for a new plant. They are rich in essential amino acids, high in fat and vitamins. Many are high in protein, fiber, folate, Vitamin E and B2, as well as a number of essential minerals. However, as significant a source of nutrients as nuts can be, they are also the most common food allergen, some of which can be deadly.

It is worth noting that fruits, nuts and berries can both be grown domestically and harvested in the wild. Blueberries, raspberries, black-caps, black walnuts, crab apples, staghorn sumac berries and

the small wild grape are just a few examples of fruits and nuts which may be wildcrafted. However, you should never harvest anything from the wild unless you are *absolutely* positive that the fruit, berry or nut is edible. Otherwise, you run the risk of poisoning yourself and whoever else will be eating your harvest. If you decide that you do want to learn how to harvest from the wild, learn from the experts—take classes on wildcrafting and invest in some flora identification guides. If you are fortunate enough to have friends or relatives who grew up on wild foods, most will be all too happy to pass their knowledge along to the next generation.

Harvesting nuts (such as the chestnut, shown here) has long formed a foundational part of the human omnivorous diet, and are now practical in even limited growing space. Photo by Andy Hay under the Creative Commons Attribution License 2.0.

Beneficial “Pests”

In the chapters ahead, we'll be talking a lot about the various types of pests to watch out for when cultivating fruit trees, berry bushes and nuts. But before we do so, let's take a moment to mention that there *are* beneficial insects for these plants, which may pollinate the plants, or devour other pests. Those which are the most common are also most well-known, including the green lacewing, the honey bee, the mason bee, the praying mantis, and everyone's favorite, the lady bug. It goes without saying that, should you see any of these little helpers in your garden, you should welcome them as part of your pest control regiment.

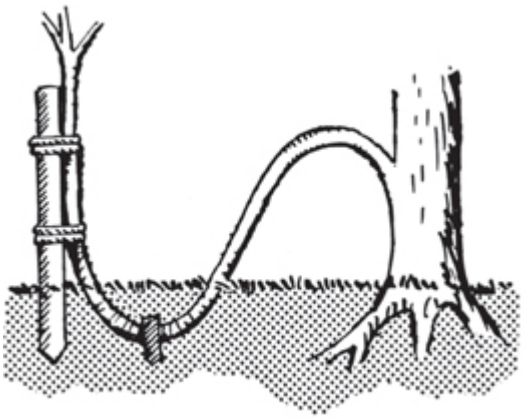
CHAPTER 3

PROPAGATION

When discussing **propagation**, and specifically the propagation of plants, we refer to the growth or spread of plants, through both natural and artificial dispersal methods. All fruits and nuts can be propagated by one or more method, including seeds/seedlings, grafting, budding, layering and cutting. Let's briefly review a few of these methods, to give you an idea of what to expect when expanding your garden.

Layering

Layering, in its basic form, involves taking a branch or shoot from an existing plant and allowing it to make contact with the soil (*without* removing it from the bush). It will then begin to create a new root system, separate from its parent plant, which can in turn be used to make viable cuttings later on. These new cuttings may be planted like any other seedling. Bush fruit, such as blueberries, can be propagated quite successfully in this way.



Similar to cutting (save for the physical removal of the shoot from the parent tree) layering is another option for cultivators looking to plant close to the original tree.

Cutting

A relatively easy method to use, **cutting** involves taking trimmings of small fruit trees or bushes to use in starting new plants. There are a few ways that this is done: some take the cuttings, bundle them up for the winter and store in a basement in moist sawdust; others place the cuttings in an outdoor trench and cover them for the winter. I personally have had quite good luck rooting fresh cuttings directly into the ground or a container after removal. In some cases, even placing the cutting in a small pot of water will begin the rooting process. Then, after roots develop, you may proceed with the planting as usual. If you are somewhere with cold winters, it is best to start collecting cuttings in late spring (after the threat of frost is over) or in very early summer, to allow your cutting enough time to develop its roots for the winter.

Taking a cutting of an existing tree and planting it in the ground allows a cultivator the opportunity to expand the growing potential of their existing trees by creating genetically similar plants.

Grafting

Best done in the spring, **grafting** involves taking a stem with a **scion** (leaf bud) and inserting it into a limb or trunk of another plant closely related to the plant that the stem came from. This original plant is called the **stock**, and will sometimes be referred to as the root stock. Most apple types can be grafted to each other (which is how you get trees three or four varieties of fruit on one tree), as can most stone fruit (including wild varieties). Tomato plants can even be grafted onto potato, providing you with tomatoes on the top and potatoes underground—both on the same plant!

By grafting viable shoots onto healthy trees, cultivators can not only grow new trees similar to their existing stock, but can maximize their use of available space. Photo by Marc Levy under the Creative Commons Attribution License 2.0.

Methods of Grafting

There are several methods of grafting. They include: cleft, budding, bark, whip, bridge, splice, side veneer, and side tongue. Let us take look at some of these grafting methods now, to better understand grafting as a whole.

Bridge

Bridging can be thought of as skin grafting for trees, save for using bark instead of skin. Used when a tree has girdling (where a pest has chewed off the bark all the way around a fruit tree), bridge grafting involves bridging over the tree's wound using two scions (of the same varieties as the girdled tree), then tacking each end above and below the damaged area, allowing the tree to heal.

Budding

Budding is a method of grafting where a bud is taken from one tree and made to grow on another. When the bud takes and grows, it will continue to produce the same fruit as the original tree that it came from.

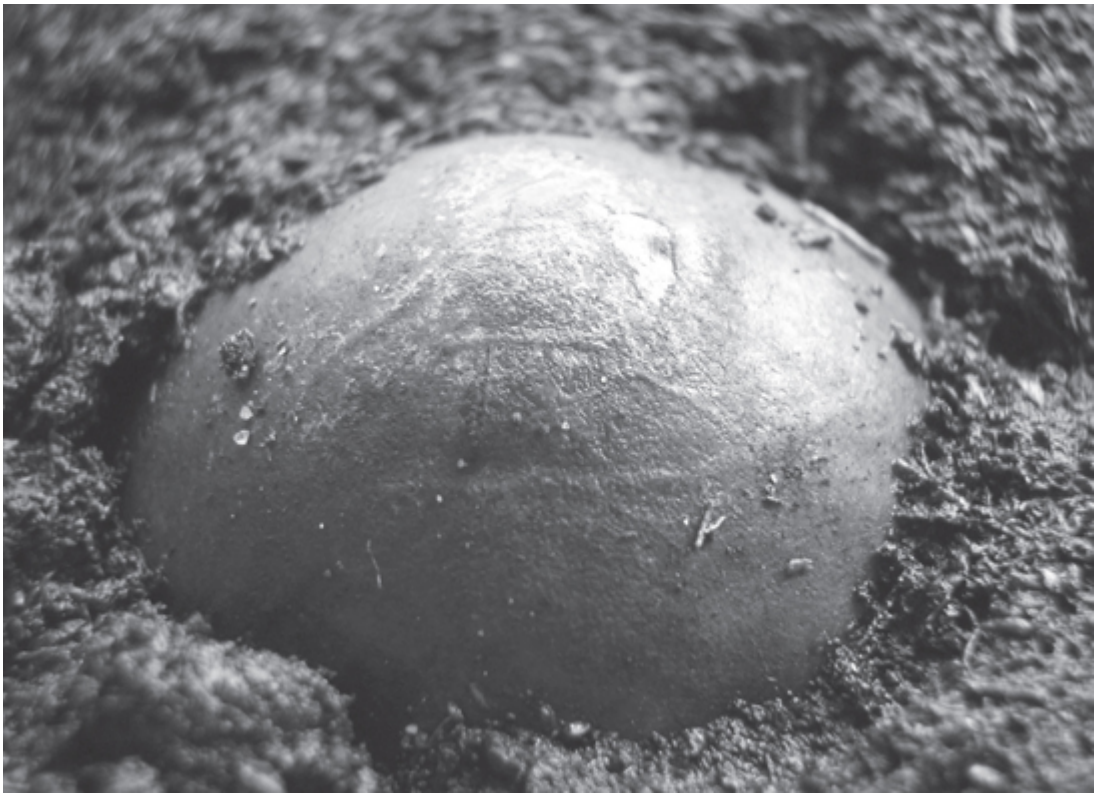
The bud used for this method of grafting should be found *under* the current leaf, and is actually the start of the following year's leaf. Budding works best with fruits like apples, cherries, plums and peaches.

This pineapple tree is just beginning to bud. Buds are especially susceptible to cold and other elemental hazards, and must be carefully tended. Photo by Arria Belli under the Creative Commons Attribution License 2.0.

Grafting is one of the best ways to propagate many fruit trees at once. It is the quickest way to begin a large number of trees of the same cultivar. The large quantity of available varieties of rootstock allow the gardener greater leeway in determining the size of the tree (full size, semi-dwarf or dwarf). Grafting can even be used to affect what age a tree will begin bearing fruit, as well as how well it will adapt to the climate and soil.

Seeds

Although you can try beginning fruit trees from seed, you may or may not have much success. The resulting tree may not be true to its source (for example, seeds from a dwarf tree may not produce another dwarf tree), or it may not come up at all. (Note that if it *does* come up, the resulting plant can make decent rootstock for grafting.) That being said, starting from seed can be fun to attempt, and is always a great project for the kids. As a general precaution, make sure to purchase your seeds from a reputable nursery.



The traditional method of cultivating plants, growing trees or bushes from seed may not be the best option for the cultivator looking to add a fruiting plant to their backyard farm.

Seedlings

Seedling trees of reliable varieties can be purchased from greenhouses and nurseries, and are among the most common methods of propagation for new farmers. Photo by USFS Region 5 under the Creative Commons Attribution License 2.0.

When selecting seedlings or young trees for your new orchard, yard or container, the first thing you need to decide is size. Trees come in three general size categories: standard, semi-dwarf and dwarf.

Growing 18–20 feet tall, the **standard tree** is the large tree that we are all familiar with. Although it may be a number of years before some fruit/nut trees produce, this concern can be alleviated by planting dual purpose trees, using them for shade, firewood and/or lumber. Space wise, you will need about 22–26 feet between rows for multiple trees.

Semi-dwarf trees can be both commercial and backyard producers; however, many still grow too large for the average backyard farm. At 12–15 feet tall, they are about 50–75 percent of the size of a standard tree, and need about 18–20 feet between rows for multiple trees.

Dwarf trees are the smallest of the trees, and excellent for small spaces. However due to their shallow root system, some dwarf trees may need additional support, especially if they bear heavy fruit—some trees may not be able to totally support themselves during heavy bearing periods. Dwarf trees can run 8–10 feet in height, needing only 14–16 feet between rows. (As a side note, there are six stages of growth on fruit trees.)

You can purchase your root stock as either bare root or potted, in soil, with a root ball. Bare root have some significant advantages over trees with a root ball. Bare root trees will not dry out as quickly in dry conditions, nor will they become over saturated and drown the roots during wet weather.

The best time to plant is during **complete dormancy**, those times when the plant is very much alive, but is not actively growing. This period is usually early spring or later fall, but it is best to check with your local nursery or extension office for your area, if you are unsure.

Another important point is to check as to whether or not the selected variety of fruit is self-pollinating; if not, remember that you will need a second variety to serve as a pollinator.

Preparing the Planting Site

Prior to planting, the planting site will need to be prepared. This is done through working the soil, removing any grass/sod or weeds, thereby eliminating any competition the young tree might otherwise face for nourishment from the soil. Then, dig a hole large enough to allow the feeder roots to spread. Usually, this hole will be at least twice the size of the root ball or bare root. Do not fertilize at this time (you run the risk of burning the roots) and make sure all air pockets are eliminated as the hole is filled in. Finally, support any newly planted tree with a wood or metal stake. Besides keeping your things out of the way, this also helps increase growth in the first year. Avoid overcrowding the trees.

Caring for Your Trees

After planting, follow any specific first year instructions for your particular tree and your area/location. These instructions may come with the tree, may be found online or through the nursery where you purchased the tree. Your local extension office may also be able to provide valuable information concerning early care for your new tree(s), such as when and how you should prune. **Pruning** is the act of cutting off pieces of the tree, thereby controlling the size and proper shaping, as well as allowing air and light to pass through to reach the fruit.

Besides removing dead weight from a bush or tree, pruning also allows the cultivator to ensure that the healthiest parts of the tree receive as much nutrition as possible.

Once you have decided which method of propagation you are interested in learning or using, there are numerous resources on propagation both online and in printed media. Please see the Resources section at the end of this book for some starting points. Your local nurseries and extension office can also be a wealth of

information and are available to guide you through your initiation into the world of plant propagation.

CHAPTER 4

CONTAINER GROWING

If you don't have enough (or any) space in your yard to grow fruits or berries, or if you live in a northern area, say, but still want to grow a citrus tree or tropical fruit, growing in containers may well be the answer to your prayers.

Note that some plants are more conducive to container growing than others, and in the case of trees, you really need to be sure that the tree you select will not turn into a 40 foot, out-of-control monster that you will then need to either transplant or dispose of within a few years. Dwarf varieties (or those semi-dwarfs that are conducive to heavy pruning) should be high on your list.

Although this apple tree will one day outgrow this small pot, it still provides a starting point for backyard farmers with limited growing space available. Photo by Dave Cito under the Creative Commons Attribution License 2.0.

A few examples include:

- Peaches and Nectarines
- Dwarf Cherry
- Apricots
- Figs
- Olives
- Grapes

Most Citrus	Almond
Mulberry	Strawberries
Blueberries	

Note that other types of fruits, nuts and berries will also work in containers; this is just a selection of the most popular types. Keep in mind that each type will usually have different varieties within their group. Some of these may be more adaptable to container planting than others. With the recent boom in container gardening, there are now some varieties being created *especially* for use in containers.

Caring for Your Container Plants

When selecting your bushes, plants and trees, keep in mind that they will all have various needs in container growing which can differ from when they are planted directly into the ground. There may be a difference in fertilization, pruning needs, watering needs and required soil nutrients, to name a few. You will also need to be prepared for the possibility of multiple transplantings over the years, until the plant or tree has reached maturity. As the plant or tree grows, so too does the root system; you do not want the plants to become root bound, especially the trees. If you see roots coming out of the drainage holes of your container, that means the roots

have run out of space and the plant is becoming root bound. Moving the plant to a larger pot as it grows will provide the space the roots will need.

Don’t forget, your container plant needs the same amount of sun and the same placement as if the plant was placed directly into the ground.

This potted pineapple tree is already beginning to resemble its larger counterparts. For best results, container gardening should be used with dwarf and semi-dwarf varieties. Photo by Carly Shell under the Creative Commons Attribution License 2.0.

Finally, when planting any fruit, nut or berry, keep your overall usage goal in mind. As some varieties of some fruits may be preferable for certain uses over others, think about what you want it for when making your initial selections. For example, there are many varieties of apple, and while all are quite good, some varieties, such as Gala, Red and Yellow Delicious and Ginger Gold are preferred as fresh eating varieties, while Jonathan and Northern

Spy are excellent for culinary use, and Empire, Gala and Empire varieties are great for cider and juice.

For example, if the tree has roots that spread out, you will need a container designed to allow the roots to do just that. Usually, a 10–15 gallon container will work well for a container tree at maximum size; however, when the tree is small, a container of that size will be a bit too large.

Transplanting

As a rule of thumb, it is best to start small and progressively get larger with each transplant's container size. If the plant doesn't like to stand in water, you will need to find the balance between not enough and too much watering. Be sure to select the correct soil mix. Does your plant need a specific pH? Are there soils that they won't tolerate? Will it need to be kept at a specific temperature when indoors (during the winter months) in order for it to produce the following year? Do you need to hand pollinate? Make sure that you can provide what your plant or fruit tree needs *before* planting into a container; otherwise, you could be wasting both money and time, with little to no production as a result. If you're not sure whether or not your selection will be container friendly, inquire with the nursery person on site or online.

One of the draw backs of container gardening is that plants (especially trees) in a container or planter will be much more labor intensive and more dependent on watering and nutrients from you, the gardener, than those planted directly into the ground. If you are in an area of cold, snowy or frosty winters, the tree or plant will need to come indoors, so you must be able to move the plant or tree. Note that placing packing peanuts in the bottom of the planter (instead of stones) before adding the potting mix will make the pot lighter, as well as providing much needed drainage. If there is not enough drainage in the container or pot, the roots of your potted tree could become waterlogged, rot and die. Not having enough drainage holes, by contrast, is a minor and fixable problem,

provided you take care of it *before* you fill the container. Simply drill more holes to the bottom of the pot.

Espalier Gardening

Although container gardening is most popular among those with little garden space, if you *do* have a little patch of ground against a wall or fence, or want something a little more out of the ordinary in your container garden and have the time to learn, you may want to try espalier.

An ancient practice of controlling the growth of a tree for fruit production, the word **espalier** is French, coming from the Italian *spalliera*, which basically means "something to rest the shoulder against." In basic terms, espalier is pruning and tying branches up to a frame or wires set flat up against a wall, fence or trellis. A common example is the grapevines in a vineyard. Beginning with the Romans and refined to an art during the Middle Ages by the Europeans, espalier is making itself known once again, as part of the resurgence of the backyard urban farmer or city dweller with limited space.

Although there are many sites online and books available to help you learn about espalier, the pruning techniques required and how to maintain the trees, you may also want to check with any local garden clubs, nurseries and extension offices in your area about any classes that may be offered, to give you a firsthand look at this useful and decorative art.

In addition to allowing the gardener leeway to direct the growth of their trees, espalier gardening can also be used for decorative or artistic purposes. Photo by Leonora Enking under the Creative Commons Attribution License 2.0.

For the homesteader with limited space, container gardening can be the answer to your prayers. A lack of viable growing space can prohibit growing the more expansive varieties of fruits and bushes, but most of what you can plant in the ground, you can also put into a container. In fact, while dwarf fruit trees *can* be planted directly into the ground (and usually are), they work wonderfully in spacious containers. So, instead of giving up on your dreams of having fresh fruit in season, nestle some planters into the small pockets in your yard or the balconies of your apartment, and get growing!

CHAPTER 5

GROWING FRUIT

Now that we have discussed the basics of fruits, berries and nuts, let us take a look at the numerous varieties available to the average homesteader. In discussing the most commonly grown varieties of these foods, we'll cover how to grow them, whether they are considered a fruit, berry or nut, and any disease/pest problems that you are likely to encounter. Although these chapters barely scratch the surface of what is available, I have attempted to include a small representation of fruits, nuts or berries for most areas of the United States. You just might be surprised by what you can grow! If you're not sure if something will grow for you, or you encounter a pest or disease problem that you do not recognize, talk to local nurseries or your local extension office. They can properly direct you to the quickest and most effective solutions for your pest or disease problem, as well as providing tips on creating ideal growing conditions for all available plantings.

Note that in discussing some of the dangers your trees and bushes may face, I have included only a small sample of the diseases and pests that may plague your crops. There are a variety of solutions and control methods available, as well; should you find yourself running into problems, talk with your local nursery person or

extension agent to help identify the issue and figure out the correct method of control or eradication.

Apples

A part of the rose family, the cultivation of apples originated in Central Asia, where their wild ancestors are still grown today. Grown in Asia and Europe for thousands of years, the apple was brought to America by early colonists, and is today the most widely cultivated tree fruit, with more than 7,500 known cultivars.

Although they *can* be grown from seed (usually the wild varieties), apple trees are usually propagated through grafting. In fact, most apple trees sold commercially are grafted; meaning the scion (the top portion that bears the fruit) is attached or grafted to the root.

When growing apples at home, you will need to select your variety according to what you want to use the fruit for—cooking, eating raw or cider. The variety chosen also needs to fit your location, proper bloom time and pollination needs. For proper pollination, at least two different varieties of apple tree are necessary for maximum quality and production. Make sure to do your homework, as some varieties will produce sterile pollen, making them useless for cross pollination.

Planting

When planting your trees, keep in mind that they will need full sun to grow properly, and should not be shaded by other trees or buildings. If the trees are being planted in the lawn, remove grass or weeds from an area approximately 4 feet around the tree, so that the young trees do not have to compete for water and nutrients. You will also need to keep them out of frost pockets, as cold air can kill the blossoms. Good airflow is also important. If the soil pH is fine, and there is plenty of water and nutrients, apple trees will tolerate a range of soil types; however, they cannot tolerate standing water in

their root area, so it is important to avoid low spots and areas with poor drainage.

One of the most iconic fruits in the Western world, the apple tree remains one of the most popular fruit trees for established backyard farmers. Photo by Alessio Maffeis under the Creative Commons Attribution License 2.0.

When you are ready to plant your new trees, they should be about a year old, and around 4–6 feet in height. Dig a hole about twice the size of the root ball and 2 feet deep. Spread the tree roots on loose soil, being careful not to twist or crowd the roots. Begin to carefully replace the soil, firming it to rid the planting of any air pockets. Continue until filled, pressing the soil well, and making sure that the graft is at least 2 inches above the soil line, as you do not want roots starting at the scion. Water well. It is important to note that adding fertilizer during planting can burn the roots.

Precisely when your apple trees will reach maturity depends on the variety chosen, as well as the climate; however, it will normally

take 4–5 years for the tree to produce. When your tree does finally begin producing fruit, you will notice that for each flower, there is a cluster of 5–6 blossoms. When the tiny apples begin to form (about the size of a dime) you should consider thinning the blossoms, leaving one fruit per cluster. Otherwise, the tree limbs may not be able to support the weight of all the fruits. Reducing the number of fruits will also help to cut down on disease and pest problems, as well increasing the overall quality of your yield.

Proper pruning is another way to develop a small tree into one that will support heavier fruit production. Regardless, pruning is essential for the development of a strong tree. Once again, your local nursery or extension office should be able to assist you.

Diseases and Pests

There are a number of diseases and pests that you may need to contend with when growing apples, whether you're tending a few trees or an entire orchard. The following are a few of the more problems that you may encounter as an apple grower:

Mildew: More common in the spring, the flowers, leaves and shoots will have light gray patches of powder. The flowers will also develop a cream-like color and will fail to develop correctly.

Aphids: These tiny insect pests will feed on the foliage and suck out the plant's juices. If there are a high number of aphids infesting your tree(s), it can reduce the overall growth of the plant.

Although you may have already run into aphid problems with other plants, the following aphids are common to the apple:

- Apple grain aphid
- Rosy apple aphid
- Apple aphid
- Spirea aphid
- Wooly apple aphid

Scab (Apple Scab): Leaves will develop olive-colored brown spots with a velvety texture, which will slowly turn brown with a cork-like texture, with the fruit developing similar spots. This will spread during a warm spring, infecting new growth.

Apple Maggot: Also known as the railroad worm, the apple maggot can affect other fruits as well, but is mainly an apple pest. The actual damage is caused by the larvae feeding on the flesh of the fruit. The adult will lay their eggs inside the fruit, leaving the worm to consume it, causing bruising, decay and eventually dropping before the fruit ripens. It may be worth noting that the braconid wasp is an enemy of the apple maggot.

Wildlife: As with most foods that you will grow, wildlife is always a challenge. Deer and wild pigs enjoy apples (pigs will eat those that have fallen) and depending on where you live, you will probably have other critters to contend with. Fences will help with some of the large animals; however, some of the smaller ones may be a bit more of a challenge. As with other problems, your local nursery or extension office should be able to direct you.

Strawberries

Strawberries are part of what are commonly called the “small fruits,” and are one of the most important and popular fruits grown in the Western Hemisphere. Found in every state, whether cultivated or wild, the strawberry is part of the rose family, with all strawberry varieties belonging to the fragaria genus. What we think of as the berry (although the strawberry is not technically a berry) is in actuality the enlarged ends of the plant stamen. The seeds of the strawberry are underneath the crown of the fruit (cut off the top to see for yourself), and what we think as being seeds (those little dots on the outside of the fruit) are actually the plant’s ovaries, a separate fruit with a seed inside of it.

The strawberry is discussed in ancient Roman literature as being used for medicinal purposes. By the 1300s, the French were

transplanting the woodland varieties to their home gardens in an attempt to domesticate this tasty fruit. Before the garden strawberry, the wild strawberry (and cultivated variations from the wild type) were the usual source of this fruit. By the mid-1500s demand for strawberry farming grew to new heights in England, with written instructions for growing and harvesting strawberries becoming widely available by the late 1570s. The first actual garden strawberry was bred in Brittany, France in the 1750s, and was a cross between the eastern North American *fragaria virginian* and the Chilean *fragaria chiloenisis*; the resulting hybrid was the strawberry that we have today.

Although strawberries can be grown from seed, today the plants are usually propagated from runners, before being sold as plugs (small plants in soil) or as bare root. The flowers of the strawberry plant function as male or female; in other words, they are hermaphroditic.

Despite the common misconception labeling the strawberry as a true berry, it remains among the most popular fruits grown on the North American continent. Photo by James Lee under the Creative Commons Attribution License 2.0.

The strawberries of today differ in size, color, flavor, hardiness, fertility, disease resistance and ripening time. They fall within four overall categories: June-bearing, day-neutral, everbearing and Alpine:

June-bearing produce in the summer and have lots of runners, which in turn produce more plants. Due to this abundance, June-Bearing plants need sufficient space to spread, and are best grown in a garden or raised bed. An example of a June-Bearing strawberry is a “jewl.”

Day-neutral will produce small crops, but will produce all-season long. Although they do have runners, it is nothing like the June-bearing varieties, making the day-neutral an excellent choice for containers and hanging baskets. An example of a day-neutral strawberry is a “seascape.”

Everbearing produce in both spring and late summer; however, their production may not span this entire time frame. As a result, the time in between may result in little to no fruit production.

Alpine are basically improved versions of the wild strawberry. Small and sweet, the plants will produce from spring to fall. Alpines are good for hanging baskets, containers and even herb gardens. As they can produce in even partly shaded situations, Alpines are great for gardens in warmer southern climates. The Alpine was a favorite of Thomas Jefferson and was grown at Monticello.

Planting

For the most part, strawberries don’t require a lot of space (unless you are planting June-bearing varieties). They can be grown in a traditional garden, a raised bed or a container. However, the easiest way to grow strawberries is in a raised bed with plenty of sun and good drainage. June-bearing plants should be planted 12–18 inches apart, while the day-neutral, everbearing and Alpine varieties should be planted 8–12 inches apart.

When growing strawberries in a container, the bigger the container, the better. That being said, if you are using an over-large container you run the risk of it being nearly impossible to move once it has been filled with soil and plants. To avoid this, make the pot lighter by filling it halfway with packing peanuts before adding soil—strawberry plants have a shallow root system, making this both safe and practical. Some even fill their containers partway with aluminum soda cans, although I have not personally tried this. This will not only make the container lighter and easier to move, you will also use less soil, saving money in the end.

If you live in an area where there are cold/freezing winters, the container will need to be brought indoors into a basement, garage or barn. If your plants are in the ground and cannot be transplanted, just cover the plants with a few inches of straw. During the next season when you return your container outdoors, thin the plants as necessary to prevent overcrowding and add new compost to freshen up the nutrients. When watering your strawberry plants (whether in the ground or in a container) water only the roots, as watering the leaves will encourage fungal growth.

Diseases and Pests

The pests that commonly plague strawberries are pretty much the same as those that afflict other fruits—slugs, moths, fruit flies, deer, etc. Protected raised beds or planting in containers will help combat raids from the local wildlife. Those that pose a specific danger to new strawberry plantings include:

Strawberry Aphids: One of several species of aphid that can plague the strawberry patch, the strawberry aphid transmits viruses from one plant to another (including strawberry crinkle virus and strawberry vein banding virus, to name a few). The aphid is pale green to yellow in color, and covered in small hairs with knobby ends, making it unlike other aphids. The hairs are only visible under magnification, so making use of a magnifying glass will greatly assist with identification. In order to keep the viruses the aphids

spread under control, you need to eliminate the aphid. Aphid activity can begin early in the season, so make sure you begin your pest control early.

Although there are many suggestions available online and in books, those new to growing strawberries are best advised to discuss strawberry aphid control with your nursery contact or extension agent to determine the best way to attack or prevent your problem.

Strawberry Sap Beetle: One of a number of sap beetles, the strawberry sap beetle ranges from ⅛–¼ inch in length with an oval shape and distinctive knob ended antenna (a characteristic of all sap beetles). They can be attracted by and found on both fruits and vegetables that are overripe, fermenting or already damaged.

In terms of pest prevention, trapping has been found to work using fermenting juice, overripe fruit or even beer as a trap (always outside of the garden, and a few feet away). In addition, precautions on your part may be taken as well, including the vigilant removal of overripe, damaged or diseased fruit, denying the beetle a food source. Other methods available for eliminating the beetle can be discussed with your nursery person or extension agent.

There are a number of diseases common to fruits that afflict strawberries as well, including powdery mildew (see this page). The following are infections that are not necessarily specific to strawberries, but are common occurrences:

Leaf Spot (Strawberry Leaf Spot): A common and widespread problem, the “spots” of strawberry leaf spot are found on the upper leaf surface. Small, round, and dark purple to reddish in color, the center will eventually turn tan to near white, with the edges remaining purple. If there are too many of these spots, leaf death will result. Leaf spot can also infect leaf stems, runners and strawberry caps. Infected ripe fruit will have black spots surrounding the “seeds.” The flesh under the spots will also be discolored, but without rot or decay. Although infected fruit may have up to eight of these “spots,” the usual number is two to three.

Black Root Rot: This disease is caused by an interaction of fungi, harmful nematodes and environmental problems. Symptoms usually appear within the first year, and are more common when strawberry plants are in low or compact soil areas with poor drainage. Symptoms include lack of vigor, poor runners, small fruit and collapsing plants during spring growths, as well as during fruiting and other times of high water demand.

To check the plant's roots, dig up a sample. Infected roots may have rot at the tips or appear mottled with black lesions on white roots. In the early stages of black root rot, the root will still be white, but will become black inside and out once the infection becomes more severe. As black root rot favors wet soil and soil low in organic matter, good site selection and management are important.

Gray Mold: This is a common fruit rotting problem, particularly prevalent during blooming time. Also common with ripening, mature and harvested fruit, especially during wet weather, gray mold is caused by fungal spores germinating and infecting blossoms and leaves during cool, wet conditions. Symptoms are not usually obvious until the leaves begin to die. The spores will continue to appear on the dead and dying leaves.

Blossoms and fruit become infected (usually) during heavy dew, rain or overhead watering. Infected blossoms are the primary reason for fruit infection, with the flowers being most susceptible when open, reaching peak vulnerability 2–3 days later. Gray mold attacks the petals, stamens and pistils, but *not* the sepals, infecting one or all blossoms, which will then wilt, turn brown and die (this is called blossom blight). The infection remains until the fruit ripens and the fungus becomes active once again. Discoloration of the fruit is a symptom, and those which do not fall off will shrivel, dry and turn into a strawberry "mummy," with the fruit becoming covered with gray powder fungal spores. These spores in turn can be spread by wind and rain.

Prevention methods for gray mold include good air circulation around the plants, proper placements of plants, removing dead and

rotting fruit, plants and roots, as well as gentle handling of fruits both during and after harvest.

Rhizopus Rot: Symptoms of rhizopus rot include discoloration of the fruit and water sealed spots with rapid enlargement. The fruit will become leaky, limp and brown. Rhizopus rot stops growing at temperatures below 46–50°F: therefore, rapidly cooling harvested fruit is a must in preventing rhizopus rot. Field sanitation, cleaning up discarded plants and fruits and the removal of all ripe fruit can help fight this disease.

Cherries

A stone fruit, the words "cherry" (English), *cerise* (French) and *cereza* (Spanish) all originate from the classical Greek, by way of the Latin *cerasum*. The earliest reports of cultivated cherries indicate that in 72 BCE, cultivated cherries were already being exported from northeastern Anatolia to Rome.

There are two types of cherries—the **sweet cherry** and the **sour cherry**. (For those interested in a fruit tree that will grow in a small area or container, there are also dwarf cherries, which can be grown in tight spaces.) The sour cherry is best used for cooking, baking and canning, while the sweet cherry is best for fresh, raw eating. The sour cherry tends to be easier to grow; however, most cultivars are sweet cherries, with many varieties existing within that group. In its raw form, the sweet cherry contains significant fiber and vitamin C, while the raw sour cherry is even higher in both vitamin C and vitamin A content.

Planting

The best time to plant a cherry tree is in the spring, although planting can be done in the fall. Both sweet and sour cherries are not overly fussy about soil type, but good drainage is a necessity; neither variety will grow in clay. When filling in the hole after planting, you will need to make sure that the soil is firm around the

newly planted tree, with no air pockets around the roots. Again, good drainage is an absolute must. Without it, you risk the loss of the tree.

While not one of the most prolific fruiting plants, both the sweet and sour cherry varieties can provide a great deal of use to the creative cultivator. Photo by Yu Jeen under the Creative Commons Attribution License 2.0.

Cherry trees are not self-pollinating, but will not cross-pollinate either. In other words, a sweet cherry is needed to pollinate a sweet cherry, and a sour, a sour. The exception to the rule is the Duke variety, which is a sweet/sour hybrid; both sweet and sour tree can be used to pollinate these trees.

Pruning should be done at planting time, as well. A discussion with your nursery contact or area extension agent should be of great help in guiding you to the correct way to do the initial pruning. In

addition to having a short growing season, it will take 3–4 years on average for the cherry tree to produce its first fruit.

Diseases and Pests

Of course, the cherry also has its problems. A few examples follow:

Winter Kill: Sweet cherries are susceptible to winter kill when there is an extreme temperature drop, although it usually will not show until summer. The bark will shrivel and split, separating from the tree with the cambium layer (the layer of living material right under the tree bark) killed. In the end, this is usually due to poor drainage.

Cracking: This is when the skin of the cherry cracks and bursts, usually as a result of rain after a dry period.

Black Cherry Aphid: This tiny insect will cause the leaves of the cherry tree to curl. It will also leave a residue on both the leaves and fruit, called **honeydew**, rendering the fruit unmarketable.

Pears

One of the world's oldest cultivated fruits, there are over 3000 known varieties of pears worldwide (according to the Pear Bureau Northwest). Easy to grow and hardy, some say that pears are even easier to grow than apples, albeit with less versatility and fewer varieties.

The pomaceous fruit of the pear, while not as popular as its family member the apple, still remains a viable choice when planting your home garden. Photo by Mary Madigan under the Creative Commons Attribution License 2.0.

A member of the tree and shrub species known as genus *Pyrus*, pears are **pomaceous**, meaning that the fruit is produced by a flowering plant of the sub-tribe *Malinae. Pom* comes from Middle English (meaning fruit), which evolved into the Anglo-French *pomme* (or *pume*) and the Latin *pomum*.

Pears have had their places in history. In Homer's *Odyssey*, Homer refers to the pear as a gift from the gods. The early Romans developed over 50 varieties of the pear, as the fruit became a very valuable and desirable item on the ancient trading routes (due to its long storage life and versatility). Native to coastal and mild-temperate areas, pears have been found in western Europe, northern Africa and across Asia. The genus is thought to have originated in the Tian Shan foothills of central Asia (China), spreading and

evolving throughout the mountains until a group of approximately 20 primary species of pear were developed. Others theorize that the pear originated between the Caspian and Black seas; the actual origins of the pear are not quite certain.

As stated, the pear fruit is a **pom**, with the shape varying by species—from being flat at both ends in an oblate shape, to the classic gourd-like pear shape.

The flavor of the pear varies greatly between varieties, ranging from sweet to sour. Up until the sixteenth century, pears were actually considered good only for culinary use. It wasn't until the seventeenth century, when "modern" pear cultivation was flourishing in Europe, that the pear actually became fit for eating fresh and raw. Today, the European pear, Chinese White pear and Nashi pear account for most of the edible (raw) pear production. In the states, the three most popular varieties are Bartlett, Bose and Seckle pears.

Most pear trees are **deciduous**, meaning that they shed their leaves every year (with the exception of a few species of Asian pears that are evergreens). And, although most pear trees are cold hardy, viable in temperatures anywhere from −13–−40°F, the Asian evergreen varieties will only tolerate cold down to 5°F. Therefore, it is wise to keep your region's climate in mind when selecting pear varieties to grow.

The leaves of the pear are alternately arranged, with their color and shape varying with variety. The flowers are normally white, and composed of five petals, with an occasional pink or yellow tint. Unlike apples, the fruits do not need thinning. Keep in mind, however, that all pear trees need cross pollination to flower and fruit, so it will always be necessary to have at least two viable trees.

Planting

Although pear trees do prefer well-drained soil, they will also acclimate to poor soils, such as clay and loam. They will also tolerate a bit of "wet feet," but keep in mind that planting trees in poor soil can result in a sour, bitter or dry fruit. Also, keep in mind

while planting that your trees will need good air circulation to help prevent disease and frost damage, so refrain from packing multiple trees tightly or planting too close to other trees.

You may discover that your pear tree requires fertilizing; however, too much of a good thing can sometimes have negative consequences. While fertilizing will stimulate strong growth in your trees, it will also make them more susceptible to blight. Before deciding to fertilize, make sure that it is actually necessary. If twig growth is around 10 inches and the foliage is dark green in color, your trees are doing well and require no fertilization. In fact, you will probably find that your trees will *not* in fact need fertilizing (or need it only rarely) and can do well without.

Pear trees are normally propagated through grafting the chosen variety onto either the rootstock of another pear or on a quince tree (which is desirable to many as it produces a smaller tree).

Harvesting

Pears should always be picked before they are ripe. Although you might think this would cause some problems when deciding when to harvest, in practice it is really quite simple. The most common way to tell if a pear is ready for harvesting is to physically lift the fruit. If the stem detaches itself from the branch, it was ready—not quite ripe, but ready to pick. There is one exception to the ripening rule—the Nashi pear's fruit is generally allowed to ripen on the tree before harvesting.

Ripening can be easily done after picking, simply by covering the fruit with newspaper and storing it in a cool, humid area, with the fruits ripening best at 65°F and at 85 percent humidity (give or take). Pears also ripen inside out, but their ripeness is still quite easy to check, by gently applying pressure around the stem of the pear. If it gives, the fruit is ripe. If faster ripening is necessary, place a few pears in a bowl with bananas, which will expedite the ripening of the pears. If you need to slow the ripening process down, refrigeration will do so. When storing your pears, if you find that they are not keeping well, they were probably picked too late.

Disease

Like any other fruit, pears and pear trees can have their problems, including disease and pesky pests. Some things are easily remedied, such as mealy flesh or a rotted core (both of which mean that the fruit was simply picked too late). But along the way, you will probably have to contend with some more serious issues, as well. Let's look at a few of the most common:

Pear Scab: Also known as **black spot**, pear scab is a fungal disease which basically causes round, brown spots on the leaf's upper surface, which later turns a velvety black and releases a spore packet, allowing the disease to spread throughout the tree. One of the easiest ways to prevent pear scab is to water your tree at ground level, allowing the foliage to remain dry, leaving less at risk for fungus (which love wet areas).

Leaf Spot: Found on petioles, leaves, fruits and shoots, leaf spot defoliates the tree, dwarfs the fruit and makes it both useless and unmarketable due to disfiguring and cracking.

The lesions begin as tiny, round, black spots on the leaves, which then enlarge to reveal black/brown centers. Fruit lesions are larger, and will make the pear crack and drop while lesions of the shoots may develop into a canker. However, the following year's growth will usually prevent canker from happening. Leaf spot may be controlled with a fungicide.

Fireblight (Fire Blight): This disease is contagious, and under optimal conditions can destroy an orchard within a single season. While this blight does affect other fruits, pears are among the most susceptible.

The disease site will appear shrunken, black and cracked, with dry leaves. Injured tissue is highly susceptible to fireblight, which can spread quickly during hot, wet weather, going dormant in the winter and then returning again in the spring. Finally, once the roots have been affected, it usually means death for the tree. If you suspect fireblight and you are new to raising pears, it is best to consult with a local extension agent or nursery.

As fireblight tends to be a real problem in pears, beginners may prefer to select those varieties which are fireblight resistant, such as the Seckle pear.

As a side note, Asian pears (which we referred to earlier) are seeing more and more inclusion in homesteads today. Easy to grow, similar to regular pears and delicious, juicy and crisp, Asian pears look more like an apple than a pear. Unlike regular pears, Asian pears *do* need thinning, the same way apples do. Among the more popular varieties are Hosui, Kosui and Twentieth Century.

There are also some varieties that are used as ornaments, such as the Bradford pear.

Peaches

Originally called the "Persian Apple," the peach is a deciduous tree native to northwest China. Both the tree and the fruit are called peach, and with proper care, is extremely easy to grow.

As the peach came to Europe from Persia, the botanical name for it is *Prunus persica*. Originating in China, the peach was said to be the favorite fruit of emperors, and is mentioned in Chinese writings going back to the tenth century.

By 300 BCE, peaches had reached Greece, accompanying the march of Alexander the Great's armies, and made its way to the Romans 200 years later. In fact, the oldest known artistic representation of the peach can be found on wall fragments dating to the first century CE.

The peach was then brought to the Americas by the Spanish explorers in the sixteenth century. The early seventeenth century also saw the peach brought to the colonies by George Minifie, an English horticulturalist who planted the tree at his Virginia estate.

Commercial production began in Maryland, Georgia, Virginia and Delaware in the nineteenth century, and today can be found growing commercially in California, South Carolina, Georgia, Virginia and Missouri.

Planting

There are two classes of varieties of peaches: the **clingstone**, whose flesh sticks to the stone or pit (which is also the seed) that is found in the middle of the fruit; and the **free stone**, which does not. A new peach tree may be started from these seeds; however, it may not grow true to the parent tree (meaning the same as the parent tree), so grafting is usually used for propagation instead.

The fruit will have yellow or white flesh, and is smooth to the touch with occasionally velvety skin—all of which depends on variety cultivated. While it grows, the fruit should be thinned like an apple tree, as the tree will set more fruit than it can handle. The fruits should be thinned 6–8 inches from each other. Nature may lend a helping hand in this phase, by letting small fruit drop to the ground; however, you will still need to check for any small, misshapen or closed fruit yourself.

Peaches will grow in just about any soil, provided it has good drainage—peaches don't like to have "wet feet." The peach is normally self-pollinating, so single trees may be planted. The tree will need little pruning for the first few years. The leaves are long and broad, with flowers showing in the early spring, before the leaves. They may grow single or in pairs, being pink in color with five petals per flower.

Because the peach is amenable to most types of soil, easy to care for and easy to harvest, this well-known fruit is valued for far more than just its flavorful taste." Photo by wisegeek.org under the Creative Commons Attribution License 2.0.

The peach has a range of hardiness levels, with some varieties being more cold-hardy than others. As a general rule, peaches will seldom do well below −15°F. It might also be at risk from early freezes, as the tree will break from its dormancy as soon as a bit of warm weather happens, leaving it vulnerable to late cold snaps and frosts.

Harvesting

Your peaches will be ready to harvest when the fruit changes from green to yellow, with a blushing color on about a quarter of the sphere. However, this is a subjective judgment, and not always accurate. The *best* way is to gently twist the fruit on the tree. If it comes off easily, it is ready; if not, leave it on the tree for a bit longer. Should you find that some of the peaches you have picked are still not ripe (or not ripe enough), simply store at room

temperature until ripe. Do not refrigerate, as this could cause the fruit to lose taste and texture. Should you need your fruit to ripen faster, place a few peaches in a brown bag alongside a banana, and leave the bag on a countertop. This will hasten the ripening of the peach. When the peach is ripe, you may then feel free to refrigerate; however, it will taste best when allowed to come back to room temperature before eating.

When slicing peaches, note that they may brown if they are left sitting out. To help prevent this, place the slices or halves in a bowl with a little lemon juice.

Diseases and Pests

Although there are a few diseases that can affect the peach, you may still encounter some problems along the way. These are two of the most serious ailments that you need to concern yourself with:

Bacterial Spot: A serious disease affecting peaches (as well as other fruits and vegetables), bacterial spot is caused by the bacteria *Xanthomonas arboricola pathovar pruni*. The disease favors conditions that are hot, wet and dewy, and will also perform well in windy and sandy conditions; furthermore, the disease can be very difficult to control when the conditions favor its spreading. It is worth noting that the affected peaches are perfectly fine to eat; however, you will need to cut the spots out (and they will have no marketability).

Symptoms of bacterial spot include spots on the fruit and leaves, as well as tree cankers. The fruit symptoms include cracking, pitting and water-soaked tissue. This can also make the fruit more susceptible to brown rot. A severe infestation of bacterial spot can result in early defoliation of the tree, which in turn will result in reduced size, cracking and sunburn of the fruit, and a reduction in winter hardiness (which can affect the all-around vigor of the tree).

As there can be difficulties with control and treatment, if you suspect bacterial spot it is advised that you contact your local nursery or extension office, so that they can assist you in finding the correct action to take for your specific situation. Unfortunately,

there is no tried and true method of either treatment or prevention, so it might be beneficial for new growers to steer more towards disease-resistant varieties, such as Blazing Star, Southern Pearl and Vulcan.

Brown Rot: Another serious disease of the peach that destroys the blossom and shoots while infecting the fruit, brown rot is a fungus that can be devastating under the right conditions—wet, with 60–70˚F temperatures. Brown rot begins early in the season, first appearing on blossoms or stems. Early symptoms that aid blossom detection includes blossoms that turn to mush, forming a spore mass on the branch, which will eventually lead to canker formations on the tree. Infection of the fruit includes a small brown rot spot, which in turn undergoes rapid spore growth over the entire fruit, leading to mummification on the tree. Removal of the bad fruit (which you should make sure to either burn or bury deep) may help to break the life cycle of the fungus, but the possibility remains that it may overwinter in the tree. It is suggested that you contact a nursery or extension office to figure out the correct fungicide for your needs. It may also help to select those peach varieties that are less susceptible to brown rot, such as Elberta or Glohaven.

As most stone fruits are at their highest susceptibility to brown rot during their ripening stage, this is the time that you will need to be most vigilant (although you will still want to watch for early infection, just in case).

Other Problems: Sometimes, what you think may be a disease, isn't at all, but another problem:

Flat Taste: Should your harvest not have a very good taste to it, your fruit was most likely picked too early. Next time, let it remain on the tree to ripen a bit more before harvesting.

Split Pit: If you find that the pits inside your peaches have split, the most likely cause is insufficient pollination. There isn't too much that you can do about this, except for possibly trying to attract more pollinators to your yard or orchard. Talk to your area extension

agent to see what you can do to attract more pollinators to your trees.

Plums

The plum is a stone or **drupe fruit**, of the genus *Prunus* and subgenus *Prunus*. There are many species of plum, but only the European and Japanese plum have become commercially significant, and so we will restrict our focus to these varieties.

Plums are thought to have been one of the first fruits domesticated by man. Believed to have been discovered approximately 2000 years ago, in the Caspian Sea region, there were over 300 European varieties noted during ancient Roman times. The Japanese plum (which actually originated in China) gained its name due to the fact that cultivation and development of the fruit took place in Japan. In the seventeenth century, the Pilgrims brought plums with them from Europe to the New World, where they planted them in their new homes and gardens.

Planting

The plum is hardy, and performs well in northern climates, while being widely adaptable to other environments. Needing only well-drained soil and a little pruning to start, plum trees prefer full sun and sheltered positions, if at all possible, as it helps to the fruit set easier. It is also very important to do your research when selecting a type to grow, to make certain that it will work best for your situation and garden.

As the tree grows, more pruning will be necessary to prevent branches from breaking (due to increased weight). Bear in mind that you will also need to plant varieties that are self-pollinating, or else cultivate additional trees of compatible strains to allow for cross pollination. It can take 5–7 years for plum trees to develop fruiting capacity, and 3–4 years for fruiting to actually begin.

The plum tree has terminal buds and solitary side buds, instead of clusters of buds, located anywhere from on the flower itself to groups of five on short stems. A groove runs down one side of the fruit itself, and the mature fruit may have what is called a “wax bloom” on it, which is the whitish film that you may recognize. The pit is smooth, unlike that of the peach.

Plums are among the easier fruit trees to cultivate, particularly in view of their hardiness, but they do require a bit more attention around harvest time, as the high sugar content in plums causes them to ripen rapidly. Photo by Eli Duke under the Creative Commons Attribution License 2.0.

Harvesting and Storage

Plums have very high sugar content and are best left to ripen on the tree. To determine if a plum is ripe, check for a slight softness at the tip, which should yield to pressure. If picked before properly ripened, plums can be left at room temperature to ripen (after which

it can be stored in the refrigerator). However, if the fruit is too immature, it will not develop a good taste.

Although fresh plums do not store very long, they may be frozen, canned, dried, or made into wine (which will preserve the flavor of the fruit). Should you decide to freeze your plums, the pit should be removed to maintain maximum flavor.

Diseases and Pests

Brown Rot: If the weather is too wet, or the plums on the tree are overripe, they may develop brown rot. As with other stone fruits, brown rot is caused by a fungal disease and can devastate a crop.

The fruit is most susceptible to brown rot during the 2–3 weeks before harvesting, as the plum ripens and the sugar content increases. The twig may also become infected through infected blossoms, in a similar way that the peach tree becomes infected through clinging blossoms (which result in a canker). However, it may also become infected directly, along with its shoots, during extended periods of warm and moist weather.

Although the best way to handle brown rot is to contact local nurseries or extension offices so that they can assist in figuring out the best method to help your trees, planting plum trees in an area of good air circulation, and maintaining good sanitary practices (such as removing and discarding infected fruits and twigs) can help in prevention.

Black Knot: Black knot is a fungal disease that stunts a tree's growth, eventually causing the tree to lose all value. The black knot itself is a wart-like knot, which will be visible on afflicted branches.

The first indication of black knot is swelling on the small twigs, at first being green and soft, then becoming hard and black—hence the name black knot. The infection spreads via the spores produced on these knots, which are then carried away through any number of means. The infection begins in spring and will continue through to the fall.

Although it is best to discuss ways of elimination with a nursery or extension agent, there are a few things that you can do to help stop the spread of the fungus, such as removing the knot (by removing that section of the branch containing the knot, at least 3 inches from the knot). Never plant new trees near older trees that you know or suspect may be infected with black knot. In the worst case scenario, removal of the entire tree may be necessary. Finally, if you are putting in new trees, look for disease resistant strains that are a fit for your region or specific location.

CHAPTER 6

GROWING BERRIES

Berries make for a fun addition in the garden. And, because there are so many varieties, it can be just as much fun to pick out the ones that you want for your garden or homestead as it is to grow them and eat them!

Blueberries

Second only to the strawberry in popularity in the United States, the blueberry is one of the few native North American fruits, eaten by Native Americans for hundreds of years. The blueberry may be found in cultivated, semi-wild or wild varieties, with the wild (or low bush) being prized for its intense color.

A perennial flowering plant, the leaves of the blueberry may be deciduous or evergreen, with the flowers bell-shaped, and either light pink or red in color. The berry is typically 0.2–0.63 inches in size, with a flared crown on the end. As they mature and ripen, the berries go from green to a reddish purple, and finally to the familiar dark purple/blue color. The berries may be covered in a powdery epicuticular wax, also called the **bloom**, which acts as a protective coat.

Sweet when ripe, blueberries are wonderful when fresh, and can also be frozen (without losing their cancer fighting antioxidants). They can also be puréed or dried, as well as made into jams, jellies and wine.

Blueberries, similar to plums, benefit from having a waxy bloom covering, which acts as a protective coat and preserves the ripeness and viability of the fruit. Photo by Liz West under the Creative Commons Attribution License 2.0.

Planting

The soil for the blueberry plant should be well aerated, moist, high in humus and acidic. When selecting which variety to grow, select the proper type for your location/area. Keep in mind that, while some blueberries are self-pollinating, others will need a secondary plant for successful pollination. When in doubt, the nursery tag a purchased blueberry bush will usually provide this information for its specific variety. If not, consult with a nursery contact.

There are three main varieties of blueberry, with a number of different types within each main category. They are:

- High bush
- Low bush
- Rabbiteye

The high bush is just as it says—blueberry varieties in which the berries grow on a high bush. There are both northern and southern varieties. If planting more than one of these bushes, plan to plant them at least six feet apart.

The low bush is very hardy and stays low to the ground, with small, sweet berries. The low bush type is best for northern areas. If planting more than one low bush, plan to plant them each at least two feet apart.

The Rabbiteye are smaller than the high bush and ripen later in the season. Rabbiteye make for a good choice in southern areas. If planting more than one Rabbiteye, plant them each 15 feet apart.

The peak time for blueberry harvesting can be anywhere from May to August, depending on the plant's maturity and your location. The longest blueberry harvest season on record is in the state of Georgia, beginning in late April and ending in July. For a prolonged harvest, plant bushes that mature at different times, if possible. Although larger farms may use machinery to gently shake the berries off the bush, hand picking is still employed as a viable method of harvesting, and is the method that the home grower should most likely use.

Diseases and Pests

As with all plantings, blueberries have their problems with disease and pests. A sampling of the diseases and pests that the blueberry is prone to includes the following:

Mummy Berry: Caused by a fungus, mummy berry is a serious problem for afflicted plants. The first signs are the flower clusters turning black and then eventually dying. As the spores of the fungus

may linger, you run the risk of the remaining blossoms becoming infected as well. The mummy berry gets its name from the fruit turning tan, then hardening, like a mummy.

Botrytis: Another fungus, botrytis thrives in damp conditions, causing the fruit to shrivel and rot.

Powdery Mildew: Caused by *Microsphaera vaccinii*, a fungus that affects only blueberries, powdery mildew will rarely cause serious harm to the plant. Seen on infected leaves, usually in late summer, full sun, good airflow and enough space between plants will help prevent this problem and reduce its potential to spread.

Japanese Beetle: A common insect that you may also see on other plants, the Japanese beetle will normally feed on the leaves of the blueberry bush. However, they may sometimes decide to feed on the fruit as well, which is when real losses may occur. Loss of the plant may also occur if the beetle has eaten too many leaves, which weakens the plant. This damage will also leave the plant much more vulnerable to winter injury as well. The best time to try controlling the beetle is at the adult stage.

Although there are traps for Japanese beetles, these may end up causing more problems than they solve. As these traps rely on sweet bait, they can actually attract *more* of the insects than you started with. The best method is to remove the beetles by hand and drop them in soapy water—a job well suited to children looking to help out in the garden.

Birds: Although not a pest per se, you will find that birds absolutely *love* blueberries. If you don't cover your bushes with bird netting, you may find yourself in a race to see who gets to the harvest first!

Grapes

Domestic grape cultivation began approximately 6000–8000 years ago in the Near East, before spreading to ancient Egypt, Greece, Rome and Phoenicia. From there, production spread to other

European areas and North Africa, before arriving finally in North America.

There are three classes of grapevines:

Vinifera: Referring to the varieties of the *vitis vinifera* genus.

American: Referring to those varieties native to North America, or which have native ancestry.

Hybrid: Referring to vinifera/American crosses.

Most of the grapes cultivated throughout the world today are vinifera. Some of the most common examples of this class are chardonnay, merlot and Riesling grapes. The American varieties are known to usually be cold-hardy and more disease tolerant, but less versatile in their uses. Some of the most common examples of these varieties are Concord and Niagara. Hybrids, then, will ideally combine the quality of the vinifer (for a fine wine) with the hardiness and production of the American. Examples of these varieties are Cayuga White and Vidal.

Grapes can grow in clusters of up to 300 berries, with colors ranging from black to dark blue, yellow and green. They can grow in many areas of the country, but you will still need to select the best variety for your particular area. A good nursery (as opposed to a big box store) or your local extension office should be able to assist you in choosing the best variety for you, based on your area and your reason for growing—food or wine—as well as any on-site specific issues that you may encounter.

Planting

When growing grapes, it's all a question of location, location, location. Grapes need full, all-day sun, well-drained soil, good air circulation and a weed-free growing area, so that the vines do not need to compete for water and nutrients. If the vines are in too much shade, they may become spindly or weak, resulting in smaller,

tasteless grapes. If the vines are planted in an area of the yard subject to cold patches, they become susceptible to frost damage in the spring, while planting in areas that are too low-lying leaves the vines vulnerable to winter damage.

Plant young, bare root stock (vines with bare roots) early in the spring, after the danger of frost is over. Cut the roots back to about 6 inches, which will encourage the feeder roots to grow. Prune the vine, taking all but one stem. If there are more than two buds on the stem, cut the buds back to two. As grapevine roots tend to grow deep, make sure that the soil is well cultivated. During dormant periods, select a few branches to keep, while removing the rest. Again, a good nursery or your local extension office should be able to assist you with proper pruning procedures, as good pruning gives good production.

Popularized for its use in making wine, there are now grape vineyards spread throughout the world, carefully tended to preserve the quality and taste of the end product. Photo by Tribp under the Creative Commons Attribution License 2.0.

The grape vines should be trained on a trellis (a latticed structure like a vertical fence) or an arbor (similar, save shaped like a small arch). The selected branches would then be trained to grow along and fasten to the trellis or the arbor. This is up to the grower's choice; however, the use of an arbor is really only useful when cultivating a few vines, as opposed to a small vineyard.

Overproduction

Although it's tempting to think that a grape vine "over-producing" would be a gold mine in grapes, the reverse is true. When a grape vine over-produces, it usually results in a poorer quality of fruit overall, with lesser and withered fruits serving as a drain on the plant's resources. To help eliminate overproduction, remove all poorly developing flowers or fruit clusters.

Diseases and Pests

As with most plants, grape vines are troubled by pests and disease. Examples include:

Black Rot Fungus: Black rot fungus presents as a small circle of dead tissue on the leaves. The grapes will turn into raisins and harden. Black rot is one of the most common diseases afflicting grapes.

Powdery Mildew Fungus: Powdery mildew fungus is a whitish mold that appears on the upper surface of the leaf as dust. The grapes will then crack and fall.

Downey Mildew Fungus: Downy mildew fungus presents as a small, yellow spot on the upper portion of the leaf surface, with a white fluff on the underside of the leaf, as well as on the grape itself. As the infection worsens, part of the leaf turns necrotic.

Downy mildew is more of a problem during wet years and will damage both young and mature vines, stripping them in a matter of weeks.

Japanese Beetles: Japanese beetles can be a problem with grape vines. Japanese beetle traps can help with this problem.

Birds/Deer: Birds love young grapes, and deer the young shoots of the vine. Bird netting and fencing can help with this problem. Should you also have problems with squirrels, skunks or other critters, the best option is to trap and relocate (if fencing doesn't work).

Elderberries

There are several types of elderberry, with the large shrub or trees growing anywhere from 9–30 feet tall. Berries range from red to a dark blue/black in hue, with the latter being the most edible (although not the best in taste, raw from the tree).

The elderberry prefers rich, moist soil with good drainage and is usually grown near farms and homesteads, often as a hedgerow plant. Elderberries should be planted in spring, at least 6–10 feet apart, and watered well throughout the first year.

Known for its antioxidant properties, vitamins and other medicinal values, the elderberry has been a folk remedy for centuries—not only in North America, but in Europe, northern Africa and western Asia as well.

Uses for elderberry include as a component in wines (elderberry wine played an important role in the classic film *Arsenic and Old Lace*), cordials, marmalades, relishes and of course elderberry pie!

Elderberries can have problems with various cankers, and conditions that are too wet, too dry or winter injuries can open the plant up to canker. If there are brown or wilting leaves, these branches are most likely infected with canker and should be removed or pruned out to prevent spreading. Should the trunk become infected (wood that appears "sunken"), the entire tree will

need removal. Making sure that elderberries are planted in good drainage areas will help in prevention.

Planting

In terms of planting elderberries, there's very little in the way of specialized technique or preparation. Easy to plant and relatively easy to care for, many elderberry growers simply harvest from elderberry bushes found wild on their property. For those not so fortunate, elderberries can be planted in most common soil types, and has no particular needs in terms of day to day care.

Among the most common target of wildcrafting and foraging, elderberries require little more than rich soil to maintain a viable plant. Photo by Smoobs under the Creative Commons Attribution License 2.0.

Diseases and Pests

Despite the viability of wildcrafting from existing berry bushes, elderberries are not so hardy that they are without their share of potential issues. For example, elderberries are susceptible to:

Canker: Extreme weather and climate conditions can weaken elderberry plants to the point that they become at risk for canker-causing fungi. Examples include *Diaporthe* stem canker, *Botryosphaeria* canker and *Nectria* canker, all of which appear as some variety of sunken wood or flesh on the trunk or stem of the plant. There may also be some wilting or browning of leaves. Treatment options are limited; you can either out infected branches to try and halt the disease's spread, but if the canker reaches the plant's truck, complete removal is the only option.

Powdery Mildew: Powdery mildew represents a relatively minor threat to elderberry plants (compared to some other varieties of fruits and berries) but it can weaken the plant to the point of opening it to other infections. The mildew presents as a white dusting, which will gradually turn a grayish color. In the most severe infestations, the plant's leaves may curl up and fall off, but this degree of rot is minor. Prevention of powdery mildew is primarily done by removing infected leaves and plants (in the winter, so as to limit its ability to spread). If you're seeing consistent problems with this mildew, you may be overwatering your plants. Powdery mildew needs moisture to grow and spread, so overwatering could be contributing to its continued presence.

Currants

Related to the gooseberry, the currant is a part of the *Ribes* genus; historically, it may also be referred to as a *corinths, corrins* or *currans*, among many other names. The name "currant" has been in use since the mid-1500s due to their resemblance to the raisins unique to Greece, called dried currants.

Wild currants existed in pre-colonial America, and were used quite often by the Native American population (as well as by the early European settlers). Used for eating, seasoning, baking, and for making jellies and wines (mostly by the early Spanish settlers), the

wild currant is still a treat today, with the domestic currant still being used in much the same ways.

There are different species of currant, with most falling into either the red/pink or white categories. Currants will range in color from red to pink to white, with some specific varieties (notably those of the *R. nigrum* and *R. ussuriense* families) being colored black.

Of the red varieties, the pinks are thought to be the best. However, all of the varieties are dependable, vigorous and productive. Note that red currants ripen late, while the white (which is actually also a type of red, genetically) is large with a mild flavor and is pale yellow in color. Red currants are good to eat raw, but are also made into jams, jellies, *bar-le-duc* (a French preserve) and Cumberland sauce. Black currants, which *can* also be eaten by hand, have a flavor that is often described as being good but overpowering, with varying sweetness. They are often used for preserves, syrup and liqueur.

Juicy and bursting with flavor, currants come in a wide variety of colors and tastes, to suit any cultivator's palate. Photo by Jonas Bengtsson under the Creative Commons Attribution

Planting

Currants may either be planted from seed, which will begin to bear fruit in 2–3 years, or from cuttings, which will quickly root, but will need to be kept in the shade for the first year. There is no advantage to using the grafting method to plant currants.

All types of currants are deciduous shrubs, with fragile roots that are fine, superficial and easily damaged. The plant can tolerate partial shade, and likes the morning sun (although the leaves sunburn quickly), and prefers things cool and moist. Like so many other plants, however, currants need good air circulation.

The currant prefers a heavy, rich soil, and is at risk of drying out quickly if planted in sandy soil. Pruning will keep the shrub manageable (refrain from pruning after spring growth has begun), and the currant may be trained to take decorative forms, and can serve as a topiary.

When searching for varieties to grow in your location, keep in mind that most currants are self-pollinating, although some are also partially sterile. In these cases, cross pollination will help in producing more fruit.

Harvesting and Storage

When the time comes to harvest your currants, first wait for the fruit to turn color before you start to pick. The fruit itself resembles a string or chain of small berries. Black currants will ripen from the top of the chain moving downwards, while the red varieties will ripen along the entire string at the same time. Most berries will hold on the plant, making for fresh eating; however, if you are planning on putting your currants into storage, wait about three weeks after the color comes to make sure the berries are dry *before* you harvest.

Pluck the berries by their stem to keep from damaging the fruit. Yields vary, with anywhere from 3–5 pounds of berries being produced per bush. The berries may be dried, refrigerated in a

shallow, tightly covered container (for up to four days) or frozen by spreading out on a cookie sheet in a single layer and placing in freezer. To complete the freezing process, remove the tray when the berries are just frozen, and immediately place the berries into freezer bags or containers, before returning them to the freezer. This will prevent the berries from freezing together into a huge lump.

Disease

The currant has its share of diseases and pests. Listed below are a few of the most common:

Leaf Spot: Anthracnose or leaf spot is a fungal disease spread when infected leaves fall in the autumn, allowing the fungus to penetrate the tree's tissue, developing apothecium. The ascopores ripen and are carried to new leaves, continuing the process. From the time of germination, it will usually be about 2–3 weeks before the problem can actually be seen.

Those parts of the bush susceptible to the disease will develop localized growing mycelium, which kills tissue and forms lesions. A mat will form near the center as an acervulus develops which, when mature, will rupture and release spores, furthering the disease's spread.

It is best to consult a nursery or extension agent for assistance in dealing with leaf spot.

Powdery Mildew: Powdery mildew is a fungal disease, presenting as an off-white, powdery substance appearing on leaves, shoots and branch tips, which may spread to the berries if not treated. Powdery mildew needs warm, humid conditions and poor air circulation to take hold.

Although consulting a professional is the best recourse available to a new grower for fighting off any pest or disease, powdery mildew's reach may be reduced by removing and disposing of any infected parts of the tree in the early spring.

White Pine Blister Rust: White pine blister rust is an invasive species that causes serious, usually devastating damage to the white

pine. It requires two hosts: the white pine, and either the gooseberry or the currant. The pine becomes infected by a fungus with spores that germinate and grow into the pine through stomatal openings in the needles of the pine, or through a wound. The fungus then grows into a twig, and after one or more years, rust forms as the spores contained in sacks erupt, releasing aeciospores which in turn infect the second host, the gooseberry or currant. Basidiospores are produced on the second host and are released in the fall, infecting more pines.

The importing and cultivating of gooseberries and currants was ended by the government and a ban placed against them in the early twentieth century. Although the federal government lifted the ban in 1966, there may still be some states or areas with bans on planting currants (many will make exceptions for the disease-resistant black currant strains and any wild bushes already on the property). Check your state and local regulations.

Currant Blister Aphid: The currant blister aphid is an insect that affects the currant by sucking the sap and infecting the lower leaf surface, usually in early summer, causing a distortion of the leaf. Signs of infection include the puckering or blistering of leaves at the shoot tip, and a discoloration of foliage to reddish or a yellow-green hue.

The aphid itself appears pale yellow in color and is found under the blistered areas of the plant, again in late spring to early summer.

To organically rid your plant of these little pests, spray them with an enzyme wash during the winter. Check with your local nursery to determine the best time to treat your bushes.

Raspberries

Easy to grow and care for, found in both cultivated and wild varieties, the raspberry is a perennial of the genus *Rubur*. The red raspberry is the most popular for commercial use, followed by the

black raspberry, while the purple varieties are rarely used commercially.

Most raspberries produce once per year (although there are some that are ever-bearing, meaning that there are two crops of berries per year). Examples of ever-bearing raspberry bushes are the Indian Summer and Purple Autumn varieties.

Whether cultivated on site or harvested from the wild, raspberries remain a perennial favorite with berry growers. Photo by Ben Stephenson under the Creative Commons Attribution License 2.0.

Planting

When planting raspberries, make sure to establish a growing area located in full sun. Plant the bushes very early in the spring, or in the fall (although some say that planting in the fall will open the plants up to winter injury, so keep this in mind). Soil type is not overly important, as long as the drainage is good and the soil is moist with lots of humus. However, the ideal placement would be a sandy or gravely loam with high humus content.

You should also make sure that the location you select is permanent, as you do not want to have to transplant large bushes, especially given the thorns of a raspberry bush. Make sure that the chosen spot has not hosted potatoes, peppers, eggplant or tomatoes in recent years, as these plants can host the disease verticillium wilt, a fungus that stays in the soil for years and will infect your raspberries.

Plant the raspberries 3 feet apart and do not allow the roots to dry out. Berries will grow on the new stalk or cane which, after harvesting, will be cut to the ground (they will die anyway) as a measure of disease and insect control. Although the flowers can be a major source for pollinators, the plant itself can be invasive and take over if not properly cared for and pruned.

Raspberries may be propagated through cuttings or using basal shoots or suckers (the underground shoots that develop the roots and plants). The black and purple varieties may also be propagated through tip layering—in the fall, the tip of the cane drops to the ground. Bury it (if left alone, it may slightly bury itself in a small hole). In the following spring, the cane may be cut from the parent and used as new plant stock, as roots will have developed on the buried tip.

Harvesting and Storage

Harvesting time for raspberries comes when the berry has a deep color and can be removed easily from the bush. The fruit should be ripe and sweet. They are highly perishable and will easily mold at room temperature. If eating raw, store them in the refrigerator and eat quickly. Otherwise, they can be frozen in the same manner as

the currant, as well as being made into jellies, pies, vinegars and even raspberry leaf tea (using the leaf of the plant).

Disease

Although maintaining a good level of care will limit disease in raspberries, even in the best of conditions problems can still arise. A few of the most common issues you may face with your raspberries are as follows:

Leaf Curl: Leaf curl is spread by aphids on the underside of the raspberry leaf. Signs of infestation include the leaves literally curling, with red raspberry leaves turning yellow and black raspberry leaves changing to a very dark, greasy-looking green. The canes may become brittle and the fruits seedy and crumbly. The virus has no known cure, and can kill an entire patch within a few years. Infected plants must be removed and burned; if it has to go to the garbage, make sure that you double bag the infected matter. This will give you an opportunity to save the surrounding plants.

To help in prevention of leaf curl, make sure that any tools used to remove or work with the infected berries are well cleaned before being used with uninfected or new stock. Little sticky cards (purchased at garden centers) will let you find out if you have an aphid problem, allowing you to eliminate them (usually with an insecticidal soap) before they can cause problems. Finally, when replacing old stock (or just starting out) try to use disease-resistant stock appropriate for your area. Beneficial insects, such as ladybugs, will also be of help.

Mosaic Virus: Mosaic virus can affect all raspberries. Spread by aphids, symptoms of the virus vary with berry variety, time of year and type of infection. In general, the shoots will blacken, canes will come in stunted and leafing will be delayed. Plant death will usually result within a few years.

Mosaic virus is difficult to control, and it only takes a few minutes for the virus to be transmitted. Preventing aphids may help slow the spread of the virus, but usually not by too much. Planting new

bushes away from old or wild raspberries may also help. The best solution is usually to replace old stock with resistant varieties for your area.

It is important to note that since mosaic virus has similar symptoms to late spring frost damage and powdery mildew, your local nursery or extension office should be consulted to make sure that the diagnosis of mosaic virus is accurate.

Gooseberries

Native to Europe, northwest Africa and south/southeast Asia, and found all the way from Norway to the Arctic Circle, gooseberries are a species of *Ribes*, with the scientific name *Ribes uva-crispa*. Found growing naturally in alpine thickets and rocky wooded areas, the gooseberry has long been valued for the cooling properties of its juice, and used as a treatment for fevers. It was described as such in *Herball*, a mid-sixteenth century book by William Turner, and became a favorite of cottage horticulture near the end of the eighteenth century. By the nineteenth century, the gooseberry had reached the peak of its popularity in Britain, and can still be found in some hedgerows among some of the ruins in Britain.

Gooseberries are grown both commercially and at home, and can be found wild or cultivated, with the wild fruit being a bit smaller than the cultivated varieties. The bush is approximately 5 feet high and wide, with spines on the branches. Flowers are single or in pairs, with 3–5 lobed leaves, with most of the fruit produced on spurs on older branches. Pruning is important to gooseberries, as it allows new growth the light necessary to grow, as well as making fruit harvesting easier.

Gooseberries are usually green in color, but can also range from red to purple, yellow or white. Propagation of the gooseberry may be from seeds or cuttings, with cuttings being planted in the fall, where they root quickly and bear fruit within a few years.

Harvesting and Storage

Harvesting the berries when they are at their largest will ensure that you obtain maximum sweetness.

Ripe gooseberries are iconic as wilderness forage, but also responds well to in-house or commercial growing. Photo by John Haslam under the Creative Commons Attribution License 2.0.

If you find that the branches are heavy with berries, cut the entire branch, keeping the berries intact. Not only does it make the harvest a bit easier, it also serves as beneficial pruning for the future.

To store the fresh berries, simply keep them unwashed in the refrigerator, where they will keep for up to two weeks. However, if they are a softer berry, they should be eaten within 2–3 days. Gooseberries may also be frozen in the same way as currants, and may be canned or dried as any other berry.

Disease

The gooseberry is vulnerable to most of the same illnesses as the currant:

White Pint Blister Rust: As stated in the section on currants, white pine blister rust is an invasive species of fungus requires two hosts, the white pine and either the gooseberry or currant, to cause terrible damage to both. It should be noted that the rust does little to the gooseberry plant, as it sheds the rust during normal fall leaf drops.

As mentioned briefly in the currant section, the new planting of gooseberries (and currants) was banned by the federal government, due to the devastation that white pine blister rust was causing to the trees. The ban was lifted by the federal government, but you will need to check your state's regulations to make sure that the ban is not still being enforced by your government.

CHAPTER 7

GROWING NUTS

Although not typically thought of when considering adding a fruiting tree to one's homestead or garden, nut trees can prove to be a valuable investment. In addition to producing tasty treats usable both on their own and in a wide variety of recipes, it has never been easier to grow nuts on your own property. Recent advancements in nut tree cultivation, stimulated by competition from corporate-owned orchards, resulted in new information and techniques being made available to the new nut cultivator.

The following is just a sampling of the nut trees you might consider when deciding what to grow. Remember to always do your homework, and confirm that your selected variety performs well in your area.

Almonds

Almonds are a very popular nut (despite not actually being a nut), full of health benefits. They are high in healthy fat and help to lower cholesterol, and can reduce risk of heart disease. Not only that, but they contain vitamin E, potassium and magnesium, which helps protect against diabetes. On top of it all, they taste great!

The almond nut is actually a fruit; specifically, a drupe or **stone fruit**, with the seed inside the shell. It is *not* considered a tree nut. Related to the cherry, apricot and peach (also stone fruits), the almond tree is deciduous, ranging from 13–30 feet in height, with some growing even taller than that. The leaves are 3–5 inches and the white to pale pink flowers are 1–2 inches with five petals apiece. Almond trees will begin bearing fruit in their third year, and should reach full capacity at 5–6 years of age.

The word almond comes from the old French word *almande/alemande*, which in turn comes from the Latin *amandula*. Native to the Middle East and South Asia, the almond also flourished in Spain, Israel and Greece from 600–900 BCE. There are also many references to almonds in the Bible as something of value and a symbol of hope. Almonds even became traditional to give to Roman newlyweds as a fertility charm.

Spread by man during ancient times along the Mediterranean to North Africa and southern Europe, almonds were even found in the Tutankhamen tomb, where they were most likely imported. Reports of the domestication of the fruit appear in the early Bronze Age.

The almond made its way to California in the 1700s, when Father Junipero Serra came to California from Spain, bringing the almond along with him. A hundred years later, the first commercial plantings in the United States commenced, with attempts being made in New England and the mid-Atlantic. Texas, New Mexico and Colorado also made attempts to produce commercial almond crops, but due to issues with the blossoms dying from late frosts or high humidity/disease, these efforts were later abandoned. In the 1850s, however, it was discovered that Los Angeles, Sacramento and Monterey were similar in climate to the almond's Mediterranean home, and by the 1900s, the almond industry was firmly established in California, where it remains to this day.

Almonds may be used for many things, including pastry fillings, almond milk and butter, nougat and marzipan, just to name a few.

Harvest and Storage

The fruit reaches maturity 7–8 months after flowering, with harvest times depending on variety and ranging from early August to late September. The fruit will begin to ripen from the top of the tree downwards, with harvest taking place when 95 percent of the outer hulls have split to expose the inner shell. (Note that if birds are a problem, the harvest may begin a little earlier to save the fruits.)

What we typically think of as an almond is actually an almond that has already been shelled. The almonds shown here are as they will appear in your backyard, as they ripen and grow.

To harvest almonds, lay a tarp down under the tree. Hand-pick what you can reach, then knock or shake the tree and branches to harvest the rest. To store, remove hulls and spread nuts in a single layer onto a large tray or screen to dry. They can be allowed to dry in the sun but cannot get wet, so make sure to only dry the almonds on a clear day. When the nuts have thoroughly dried, store them inside plastic bags and place in the freezer for two weeks. This will help

destroy any remaining pests or eggs that may be on the almonds. Remove from freezer and remove the almonds from the bags. Place in a clean bag or container, and dispose of the old bag, in case it is holding any problems. Refrigerate or return to the freezer.

Diseases and Pests

Almond growers face problems from disease and pests, just as with any fruit. We will cover two of the most damaging here:

Hull Rot: Hull rot is a fungal disease causing a lack of blooms in the lower part of the tree and dead fruiting spurs. Caused by either the *Monilinia fructiola* (one of the brown rot fungi) or *Rhizopus stolenifer* (otherwise known as the bread mold fungus) dry rotted areas will develop on the almond's hull as spores form either between the hull or shell or the inner and outer shell surface. While the nut won't be damaged, the toxin from the infected hulls will move to other leaves and shoots. Once the hull splits, the trees are then at risk of infection. As harvest time approaches, you will notice dry leaf clusters, and spurs, shoots or small branches collapsing. It is best to consult a nursery who deals in almond trees or the local extension agent when seeking treatment for hull rot.

Noninfectious Bud Failure: Noninfectious bud failure is a genetic problem, induced by heat and irreversible, which causes the buds of the tree to fail to grow, as well as resulting in terminal shoots dying back, erratic growth of surviving buds and deformed bark. It causes significant production loss, but only in susceptible trees.

Symptoms include top shoots looking dead and a failure to leaf out or properly bloom, with the middle of the shoots showing symptoms while the tips show growth and rough, dark bark.

The best way to avoid noninfectious bud failure is to propagate new stock from trees that have never shown any signs or symptoms of the disease.

Root Lesion Nematodes: Root lesion nematodes (also known as *pratylenchus*) are parasitic to plants and responsible for **root lesion disease**. These migratory endoparasites feed/reproduce on the root

and move around, usually only feeding on the cortex of the root. Symptoms include necrotic lesions of the root, stunted plants that are chlorotic and wilted. As the plant may very well die, these nematodes can cause significant loss.

Because management of nematodes can be expensive, it is best to contact either a nursery that deals in these trees or an extension agent, so that they can direct you as to the best route to take in dealing with your infestation. If you are putting in new trees, check to see if there are any resistant varieties that will work in your area.

Chestnuts

The chestnut is from the genus *Castanea*, in the beech family *fagaceae*. Native to the temperate regions of the Northern Hemisphere, they are a moderate to fast growing plant, with sizes varying from shrubs to giant trees, depending on type. Note that the chestnut is not related to either the water chestnut (which is from an aquatic herbaceous plant) or the mildly poisonous horse chestnut.

Although chestnuts fell out of favor and popularity due to its becoming known as “the poor man’s food,” it has remained a part of holiday traditions and a street food staple. Today, as reforestation continues in the United States, the chestnut works to return to its rightful place in American history.

Because the chestnut was introduced to Europe from the Sardis (Asia Minor), the chestnut was referred to as the Sardian nut. It was a staple in many areas of the world, such as the mountainous Mediterranean areas, where cereal grains couldn’t grow. The ancient Greeks valued the chestnut’s medicinal properties, while the chestnut became a symbol of chastity to Christians.

Cultivated by man since approximately 2000 BCE, the chestnut is believed to have been spread throughout Europe in the wake of the military campaigns of Alexander the Great and the Roman Empire. At the time, forest communities relied on chestnuts as a main

carbohydrate source (as there was no wheat flour), and continued to do so until the introduction of the potato.

Meanwhile, American Indians were eating chestnuts even before the Europeans brought their stock to the new world. At one time, chestnut trees comprised a quarter of the hardwoods in the Appalachian Mountains, and grew to 100 feet high and 5 inches in diameter.

In the early 1900s, a chestnut blight almost wiped out all the chestnut trees in America, caused by a diseased Asian chestnut planted in Long Island. Even today, reforesting continues in an attempt to bring the chestnut back while trying to create a blight resistant tree that keeps as close to the lost American chestnut as possible.

There are three species of chestnut:

- **European** (including the Sweet chestnut)
- **Asiatic** (including the Japanese chestnut, Chinese chestnut, Chinese Chinkapin and Seguns chestnut)
- **American** (including the American chestnut, Allegheny or Chinkapin chestnut and the Dwarf chestnut)

The Asian species are usually multi-leadered and wide-spreading, while the American and European species are tall and erect with massive trunks, notable for having smooth bark when young. In the case of the American chestnut, the bark also gets darker, grayer and deeply furrowed.

Planting

Although the process for planting a chestnut depends on the type that you have selected, they all need good drainage and wide space between the trees to encourage low and broad crowns, which in turn will allow maximum sun exposure for increased productivity. The chestnut may be propagated through either seeds or cuttings.

The leaves of the chestnut are sharply pointed with wide spaced teeth, and turn a vibrant yellow in the fall, with flowers coming after the leaves in late spring or early summer. These flowers arrange themselves into **catkins** (slim, cylindrical flower clusters, which may have no petals). They are usually pollinated by the wind, but are sometimes pollinated through insect activity, with two trees being necessary for pollination.

The spiny hull of the ripening chestnut may seem unappealing and difficult to open, but the fruit of the chestnut is well worth the effort! Photo by Egnaroorang E under the Creative Commons Attribution License 2.0.

Harvest and Storage

The fruit of the chestnut is contained in a very spiny burr, usually in pairs or clusters on the branch. Depending on the species, there can be between 1–7 nuts. At maturity, the burr turns yellow/brown and splits, usually releasing the nut after falling to the ground. Soil

humidity plays a partial role in the release, so bear that in mind when selecting an area to plant.

Chestnuts may be eaten fresh, canned, puréed or preserved in a sugar or syrup. Shelled and cooked, they can last in the refrigerator 3–4 days. They may also be frozen for up to 9 months, or be milled into flour for baking, pasta and as a thickening agent.

As a side note, the wood of the chestnut tree is also very durable and good for outdoor use. At one time the wood was the natural source for **tannin**, used for leather tanning.

Diseases and Pests

Ink Disease: Ink disease is caused by the fungus *Phytophthora cambivora*. Affecting trees in Europe, ink disease causes the chestnut tree to wilt and die, and has a high mortality rate. It attacks the phloem tissue, the cambium of the roots and the root collar above ground, resulting in wet rot. Ink disease gets its name from the ink black color of the tannic acid, which oxidizes as it seeps out of the tree.

Symptoms include leaves turning yellow and falling off and small fruit and nuts dropping from burrs prematurely. In some cases, root decay may also occur. Treatment depends on how bad the problem is, so a professional should be consulted for control suggestions.

Root Rot: Root rot is caused by the honey fungus, and is more prevalent in areas of heavy, poorly drained soil. In container plants, over watering is usually the problem. As the name suggests, the result is the roots of the tree literally rotting. Unfortunately, there is no treatment for root rot, just preventative measures, such as good drainage and proper watering.

Butternuts

The butternut (also known as the **white walnut**) is native to the eastern United States and Canada, and is one of the hardiest of all nut trees. It is from the genus *Juglans* and the species *Juglans cinerea*.

The butternut was a staple in the diets of both the American Indians and the colonists. During the American Revolution, an extract was made from the inner bark of the tree in an attempt to treat dysentery and prevent small pox. During the Civil War, Confederate soldiers were known as “Butternuts,” most likely due to the dye made from the butternut that was used on their clothing.

A deciduous tree, the butternut grows to be over 60 feet tall. A fast growing tree, it has an average lifespan of about 75 years. The butternut cannot tolerate shade or canopy competition from above, and grows best at stream banks or in well-drained soil in coves, slopes, terraces or other areas with good drainage.

The leaves are feather-like or **pinnate**, and are a bright yellow-green in color. The tree flowers anywhere from April to June (depending on the location of the tree) with both male and female flowers. The male flowers are yellow/green catkins that develop from the auxiliary buds, while the female flowers have a light pink stigma and are on the short terminal spikes on the current year’s shoots. At least two compatible trees are necessary for pollination, as the male and female flowers usually will not mature on the same tree at the same time.

The fruit itself is a nut and grows in bunches of anywhere from 2–6 fruits, which are encased in a green husk until reaching maturity in the fall.

Propagation can be done through seed, cuttings or grafting, with grafting usually being done with the butternut to black walnut rootstock to create canker-resistant trees.

Harvest and Storage

Butternuts are perhaps one of the easiest harvests that you will ever see—you simply pick them up off of the ground. Once the nuts have been gathered, place small amounts in mesh bags and hang the bags in a dry place until the husks dry. Once dried, do *not* remove the husk. An uncracked butternut can last up to 25 years if kept dry! The nut may be eaten raw or ground into a flour. The husk can also

be used to create a yellow/orange dye and a dark brown dye from the bark.

The butternut (or “white walnut”) grows its fruit in groups of 2–6 nuts, all of which are contained within an oblong husk prior to being shelled. Butternuts grow quickly, but a butternut tree will only produce its fruit for perhaps 65–70 years.

Diseases and Pests

Butternut Canker: Perhaps the most dangerous disease that the butternut faces today, and the biggest problem the tree owner will have is the butternut canker. It has become a serious threat to butternuts everywhere, and is the primary cause of the decline of the butternut. A serious fungal disease, the fungus can spread across wide ranges, so there is little protection that may be offered for the tree. The tree itself will try to fight the canker, but it usually ends up losing the battle.

Symptoms of butternut canker include drying stems and branches, with cankers developing on lower crowns. Spores will develop and spread by rainwater, causing stem cankers to develop. The stem canker can develop 1–3 years after the branches die. The treetop will be killed by the stem girdling cankers and will not re-sprout. Note that the free standing butternut tree will fare better against the disease than those in dense areas.

Walnuts

A single seed stone fruit and part of the *Junglandaceae* family, the walnut is high in nutritional value. Rich in monounsaturated fats and excellent source of omega-3, the walnut is also possessed of both antioxidant and anti-inflammatory benefits. The walnut grows best in rich, deep soil, with full sun and long summers.

From the Germanic *wal* and the Old English *wealhhnutu* (meaning "foreign (nut)"), the most commercially produced variety of walnut is the English walnut. In terms of overall taste and quality, the eastern Black Walnut has perhaps the best taste of all of the walnut varieties, but is difficult to shell and has poor hulling. As a result, the eastern Black Walnut is not usually used for commercial production (although they are commonly found growing wild in some areas, with their nuts harvested by individuals for home use or farm/farm market sales). An interesting note: the United States is the largest exporter of walnuts, with virtually all commercially walnut production based in California. Size wise, the eastern Black Walnut can reach 80 feet in height, and the English, 50 feet. Both have very long life spans and good disease resistance, with no cross pollination necessary.

Walnuts can be processed while still green (for pickling) or when fully ripened (for nutmeat). Among the products created from processed walnuts are walnut oil and toasted walnuts, a tasty treat and used in a variety of recipes. To harvest the actual nut, the husk is removed to reveal the shell (which is normally in two halves, but will occasionally be found in three parts). This shell is then removed

to expose the nutmeat, while the husks are used for ink making and as an element in some brown dyes.

Ideal storage conditions for walnuts are freezing temperatures, around −3–0°F, with low humidity. If stored at above 30°F and above 70 percent humidity, rapid spoilage can occur. If stored at above 75 percent humidity, a fungal mold can begin to grow, even as the nuts become more susceptible to insects. If a fungal mold occurs, it can in turn produce **aflatoxin**, a potent carcinogen. As a result, any batch of walnuts with mold needs to be discarded in full.

The walnut harvest requires more effort as compared to other nut tree varieties—it isn't until they are picked and shelled that they resemble the walnuts we are familiar with—but despite this, it remains a popular fruit worldwide. Photo by born 1945 under the Creative Commons Attribution License 2.0.

Diseases and Pests

The walnut is prone some disease and pest problems, although the trees themselves are quite hardy. The following are only a few examples of what can affect your tree(s):

Bacterial Leaf Spot: The leaves will turn brown with black spots, with the affliction worsening during wet seasons or in humid

climates.

Anthracnose: Husks will still form, but when broken open there will be no nutmeat. Warning signs include trees losing their foliage in early summer. Anthracnose is worse during wet seasons or years.

Frost Injury: Although not technically an issue of disease, a tree harmed by frost will often produce inferior nuts.

Walnut Husk Fly and Walnut Husk Maggot: The fly and maggot look very similar to one another: both are light brown and legless, with transparent wings and dark cross bars. The larvae burrow into the husk and feed on it, causing black, slimy husks. However, this does not have any direct effect on the nut or nutmeat, as the shell is not penetrated. Remove infected walnuts as soon as they fall from the tree.

Peanuts

Although the peanut is neither a nut nor a berry, but is in fact a legume, it has been included here regardless, as it is commonly referred to, used as and known as (albeit incorrectly) as a nut. Also known as a ground nut, monkey nut and earth nut, the peanut does not actually fit the botanical definition of a nut; it is for this reason that it is considered a legume. The botanical definition of a legume is a dry fruit which develops from a simple carpel, usually having and opening from a seam on two sides. The peanut plant is self-pollinating.

A false nut (the peanut is actually a legume) the peanut is one of the most common and versatile plants in North American culture.

The oldest peanut specimen is said to have been found in Peru and dates back approximately 7600 years. The peanut then spread as far as Mesoamerica, where conquistadors found it being sold in what is now Mexico City. Meanwhile, European traders are credited for the peanut's worldwide spread.

Although the peanut was grown in the gardens of colonial Americans, it was mainly used for animal/livestock feed. It wasn't until the late nineteenth and early twentieth century that the USDA encouraged peanut production for human consumption, with the

most well-known program participant being George Washington Carver. Today, the peanut is a popular snack in the United States, in addition to being a common culinary ingredient.

The peanut is used as oil, flour, boiled or dry roasted and in cuisine. It is a good niacin source, as well as a source of antioxidants, resveratrol and coenzyme Q10 (or CoQ10). However, as useful and as healthy as the peanut may be, many suffer from severe peanut allergies that can cause illness, and in some cases death, if not handled right away after ingestion or inhalation.

Planting

The peanut may be planted within its shell (or pod), or removed from it. However, should you decide to remove the nut from the pod, leave the papery red skin *on*; otherwise, the nut will not germinate. If you are growing peanuts in the north, start the seeds indoors 30 days (or one month) before the final frost. The plant may then be transplanted outdoors when the soil reaches 60–70°F. The plants should be planted 10 inches apart, being careful not to damage or bury the crown.

If you are growing peanuts in the south, the seed may be planted directly into the soil around the time of the last frost (if applicable). They should be planted 2 inches deep and 5 inches apart. Later, the plants should be thinned to 10 inches apart. In either case, the peanut will grow best in light, loamy soil. If the soil in your area is too heavy, it will need to be mixed with organic matter to loosen it up and prepare it for the plants. The peanut will require about 5 months of warm weather, and either good rains or good irrigation.

Once the plants reach 1 foot in height hill up loose soil around the base of the plant. This will allow the stalk (or **pedicle**) to push into the soil, letting the peanut form. In other words, the peanuts will begin above ground. The stalk, which is at the base of the ovary, will then elongate and bury itself in the ground, forming and developing the pod.

The plant is ready for harvest when the leaves are yellowed and the inner shell has gold veins (you will need open a few peanuts as

tests to check for this), approximately 120–150 days after the seeds were planted. When ready to harvest, pull (or dig) out the entire plant when the soil is moist. Gently shake off any loose dirt and allow the entire plant to dry in an area with good air circulation. Be aware that if the plants are harvested too early, the pods will not be ripe. If harvested too late, the pods will come off of the stem and remain in the soil. When the leaves become crumbly, the pods may be removed. There are usually two seeds (or peanuts) per pod (or shell).

Finally, keep in mind that the type of peanut that you grow will depend on your end goal for your harvest. Four of the most popular cultivars grown in the United States are the Spanish, Runner, Virginia and Valencia varieties. For example, if you are looking for a good eating peanut, you may choose the Virginia. If you are looking to turn the peanuts into peanut butter, then the Spanish and Runners will work better for you. Just be sure to do a little research to make sure that you are growing the correct type of peanut for your location and final needs.

Diseases and Pests

A few of the diseases and pests that can plague the peanut are as follows:

Botrytis Blight: Caused by a fungus, signs of botrytis blight include spots on the upper leaf surface, with parts of or even the entire plant wilting and dying. Pods and stems are covered in fungal sclerotia. Botrytis blight is brought on during times of high moisture and temperature, with the plants even more susceptible if they have suffered previous frost damage. Prevention includes making sure the plant is not exposed to frost, and applying the appropriate foliar fungicides.

Early Leaf Spot: Starting as small flecks on the leaf petioles, stems and pegs, these spots will darken as they grow, eventually developing a yellow halo. Early leaf spot is caused by a fungus and again, high humidity and temperature play a major role in its

spread. If the leaves are in prolonged wetness, early leaf spot will spread.

Caterpillars: Although we loved them as kids (and in many cases still do) caterpillars will eat the plant above the ground.

Cutworms: Caterpillar-like in appearance and occasionally confused for such, the cutworm is active mostly at night, feeding on the foliage and sometimes on the pod as well.

Lesser Cornstalk Borer: A variety of caterpillar, the lesser cornstalk borer is bluish-green with brown stripes. It feeds externally, but will also tunnel underground, leaving you with hollowed-out pods for harvest.

The peanut is also susceptible to contamination when stored using poor storage practices. This can lead to *Aspergillus flavus*, a mold fungus which releases a toxic and highly carcinogenic aflatoxin.

CHAPTER 8

GROWING TROPICAL VARIETIES

While every region of the world presents its own unique growing conditions, nowhere is the variety of fruits, berries and nuts more diverse and plentiful than in the tropical regions along the Equator. Here, trees and bushes that require exceptional amounts of rich soil, strong sunlight and humidity grow in abundance, providing a number of options to the potential cultivator. While growing many of these plants comes with its own obstacles and challenges, the equipment available to the modern grower makes raising tropical varieties not only possible, but fun and rewarding as well.

What follows are just some of the tropical fruits, berries and nuts that an aspiring cultivator or homesteader can consider when researching new additions to their garden:

Citrus

The term “citrus” includes a wide variety of fruits, ranging from oranges and tangerines to lemons, limes and grapefruit. Citrus fruits

share a lot of common traits, and as a result, care for citrus trees remains mostly the same across the board—up to and including the diseases and pests to watch out for. Citrus is a very popular plant for backyard farming in regions where they can be grown in gardens or yards. Even in regions where citrus can't grow year round outdoors, individual dwarf trees are often kept in containers, put outdoors in the summer and brought indoors in the winter. Health-wise, citrus is a good source of vitamin C and flavonoids.

Citrus refers to both the term itself and the genus for the flowering plants of the *Rue* family *Rutaceae*. Originating from the Latin, and referring to Citron or a conifer tree, the possible origins of citrus include Australia, New Guinea, New Caledonia and the Southeast Asia area bordering northeast India, Myanmar and the Yunnan Province (where the ever-popular mandarin orange and lemon originated). It is thought that only the citron, pimmels and mandarin are genuine domesticated ancestral species, with the rest of the group developed through hybridization (natural or artificial).

Most citrus are highly fragrant and filled with a juice that is high in citric acid. The plants may be large shrubs or small trees, but will have spiny shoots and evergreen leaves. The citrus flowers will be either singular or in flat top clusters, usually with five petals and many stamens, and possess a strong scent. Some varieties of citrus (such as the Meyer lemon) have thorns, though most do not.

A citrus fruit is a **hesperidium**—basically a tough berry with a leathery rind. The outer layer of the rind is where the pits of essential oils can be found. It is called the **flavedo**, otherwise commonly known as zest. The interior flesh is composed of sections that have fluid filled vesicles called **liths** and inside each lith is a **locule** filled with the juice vesicles or pulp. Unlike other berries, the outer rind (or peel) is usually not eaten, as it is bitter and tough (except for the kumquat, where the entire fruit is consumed). Rinds are sometimes candied or dried and used in cooking or baking.

Although most will commonly think of oranges when thinking of citrus trees, there are a wide variety of citrus fruits, including lemons and limes. Photo by Pamela Carls under the Creative Commons Attribution License 2.0.

Planting

Citrus as a rule are not particularly frost hardy, although there are a few hybrids that can tolerate below freezing temperatures (at the cost of their overall fruit quality). Citrus thrive in a sunny and humid environment, and need fertile soil and proper watering through either rain or irrigation; or, if you only have a tree in your yard, hand-watering when necessary.

Citrus plants do not drop their leaves unless stressed. Citrus flowers in the spring with the fruit setting not long after. The fruit will begin ripening in the fall or early winter, depending on the cultivar. Some fruits will ripen quickly, while others may take months.

Harvest and Storage

With citrus, the terms “ripe” and “mature” are often used interchangeably; however, there really are differences between the terms. **Mature** simply means that the fruit has completed its growth phase, while **ripe** actually refers to a change in the fruit when it passes maturity and has entered into the beginning stages of decay. Citrus will go from immature to mature to ripe while still on the tree, and once harvested, will cease to ripen ends. While you may think that the color of the rind signals whether or not a fruit is ripe, this is not a guarantee. The reason is that, in the tropics, citrus will remain green due to there being no “winter,” as cool weather is necessary for color development. In reality, only by physically tasting the fruit can you determine if it is ready for harvest. If it is at full flavor, then it is ready. It should be noted that citrus will keep longer on the tree than when stored.

After harvest, citrus will keep for 4–6 weeks in the refrigerator, while the juices can be frozen for up to four months. The fruits may also be used for jams, marmalade and preserves.

Disease and Pests

The following are some examples of diseases and pests that can affect citrus plants:

White Fly: A small insect that feeds on the underside of the citrus leaves, the specific member of the white fly family that poses a risk to citrus is the Citrus Black Fly, which is found on hundreds of hosts (although lemons, pomels and oranges are found to be the most often infected).

Originating in Asia, the fly sucks the tree’s sap, depriving it of nutrients and water. It leaves an excretion called **honeydew** (a sugary, sticky liquid secreted by the aphids feeding on the sap), which coats the leaves and encouraging sooty mold, a fungus that is more of a cosmetic problem than any real danger. However, when taken in combination with the other damage, sooty mold can cause health problems for the tree and a reduction in fruit production.

Although your local nursery or extension office can best direct you as to how you can eradicate this problem, parasitic wasps can also assist in controlling the white fly.

Aphids: Aphids or plant lice are among the most destructive insect pests. The aphid leaves honeydew the same as the white fly does, and while in small numbers aphids do little damage, once their population grows to sufficient numbers, the damage they cause can be can be significant.

Symptoms of aphid infestation are pucker marks on the leaves, as well as leaves yellowing and twisting. If you being to see leaf drop, or extensive damage to twigs and branches, it means that the infestation is severe. It is best to contact your local nursery or extension agent or so that they can help you figure out both the extent of your infestation and how to take care of it.

Citrus Red Mite: Citrus Red Mite is a very tiny pest (only about .02 of an inch long) and is red or purple in coloration. The mite infests the fruit and the leaves, and is at its worst during hot and dry weather. Leaf drop may come with a heavy infestation.

A major problem with this mite is that it, because it is so tiny, many times you won't even know it is there until it is too late and infestation has become severe. Although healthy trees can withstand slight infestations, a heavy infestation is cause for alarm. A miticide spray can help in taking care of a bad infestation.

Citrus Canker: Citrus canker is a serious problem that affects citrus plants, and is caused by the bacterium *Xanthomonas axonopodis*. Although there are many strains of this canker, it is the Asiatic strain that is the most widespread and severe. Once it establishes itself, it is difficult to get rid of.

Citrus canker causes fruit and leaves to prematurely drop, and can produce lesions on the fruit, stems and leaves. While the infected fruit is completely edible, it is not marketable. Once a tree develops canker, it will continue to decline in health, until production stops. Florida has had major problems with this canker, to the point where it almost destroyed the orange industry there.

Citrus canker is spread not only by nature (through windblown rain) but by humans as well, often through landscaping equipment that was used on infected trees and not cleaned, on clothing and by moving infected plants.

The best method of managing citrus canker is open to debate. It was thought that eradication of infected trees and groves would curb the problem; however, in 2006 the USDA stated that this method was not working and ended the eradication program. Maintaining careful practices when working around infected trees, as well as replacing non-resistant trees with resistant types, and spraying with a copper-based bactericide can help.

Olives

Few people are aware that olives are actually fruit! Olive trees are evergreens, similar to lilacs and jasmine. Despite the common misconception, olive trees are not found in the wild. Although there is a "wild olive" whose root stock is sometimes used for olive grafts (discussed in Chapter 6), this strain is not believed to be related.

Olives have been around since antiquity. Wall paintings in ancient Egypt show olives grown there during the time of the Pharaohs, where the oil of the olives was used for cooking, lighting lamps, medicinal and ritual needs, as well as being consumed for nourishment. Evidence has also been found indicating that olive branches accompanied the dead to their final rest, laid beside them in their tombs. By 1200 BCE, olives and olive oil had already become a prized trade good, with the Phoenicians exporting olive oil to Italy, Spain, Carthage and France. By the sixth century, this role had been given over to the Greeks, who occupied such a central role in the use and trade of olives and olive oil that the olive tree was said to be a heavenly gift.

Olive trees can live and produce for centuries, and grow up to 50 feet in height, though they are normally kept to a more manageable size through pruning. Should an old growth be cut down, new shoots will emerge from the roots (as long as the root stock is still

living), making the olive tree one of the hardier choices available to the homesteader.

Once revered in Greek religious ceremonies, the olive continues to occupy an important place in the orchards of the world. Photo by Naotake Murayama under the Creative Commons Attribution License 2.0.

There are over 800 million olive trees in the world, with most still grown, harvested and processed in the same Mediterranean areas where they have been for centuries. Today, you can also find olive trees growing in California, South Africa and Australia, with attempts being made in places like Florida in hopes of expanding

the olive's environment (while recouping some of the profits lost from citrus groves due to canker and other issues).

Planting

Yes, you can grow olives at home! Olive trees need at least six hours of daylight in full sun, with well-drained and fertile soil. Olive trees thrive in areas with dry springs and long, hot summers; although they will handle drought, they do best when they remain fertilized, watered and pruned in the fall (to allow the trees energy for new shoots). Under these ideal conditions, olive trees will produce an appreciably greater yield. The ground around the trees should be weeded to eliminate competition for water. Newly planted trees need to be watered well until the trees become well established.

Olive trees will usually begin fruiting at 4–5 years of age. Small flowers will appear in late spring, and will need dry weather for proper fertilization. Rainy weather will knock the flowers off of the branch, and each flower lost is a fruit lost from the eventual harvest. When the fruits begin to appear, they will start out green, and then ripen to black. It usually takes about six months for an olive to fully ripen, going from blossoming to picking. Although olives are at their maximum oil content when fully ripe, the oil is actually at its best for harvesting when the ripening process is *just* starting.

Depending on the area and how the olives are to be used, harvest time is normally late fall to spring, with only the ripe fruit being picked. The fruit may be picked by hand (if you only want fruit at certain stages of ripeness) or you may lay a tarp underneath the tree and shake vigorously, letting the olives fall on to the tarp (if you're interested in a more global, "clean sweep" sort of collection.

Most olive varieties are self-pollinating (meaning the tree does not need a "mate" to produce fruit), and there are over 150 cultivated varieties, most usually propagated from cuttings. A few of these varieties include the Kalamata, Manzanillo and Arbequina. If you are interested in growing olives where you live, check with area nurseries and/or local extension offices to see which of the many varieties will work best where you live. If you are in an area with

severe winters, note that olive trees may need to be grown indoors in a container.

Diseases and Pests

The olive does come with its own problems, just like any other plant. A few are listed below:

Olive Fruit Fly: The olive fruit fly was accidentally imported to California in the late 1990s, and can completely ruin a crop. The adult fly is a quarter inch long, with a brown or dark brown marked head, thorax and abdomen. The thorax will also have yellow or white spots, making them easier to identify. The wings of the olive fruit fly are horizontal, and are held away from the insect's body.

The female fly will lay her eggs in the fruit (usually one egg per fruit). A single female can lay from 200–500 eggs in her lifetime. When it comes time to hatch, the larvae, which is a maggot-like, yellowish and legless thing with a pointed head, will then eat its way out, destroying the pulp and causing premature fruit drop and a reduction in quality. At first, these larvae will be difficult to see. The more they eat, the more visible they will become.

The life cycle of the olive fruit fly is linked to seasonal development, as well as the climate of the region. In the summer, during optimum temperatures, a fly can complete an entire life cycle in as little as a month, while hot, dry conditions cause high mortality for both the eggs and the larvae, while restricting the adult's access to food and water.

Control of this fly depends on location and harvest time, so consult with an extension agent or other expert as to how best to handle your situation.

Peacock Spot: Peacock Spot, also called Olive Loaf spot, is a very common disease among olives that occurs throughout the world. It is a leaf fungus that shows up as a small silver or brown spot on the upper part of the leaf, sometimes with a yellow halo around the spot. If not taken care of, it *can* cause defoliation; however, this

disease takes years to become serious. Areas with lots of rain are particularly at risk for Peacock Spot.

It is best to check with a professional about control if you are new to olive growing. However, keep in mind that the best treatment is to prevent it in the first place. Prevention should begin in the fall of the year. One solution is by applying a fixed copper fungicide as early as possible *after* the harvest, not before.

Bananas

From the West African word *banana*, the banana grows primarily in tropic and sub-tropic areas. A perennial and considered a starch, the banana is botanically a berry, which is produced by large, herbaceous flowering plants of the *Musa* genus. "Banana" is also the name of the plant which grows the fruit.

The banana has been domesticated in Southeast Asia and Papua, New Guinea as far back as 8000 BCE. Bananas were observed in India in 327 BCE by Alexander the Great's army. In the tenth century, bananas began showing up in both Egyptian and Palestinian texts. By the sixteenth century, the banana had been introduced into America by Portuguese sailors who brought them over from West Africa (as well as to England through Jules Vern's classic *Around the World in Eighty Days*).

After the Civil War, bananas became more common widely eaten in the United States. At first, the fruits were only available in seacoast/seaport towns, due to the inability to transport bananas over any significant distance.

The United Fruit Company was formed in 1899, through the merger of the Boston Fruit Company and Minor C Keith. United Fruit, a United States company, traded mainly in bananas grown in Central America and South America, with their primary market being the United States and Europe. In 1970, the United Fruit Company became United Brands, and by 1984 it had become the still well-known Chiquita Brands International.

Most cultivated bananas today are from the wild types *Musa acuminata* and *Musa balbisiana*. Although typically thought of as being yellow, bananas can vary in size, color and firmness. As the banana is non-seasonal (meaning they don't have a specific growing time), they are always available. Bananas prefer dark, fertile and rich soil with lots of mulch, potassium and nitrogen, as well as lots of water. In fact, lack of water is one of the most common problems involved in keeping bananas. The banana plant grows to between 10–26 feet in height, with fruit clusters of 50–150 bananas (with individual bunches within the clusters holding 10–25 bananas). They also like the shade that comes from another banana plant!

A longtime commercial crop in South American countries, the banana has become equally popular as a common import to North America and elsewhere.

The banana plant is the largest of the herbaceous flowering plants. Although mistakenly thought of as a tree, the trunk is actually a false stem. When the banana plant matures, the corm (which is the underground plant stem which acts like a storage center, allowing the plant to survive adverse weather, including drought) stops producing leaves, and the flower spike (or inflorescence) begins to form. A stem then forms *within* the false stem, carrying the young flower spike until it pops through the top. After fruiting, the false stem will die, even as new shoots form at the base; this is why the banana plant is considered a perennial.

The fruit itself develops in tiers, which make up the large cluster or bunch. There are upwards of 20 bananas in each tier, with each bunch weighing between 60–100 pounds. The clusters hang from

the top of the plant and are ready to be harvested when the banana is well rounded with good ribs, and the flowers on the end dry out and come off easily. They can then be harvested, either when green or ripe; but, once ripening starts, it continues quickly. Once the fruit is harvested, the plant quickly begins to die.

Diseases and Pests

At present, the majority of diseases and pests that banana growers can expect to face are relegated to those countries where bananas are grown as a commercial crop, before being imported to the United States. The average homesteader, who grows on a much smaller scale, has relatively few threats to look for in regards to their bananas. An example would be:

Banana Bunchy Top Virus: This virus is spread by aphids, stunting leaves and often destroying the appearance of the infected plant. Affected plants usually will not produce, and there is no known cure; infected plants must instead be removed and destroyed.

The most significant threat to a homesteader's bananas remains overwatering, which is a result of improper care, rather than a pest or disease.

Along with the plants themselves, banana hearts are used as a vegetable. The leaves, which are large, flexible and waterproof, are often used as plates and cooking ware, as well as a popular wrapping for grilling. Bananas are an excellent source of vitamin B, soluble fiber, vitamin C, potassium and manganese. Eating bananas benefits one's cardiac and digestive systems, as well as improving overall athletic performance.

When preserving bananas, freezing and dehydrating them prove to be the most effective methods. Dried banana has a sweet, almost candy-like taste and is a popular snack on its own, as well as in a variety of trail mixes.

Pineapples

Part of the *Bromeliaceae* family, little is known about the domestic origins of the pineapple, save that it was originally indigenous to South America, before it spread to Central America, the Caribbean and Mexico. Once it reached Mexico, it began to be cultivated by both the Aztecs and Mayans.

The word “pineapple” was first used in England in the late 1300s, but in its original usage it described what we now know as a pinecone. The term “pinecone” was not recorded until the late 1600s. It wasn’t until the late 1600s that the European explorers first referred to the fruit as a pineapple, named for its resemblance to the pinecone.

By the end of the sixteenth century, the Portuguese and Spanish had introduced the pineapple into many of their colonies in Asia, the South Pacific and Africa. In the eighteenth century, cultivation of the pineapple began in Hawaii, which became known for their pineapple industry (though in reality, only a few companies still grow them commercially). Pineapples take a long time to grow, but the final outcome of a homegrown fruit is the best!

While the pineapple is usually thought of being a single fruit, they are in fact composed of a tightly packed collection of flavorful berries. Photo by Ramesh NG under the Creative Commons Attribution License 2.0.

Planting

The pineapple is a tropical plant, with multiple edible fruit, meaning the fruit comes from an **inflorescence** or cluster of flowers. Each flower produces a fruit which will form a single mass at it matures. One pineapple per plant is produced. The pineapple is an herbaceous perennial, meaning the leaves and stem will die down to soil level at the end of the growing season, with part of the plant surviving underground or close to the ground, allowing new growth to develop.

Pollination of the pineapple is done by bees, hummingbirds, pineapple beetles and even bats (as the pollen is too sticky to be

spread by the wind).

There are many cultivars or varieties of pineapple, including Kona Sugarloaf, Red Spanish and Smooth Cayenne. Pineapples are easily propagated, either by rooting the crown of another pineapple (just cut it off the top of the fruit, about a half inch or so below the greenery and plant) or as a sucker, as pineapples will produce offshoot plants that can either be left alone to develop or severed from the parent plant and planted by itself. You should get flowers within two years of planting, and fruit six months after flowering. Pineapples can also be planted in containers.

Harvest and Storage

Determining whether a pineapple is ready for harvest can be a bit tricky. Pineapples will continue to ripen after harvesting, so for the best quality and sweetness, harvest the pineapple when it is almost all yellow and gives off a sweet smell. If the smell is sour, fermented or musty, something is wrong (you probably let it sit too long or there was another problem), and the fruit should be discarded. If you feel that you have harvested your pineapple too soon, or have purchased a pineapple that you think is too green, just leave the pineapple sitting on the counter, and it will ripen further. That being said, pineapples are quite perishable—they bruise easily and rot rather quickly. At room temperature, fruit should be used within two days; depending on the conditions in the room it is kept, it could be a bit longer, but should still be used within seven days (if refrigerated).

Pineapples may be eaten fresh, dried, cooked, as a preserve or juiced. To prep a pineapple, cut off the green top (which can be kept for propagation), slice off the skin and remove the eyes (the brown spots in the flesh, which resemble potato eyes). Once cleaned, you may either remove the core or leave it in, and prepare the pineapple in whatever way you prefer. The root and fruit can also be applied topically as an anti-inflammatory.

Disease and Pests

The following are a few examples of problems that pineapple growers may run into:

Yellow Spot Virus: Yellow spot virus, also known as tomato spotted wilt virus, is a viral infection transmitted by the onion thrip. It causes a yellowing of the leaves, and will cause young leaves to turn a bronze color as the tips die back. The leaves will also develop dark spots. The fruit will be affected with chlorotic ring spots and raised bumps.

In terms of prevention methods, if you can control the thrips, you can control the virus; however, once a plant is infected, there is no cure, and severely infected plants should be destroyed.

Fungal Heart Rot: Fungal heart rot is a fungal infection, marked by the center part of the plant stem rotting out completely (the center will pull right out). This will most often happen when trying to root a pineapple top. The cause is poor soil and bad drainage, and can also happen when first time planters overwater during propagation.

The plant will produce a bad smell as the leaves will turn brown, and the center may pull out. Although the plant will usually die from the infection, there are some exceptions where the propagation will somehow survive the rot and later go on to produce fruit. Again, this is the exception, not the rule.

Pink Disease: Pink disease will not present until the afflicted fruit is canned, and as such is more of a problem or the canned fruit industry than the grower. However, if you are planting and processing at home, you may find yourself needing to deal with this problem.

First observed in Hawaii in 1915, the early signs of pink disease will appear during the heating process of canning, and causes a red/rusty red color to appear on the fruit.

Identifying the cause of this problem has been difficult, as there are many bacteria associated with pineapples. However, a cause was finally identified—*Pantoea citra*. Symptoms are very difficult to see in the field; however, as there are no outward symptoms on the plant or fruit, current control methods for pink disease are

expensive, and are currently focused on attempts to create a resistant strain. For the home gardener, know that propagation will continue the disease, so if you see it in a fruit that you have heat processed and you have already replanted the top from that fruit, dig it up and destroy it.

Avocados

Although we tend to think of Florida and California when we think about the avocado, it is actually native to Mexico and Central America. The word “avocado” comes from the Spanish *agucate*. (Although, it known by different names in different countries, such as butterfruit in India, alligator pear in China, and cheese pear in Taiwan.)

Considered a fruit, but botanically a berry, the avocado contains a single seed. A subtropical fruit, the avocado does not like frost, though there are some hardier varieties that can be carefully kept in areas like northern Florida. The avocado tree likes well aerated soil, and will grow to approximately 66 feet tall, with leaves anywhere from 4½–9½ inches in length. The flowers are green-yellow in color, and the fruits may be anywhere from 2½–8 inches in length, and weighing 3½–35 ounces, depending on the variety.

The avocado provides approximately 20 essential nutrients, such as potassium, Vitamin E and B. It also provides fiber, and has a higher fat content than most other fruit. However, the avocado will turn brown very quickly after being removed from the skin and exposed to the air, due to enzymatic browning. A quick stir with a little lemon or lime juice will prevent this from happening, allowing the fruit to remain green.

While avocados can be successfully grown in northern areas, particularly if kept in a temperature controlled environment, the fruit itself performs best within its comfort zone: warm tropical and subtropical areas that don't see frost. Photo by walknboston under the Creative Commons Attribution License 2.0.

Avocado is used in guacamole, sandwiches and salads. Avocados are usually eaten raw, as some avocados when cooked react poorly to the heat from cooking. However, as much as we may love the avocado, the leaves, bark, skin and pit can be quite toxic to animals,

while the fruit can be toxic to some birds. Use caution with your pets around the avocado tree.

Planting

Propagating the avocado is usually done through grafting, in order to maintain quality and make sure that the resulting fruit contains the desired traits of its parent. The avocado *can* be grown by seed, but it can take 4–10 years to fruit, with the resulting fruit being quite unlike the original cultivator. When growing from seed, the pit is stabbed through with four toothpicks, around the equator of the pit (or even a bit lower). The pit is then placed in a glass of water, with the toothpicks holding the pit up so that only the lower part of the seen is in the water. Once the seed has begun to send out roots and establish itself, the pit can then be placed in soil.

Another method which has shown success (when propagating directly in soil) is by placing the pit halfway up in loose soil, and then covering the seed with a clear plastic cup (to act like a little greenhouse). Keep it moist, and within about 6 weeks you should see a split seed and sprout (at which point you should remove the plastic cup).

The avocado is partially self-pollinated and has two flowering types: “A” and “B.” The “A” cultivars open as female on the morning of the first day, close early in the afternoon, and then opens as a male on the afternoon of the second day. “A” type examples include Gwen, Hass and Lula. The “B” type opens as female on the afternoon of the first day, closes in the late afternoon, and opens as a male in the morning of the next day. “B” types include Bacon, Zutano, Ettenger and Monroe.

Commercially, the avocado remains on the tree until mature and is then picked and allowed to ripen, a process which usually takes 1–2 weeks at room temperature.

Diseases and Pests

There are a few pests and diseases that affect the avocado. Examples include:

Sunblotch: A very serious disease, the fruit becomes off-color and/or scarred. Cracks may develop in the bark and twigs may discolor. There could also be stunted growth. However, some trees may show no signs except for yields lowering. There is no cure for sunblotch.

Canker: A relatively minor disease, which can be brought under control once diagnosed, the trunks and branches will ooze a gummy substance, with the visible wound having a rusted look. Cankers can be cut from limbs; however, if is the canker is already in the trunks, it can be deadly to the tree. Canker usually infects existing wounds in the tree.

Borers: These insects will tunnel into the trees to either feed or lay their eggs. Infested branches need to removed and disposed of immediately. The borers prefer trees that are under some stress (being easier to penetrate), so much of the prevention comes through keeping your tree(s) healthy.

Thrips: These little pests will scar your fruit with scabs or leathery spots, which appear as the fruit grows larger; however, there is usually no serious damage from the thrip. Once found, horticulture oil will usually destroy these pests.

Coconut

Despite its name, the coconut is not a nut; rather, it is an indehiscent stone fruit or **drupe**, with a single seed—the largest seed in the world! The word coconut can refer to the fruit, the seed or the entire tree. The coconut itself (as we are familiar with it) is encased inside a husk-like shell. A versatile fruit, the coconut provides many uses: it may be eaten green; the coconut itself is full of “water,” which is drinkable; its husk and leaves may be used in furniture and décor; and the meat is gel-like, allowing it to be easily

scooped out. As the coconut ripens, the meat can still be harvested; it will also contain at least some water, which can be used in cooking or baking. After eating a piece of fresh coconut, you will never want to use the packaged stuff ever again! The coconut may also be processed to make milk and oil, both of which are edible and have multiple uses.

The word coconut comes from sixteenth century Portuguese and Spanish word *coco*, meaning "a head or skull," a name which derived from the three indentations that can be found on the end of the coconut itself, said to resemble a grinning face (in reality, these are germination pores). The oldest fossils of the modern coconut, found in Australia and India, are thought to date back to from 37–55 million years ago, during the Eocene period. A coconut can travel over 3000 miles by sea and still be able to germinate; however, as the coconut palm has spread throughout much of the tropics, their spread is also at least partially due to ocean travelers. The coconut is suited for ocean travel, and is often dispersed to its final home by floating in the sea.

The growing and tending of the coconut presents its own challenges, particularly in terms of germinating the initial seed, but is still cultivated by some hobbyist growers. Photo by Victor under the Creative Commons Attribution License 2.0.

The coconut palm is **monoecious**, meaning that it produces both male and female flowers. The tree has a fibrous root system, with

the roots growing outward near the surface and only a few roots penetrating below the surface. It thrives on sandy soil and is tolerant of salinity. The coconut palm prefers lots of light and good rainfall, and is cold intolerant, requiring warmth for proper growing. The coconut palm will bear fruit continuously, with 75 or more fruit produced per year (by a healthy tree in healthy soil). While it may also be grown indoors in northern climates, this is usually as a decoration only.

Planting

Propagation of the coconut palm consists of sprouting from the seed. Simply plant the entire coconut (with outer husk) in a shaded area, leaving about half of the coconut sticking out of the ground. Keep in mind that if you plant while the seed is soft, germination may start within weeks, but if the seed is hard, germination could take years! Some say it is preferable to transplant the coconut several times before deciding on a final planting spot for your new palm.

Diseases and Pests

The coconut palm is susceptible to a few diseases and pests. Should you begin to run into problems with your coconut palms, whether from disease or pests, a good nursery or local extension office should be able to assist you in diagnosis, treatment and prevention.

Lethal Yellowing: Spread by the plant hopper *Haplaxiu crudus*, this insect is attracted to thick grass, in which it prefers to lay its eggs (with the nymphs then developing at the grass roots). The only way to address the threat is through careful prevention; unfortunately, the methods for preventing lethal yellowing differ greatly based on region, climate and general soil composition. Therefore, efforts made to prevent lethal yellowing should always be done under advisement by a professional for your particular situation.

Coconut Leaf Beetle: This beetle feeds on young leaves, damaging both young and mature trees.

Eriophyid Coconut Mites: These tiny mites infest the seeds and can be devastating if left untreated.

CHAPTER 9

HARVESTING AND PRESERVING

It's the culmination of all the backyard farmer's efforts: harvest time! **Harvesting** will not be covered in too much detail here, as the various types of trees and plants all have their own particular harvesting time. The periods may also depend on where they are being grown and the conditions they've been grown in. Some fruits, such as bananas, may be harvested while still green, and will continue to ripen even when off of the tree. Others, such as grapes, will need to be harvested *only* when ripened on the vine; once picked, its ripening will cease. It is up to you to learn the specific harvest times for your trees. This information will likely be made available from the nursery at the time of purchase, along with any other information you would like regarding trees, plants and your future harvest.

Remember that when harvest time comes around for your fruits, berries and nuts, any excess may be preserved for later use. However, while vegetables are (most likely to be) either canned, dried or frozen in their natural form, fruits, berries and nuts can be preserved in a multitude of ways, as well as in their natural forms. Jams, jellies, leathers, butters, frozen, canned, dried, juices, wine—

these are just a few examples. If you are fortunate enough to have a root cellar, some fruits may be kept whole (at least for a few months' time, enough to leave you with fresh fruits into at least early winter).

In this chapter, we'll be looking at some of the preservation methods available to you for preserving your excess fruits, nuts and berries.

Fruits and Berries

There are number of ways that fruits may be preserved. Please see the Recipe section at the end of this book for some tasty examples you can try out yourself! And those are only a handful of options; there are thousands more available online. As you become comfortable with making certain recipes, try putting your own spin on them and see what happens.

Let's take a brief look at some ways to preserve fruits and berries.

Freezing

Many fruits, especially berries, may be **frozen**. Although some may be a bit mushy when thawed, they make for excellent ingredients in sauces, dessert toppings, milkshakes, smoothies, and anything else that you might concoct. Berries may also be used frozen, whether added to drinks or as a refreshing and healthy treat on a hot summer day. As with all frozen foods, your primary concerns should be watching for freezer burn and drying.

When freezing fruits or berries, it is important to remove all moisture from the bag itself. Remember that excessive moisture can result in ice crystals, which reduce the taste of the preserved fruit.

Dehydrating and Drying

One of the oldest methods of preservation, **drying** provides the longest storage capability/shelf life (provided that you keep the dried items from becoming wet). Most fruits may be dried or dehydrated. Although a dehydrator can make the process a bit easier, microwaves and conventional ovens may be used as well, as can air and sun drying (if you live in an area with lots of good, hot sun).

Drying and dehydrating fruit provides another delicious, affordable and versatile option to the home harvester's kitchen. Photo by Matt Kowal under the Creative Commons Attribution License 2.0.

One of the most fun ways to dry fruit is by turning it into **fruit leather**. Fruit leather stores for a long time, provides opportunity for a wide variety of flavors, and makes for a popular kid treat. You do need to remember that, when you make fruit leather, there will be little else that you will be able to do with the leather besides eat it as is (or create cake and cupcake decorations with them). So, unless your family eats a lot of fruit leather (and you do not need to preserve fruit for anything else) you might want to limit the percentage of your harvest that you devote to this tasty, albeit limited treat.

Sliced fruits may also be dried and later reconstituted with water (or juice) as needed, or else eaten dried as a delicious (but sometimes overly sweet) snack. Fruits that make for excellent dried snacks are pineapples, mangos, apples (especially if you sprinkle cinnamon before drying), figs, tomatoes, bananas and strawberries. Citrus, although it will dry, is not something that you will want to

eat later on. (However, you may want to save citrus *skins* to dry, as their powdered skins are often used in cooking and baking.)

Once dried, fruits will need to be kept dry, as any moisture will introduce mold, forcing you to throw the fruit away.

Jams and Jellies

Perhaps one of the most popular ways to preserve fruits, **jams** and **jellies** can be quite easy to make, require no special equipment, and can be prepared in any multitude of flavors. Blueberries, strawberries, quince, apples, citrus (such as oranges and kumquats), tomatoes, grapes (including wild grapes) and staghorn sumac berries are only some of the fruits and berries that make for a delicious jam or jelly. When canned and stored properly, jams and jellies have a shelf life of up to a year or more.

Not only do jellies and jams provide a viable and delicious method of preserving your harvest, they're fun to make!

Wine and Juice

Making **wine** and **juice** is a way to preserve the *flavor* of a fruit or berry, not the fruit itself. While it once was true that only grapes or apples were turned into drinks (either alcoholic or non-alcoholic), today wine and juice makers use a wide variety of fruits and berries in their recipes, to great effect.

In terms of making juice from your harvested fruits and berries, it really couldn't be simpler. In this modern age, all you need to is follow the directions provided with any kitchen juicer to enjoy delicious chilled drinks made from your very own crops. Just make certain to follow the guidelines for the specific fruits used to make certain you're using only ripe fruit.

Vinegars

The flavor of a fruit or berry can be preserved through making **fruit vinegars**.

To make fruit vinegar, begin by putting fruit scraps into a food-safe container (the size of the container will depend on the amount of scrap used). To begin fermentation, combine 1 gallon of water with ¼ cup of sugar. Mix well and pour over the scraps until covered, mixing more sugar water in if necessary. Cover with muslin or sheeting and fasten with rubber band (or tightly tie with twine). Let sit. You may hear some bubbles pop; this is the fermentation process at work!

After about 2–3 weeks, drain the scraps in a colander sitting in a clean bowl, as you will need to save the liquid. Strain the liquid a second time through cloth or muslin. Put into a clean jar and cover as before. Allow it to sit on the counter for three weeks to six months to acidify, depending on how potent you want your vinegar. Pour finished product into sterile jars for immediate use or can for indefinite storage.

Note: Almost any fruit may be used; if you don't have scraps, smashed fruit may be used instead.

Root Cellar

If you are fortunate enough to have one already (or be able to build one), **root cellars** come in handy for food storage. Keep in mind root cellars may extend some foods' lifespan by months, others by only weeks; but, if you have an overabundance of watermelons harvested to avoid a killing frost destroying the whole crop, being able to keep them for a few extra weeks will be a great help! Even if you don't have a cellar, let alone a root cellar, many times a cool, dark closet or room can work just as well, provided you maintain proper temperature control.

A root cellar provides a valuable, temperature-controlled and constant environment for the storage of any number of varieties of fruits, nuts and berries. Photo by J. Todd Poling under the Creative Commons Attribution License 2.0.

The following are some of the fruits that may be stored in a root cellar, along with their approximate storage time if properly

handled:

Apples

Apples keep well into the winter, (up to six months) depending on the variety.

Cranberries

Keep cool and moist. Cranberries should keep for 3–4 weeks, if not more, depending on conditions.

Grapefruit, Oranges and Tangerines

These citrus fruits can keep for up to 2 months if kept in a cool, dry place, with 80–90 percent humidity and a temperature of 36–40˚F.

Grapes

Grapes will keep for 1–2 months when stored at around 40˚F, in cold and moist conditions. Best storage conditions are one layer deep in baskets or trays, or else suspended in air.

Watermelon

If harvested when ripe, they will last for 2–3 weeks.

Pears

Wrap each pear individually, and place in layers in shallow boxes at temperatures of 32–40˚F and 80–90 percent humidity. Pears should be mature but not ripe when picked. When ready to eat, allow pears to ripen in a room at 60–65˚F. Ripening may take several days.

Preserving Nuts

Nuts are more limited in terms of their preservation methods, but they can still be kept whole and in their natural form for quite a while before spoiling. Freezing nuts will also extend their life span, keeping them from going rancid for much longer than just sitting in a cupboard. (It is not difficult to know when nuts have gone bad; their taste and smell will be off.)

Nut Butters

Many do not realize how easy it is to make your own **nut butters**. Peanuts, cashews, almonds and walnuts are among the nut varieties that make the best butters. Although nut butter doesn't preserve the nut as a whole, it preserves the nut's flavor, as well as the nut's nutritional value. Nut butters do not have an unlimited shelf life, due to their oil content; despite this, they can still give you an alternative use if you are flush with fresh nuts.

Making nuts butters at home is as easy as grinding the nuts themselves, regardless of whether they fresh or roasted. Roasting the nuts can be as straightforward as preheating the oven to 350˚F and spreading the raw nuts in a single layer onto an ungreased cookie sheet. Some find it preferable to soak the raw nuts for 12–24 hours, and then dehydrating prior to roasting; this can aid in digestion and provides some better nutrients. Let the nuts roast for about 8 minutes, and then remove tray from oven and mix or shake the nuts around a bit. Be careful; the tray will be hot! Place the tray back into the oven for an additional 8–12 minutes, and then remove and let cool. Once the nuts are cooled, place them in a food processor and process until the nuts release their oils and change to a buttery consistency, occasionally scraping down the side of the processor bowl. You may add a bit of oil as well for a smoother consistency, using a coconut, peanut or similar oil (which will work properly with the particular nut that you are using). When the mixture has reached the desired consistency, store in a container or glass jar. If you prefer grinding raw nuts, just skip the roasting steps.

Canning Nuts

Did you know that you can also **can** your excess nuts? First, place nuts on a cookie sheet on a single layer in a 250˚F oven until the nuts have dried. Pack the hot nuts into canning jars (size of your choice). Cover and can in a pressure cooker, following the directions that pertain to your specific piece of equipment. Once completed, canned nuts should be placed in a cool, dry cupboard, where they will keep for up to two years.

These are the most common methods that you will use for your excess nuts. However, it may be valuable to do a bit of research and see what other methods you can find.

This is just a brief discussion of fun ways to preserve excess fruits, berries and nuts. Although some may be time consuming, most of these methods are not difficult. Just remember that, as with preserving vegetables, fruit and nut preservation techniques must be done properly so as to end up with a safe end product that you can enjoy. Don’t be afraid to get creative; just stay safe!

FINAL WORD

While growing fruits, nuts and berries can be quite fun, it may require a more significant investment of time than other homesteading projects. For example, some nut varieties take time to mature, especially when planting young trees. Oftentimes, it is more advantageous to find properties for your homestead which already have a few producing nut trees or berry bushes on site. Even in the city you may be able to locate a home with a nut tree already on the premises.

For homesteaders looking to include fruiting bushes or trees in their backyard farms, fruits are the way to go. Fruits do not take as long to begin production, even when starting from scratch. Take some time when researching and choosing what you want to see in your garden or mini-orchard. And, once you learn about *proper* wild-crafting techniques, don't forget to check any woods, open fields and hedgerows nearby to determine what (if any) wild varieties you have available. You never know what you may find, already growing wild, just waiting to be discovered!

This book only scratches the surface of the fruits, nuts and berries available to the enterprising backyard farmer. We've tried to provide you with enough information to provide newer gardeners with the basics, to help reach a decision on what and when to grow. When you feel ready to take the next step, you can use some of the information provided in Resources (this page) to do your own research; or, as has been stated many times, go directly to the

source and talk with someone at your local nursery or extension office. They may even offer classes or seminars on growing and gardening to help set you on the path to full backyard self-sufficiency!

Enjoy!

FACTS AND TRIVIA

- Almonds were grown by the Egyptians, and are also mentioned numerous times in the Bible.
- The cranberry is a true berry, and can float (due to its interior seed cavities being hollow).
- Brazil nuts are produced by trees found only in the Amazon rainforest.
- The pineapple is actually a berry, and cucumbers are actually a fruit!
- The Native Americans referred to the strawberry as “heart seed berries.”
- Grapes *will* explode in the microwave (and make quite a mess!)
- Bananas produce a slight reading on a Geiger counter, meaning that they are faintly radioactive—but not enough to cause any problems!
- The acorn is the fruit of the oak tree.

There are many theories as to how exactly the strawberry got its name. The most commonly accepted story is that, as the berries grow in a way that seems almost

strewn about on the plant, they were first called “strewn berries,” which eventually became strawberry.

As with everything, politics have also played a role in the history of fruits, nuts and berries. The banana in particular is closely tied to the political history of Central America from the 1880s, all the way through to the 1970s, while chestnut exports from Italy stopped during WWII.

RECIPES

Red Cross Fudge

4½ cups sugar
½ pounds butter
12 ounces evaporated milk
1 tablespoon vanilla extract
2 cups miniature marshmallows
12 ounces real chocolate chips
2 cups chopped walnuts

Combine sugar, butter, evaporated milk and vanilla in a saucepan and bring to a rolling boil. Cook on medium heat for 11 minutes, stirring constantly. Add marshmallows, chocolate chips, and walnuts to fudge and mix well.

Pour into a buttered pan and let cool. When the mixture cuts without melting back together (but before it becomes crumbly) cut into squares. Store in an air-tight container. Makes approximately 5 pounds of fudge.

Tip: Substituting margarine for the butter makes the fudge oily.

Brioche Stuffing

2 cups brioche bread, coarsely chopped
½ cup shelled walnuts, finely chopped
¼ cup dried apples, coarsely chopped
¼ cup honey
¼ cup unsalted butter, cut into small cubes
2 tablespoons brown sugar
¼ cup diced red onion
2 cloves garlic, smashed and minced
½ teaspoons dried rubbed sage
¼ cup diced celery
Salt and pepper, to taste

Combine all ingredients in a deep roasting pan. Press into a loose, flat layer. Bake in a 375˚F oven for 25 minutes. Raise temperature to 425˚F and bake for 10 minutes. Serve immediately.

Chocolate Bourbon Pecan Pie

6 eggs
½ cup half-and-half
1 cup loosely packed brown sugar
1 cup dark corn syrup
½ cup good bourbon
1⅓ cups chocolate chips
2½ cups pecan pieces
Pastry dough for 9-inch pie (commercial or homemade)

Preheat oven to 350˚F. Beat eggs in a large bowl until yellow and creamy. Whisk in half-and-half, sugar and syrup, until smooth. Stir in bourbon, chocolate chips, and pecans.

Oil a spring form pan lightly. Roll out the pastry dough and press it into a pan, pressing out any air bubbles. Pour mixture into oiled spring form pan. Put the pie on a baking sheet with a raised edge or border. Bake until the center is only slightly jiggly (about 2 hours). Do *not* remove the pie from the mold until absolutely cooled, at least an hour.

Peanut Butter Dog Biscuits

1 beaten egg
½ cup stock (chicken or vegetable)
¼ cup vegetable oil
¼ cup peanut butter
1 cup all-purpose flour (approximate)
¾ cup bran cereal
¼ cup rolled oats

Preheat oven to 350˚F. Mix the peanut butter, stock, and oil into the egg until smooth. Mix the flour, cereal and oats together. Add the dry ingredients to the egg mixture until it forms a very stiff dough (you'll need to use your hands at the end). If not very stiff, add flour gradually.

Turn the dough out onto a lightly floured surface and roll to about ¼ inch thick. Cut out shapes (bone shapes work well) and bake on a lightly greased cookie sheet in the middle rack for about 15 minutes. Best results are obtained by allowing biscuits to harden overnight.

These dog biscuits have a bit of protein from peanut butter. You can use a mostly-oat low-fat granola in place of just the oats and the kind of bran cereal with flax seeds in for some extra texture.

Peanut Sauce

¾ cup roasted peanuts (unsalted)

4 cups coconut milk (unsweetened)

2 tablespoons red curry paste

2 tablespoons sugar

3 tablespoons lemon juice

3 teaspoons fish sauce

Chop or grind peanuts into a fine meal. Heat half the coconut milk in a medium saucepan on high heat and add red curry paste. Stir until curry paste is dissolved and continue to heat on high for 10–12 minutes (not stirring) until the oil from the coconut milk has risen to the top.

Decrease heat to medium-high and add ground peanuts. Stir and add the rest of the coconut milk. Bring to a full boil then decrease heat, adding the sugar, lemon juice and fish sauce. Continue to cook (stirring occasionally) for 15–20 minutes, until the sauce has thickened and the oil has risen to the surface again.

Take off the heat and let set for about half an hour. Stir to blend in the oil that has risen; the sauce should be not quite as thick as peanut butter. If it seems too thick, add about a teaspoon of water or coconut milk. Use as a dip or sauce on most any grilled meat. Thin with water to use as a marinade or dressing.

Honey Apple Marinade

1 cup apple cider
¼ cup apple cider vinegar
¼ cup honey
½ teaspoons salt
½ teaspoons freshly ground black pepper
2 tablespoons smoked paprika

Mix all ingredients together. Store in the refrigerator for up to 3 weeks.

Fried Apple Pies

9½ ounces all-purpose flour, approximately 2 cups
2 teaspoons baking powder
¾ teaspoon salt
2½ ounces shortening, approximately 6 tablespoons
¾ cup milk
1 egg mixed with 1 to 2 teaspoons water
2 quarts canola oil
Apple filling (see recipe below)
Confectioners' sugar

Filling

2 cups peeled and chopped apple
1 cup sugar
½ cup apple juice
1 teaspoons freshly ground cinnamon
½ teaspoons freshly grated nutmeg

Filling

Place all of the ingredients into a small saucepan over high heat and bring to a boil. Reduce the heat to low, cover and simmer for 30 minutes, stirring occasionally. Transfer to a bowl and place in refrigerator to cool completely before using as filling.

Pies

In the bowl of a food processor, combine flour, baking powder and salt. Pulse for a few seconds and then pour into a large mixing bowl. Add the shortening and knead it into the flour with your hands until

it is crumbly. Add the milk all at once and mix in with a spatula until it begins to come together.

Lightly flour your hands and the countertop and turn the dough out onto the countertop. Knead the dough ball, folding over 10–20 times. Using a rolling pin, roll the dough to ⅓ to ½-inch thickness and cut into rounds using a 2¼-inch ring. Roll each round as thinly as possible, or 5–6 inches in diameter. Spoon 1–2 tablespoons of filling onto the dough. Brush the edges of half of the dough lightly with the egg wash. Fold over and seal the edges together with the tines of a fork, dipping it into flour as needed. Gently press down to flatten and evenly distribute the filling. Dock the top of the pies with a fork.

Heat vegetable oil in a deep-fryer or a large heavy pot to 375°F. Once hot, add 1–2 pies at a time and fry until golden brown, approximately 3–4 minutes. Drain on a cooling rack.

Once all pies have been fried, place sugar in a bowl. Roll each pastry in the sugar and serve.

Easy Orange Smoothie

1 small can orange juice, frozen
1 cup skim milk
1 cup water
1 teaspoons vanilla extract
¼ cup sugar
14 crushed ice cubes

Place all ingredients in a blender and blend until smooth. Serve and enjoy.

Pesto

4 ounces fresh basil
Approximately 8 ounces extra virgin olive oil
⅓ cup freshly grated Pecorino Romano
¼ cup pine nuts (optional;
some also use walnuts)
4 cloves garlic
Freshly ground salt and pepper, to taste

Preheat the oven to 425˚F. Toast the pine nuts in an ovenproof pan for 10–15 minutes, checking every 5 minutes to prevent excessive browning or burning. In a small frying pan (skillet), heat 2 tablespoons of the olive oil on medium heat. Crush the garlic and sauté in the oil until soft, about 2–3 minutes. Combine the basil, garlic, cheese, pine nuts and oil in a mortar and pestle until it forms a smooth paste, or use a food processor and chop finely, slowly adding the oil to reach the paste-like consistency.

The sauce can be used immediately, or covered with a thin layer of olive oil and refrigerated in an airtight container for one week (or for several months, when frozen). It's possible to store pesto in jars for longer periods, but make certain to add a little extra olive oil on top of the filled jar, to prevent the pesto from turning brown as it oxidizes in the air.

Roasting Nuts

Nuts can be roasted (or toasted) by placing them evenly on a sheet pan and roasting in a 350˚F oven for 5–10 minutes. This works well with pumpkin seed as well. Many will also add seasoning to the nuts while oven roasting.

Small nuts, such as pine nuts or chopped hazelnuts, sunflower seed or pumpkin seed, can be toasted in a dry frying pan over fairly high heat. Make sure to keep the nuts moving with a spatula to prevent them from burning.

Saucepan Fudge Crackle Cookies

1 cup flour

1 teaspoon baking powder

¼ teaspoon salt

¼ cup butter (margarine may be substituted)

3 ounces unsweetened baking chocolate

1 cup granulated sugar

2 eggs

1 teaspoon vanilla extract

½ cup coarsely chopped nuts, such as walnuts or macadamias

Additional sugar for coating

Mix the flour, baking powder and salt. In a 3-quart saucepan on low heat, melt together margarine and chocolate. Remove the chocolate mixture from heat. Into the chocolate mixture, mix the eggs, sugar, vanilla, and nuts. Mix the flour mixture into the chocolate mixture.

Cover and refrigerate until firm, overnight if possible.

Make 1½-inch balls, rolling them in sugar and placing onto a cool, ungreased cookie sheet. Bake at 300˚F for 20 minutes. Immediately remove the cookies from the cookie sheet or cookies will stick.

Butter Tart

Dough

1 cup shortening

1 large teaspoon butter or margarine

¾ cup boiling water

3½ cups pastry flour or 3 cups all-purpose flour

2 teaspoons baking powder

¼ teaspoon salt

Filling

2 eggs

1½ cups brown sugar

½ cup corn syrup

3 tablespoons butter, melted

1 cup currants or raisins

½ cup chopped walnuts

2 teaspoons vinegar

½ teaspoon vanilla extract

Pinch of salt

Dough

Mix together shortening, butter, and water until creamy. While still creamy (but not yet cold) sift in the flour, baking powder and salt. Mix gently until a dough forms. Try not to knead it while forming it into a large ball.

Separate the dough into two equal portions and chill for 20–40 minutes. Separate the dough into two dozen equal balls. Roll each ball flat, ready to be placed.

Tarts

Preheat oven to 350˚F. Beat the eggs well. Add sugar, syrup, and melted butter and beat again.

Add the currants, walnuts, vinegar, salt, and vanilla extract and mix vigorously.

Put a small amount of corn meal into tart tins, or count out 24 cupcake papers. Place flat circles of uncooked pie crust into the pans, or place the circles into cupcake papers and insert them into the pans. Fill the shells two thirds of the way full. Bake until the pastry is light brown, about 20 minutes.

Boilo

2 medium-large oranges

2 lemons

1 small box raisins (about 1½ ounces)

8 ounces honey

12 ounces whiskey (80-proof) or more, to taste

½–1 teaspoon cinnamon, nutmeg, cloves, caraway seed, anise seed (choose one or all)

Prepare this recipe in a crock pot; it's easier than cooking on the stove, and much less likely to overcook or scorch. For the quantities shown here, a small (1.5 quart) crock pot will do.

Peel the oranges and lemons. Cut up the fruit and squeeze them into the crock pot. Put the remaining fruit pulp into the crock pot as well.

Add the raisins, honey, and spices, and stir. Note: do not add whiskey yet.

Start the crock pot and let the mixture cook for about 2–4 hours. Stir occasionally. It's complete when the fruit pulp gets cooked down. Strain into a pitcher. Mash down the fruit in the strainer to get all the liquid.

Now add the whiskey to the pitcher and stir. If you cook the whiskey, even for a short time, the alcohol will start to evaporate. Taste, adding more whiskey to your liking.

Serve hot in shot glasses, espresso cups, or coffee mugs. After the first round, each individual serving can be heated in the microwave. This recipe makes about 12 ounces of "virgin" boilo. Add 12 ounces of whiskey to this and you get 24 ounces of "coal region nectar," enough for 12–18 servings.

Traditional Pecan Pie

Pie Crust

1½ cups all-purpose flour

6 tablespoons (3 ounces) unsalted butter

$^1/_6$ cup vegetable shortening

1 teaspoon table salt

4–5 tablespoons very cold water

Pie Filling

6 tablespoons (3 ounces) unsalted butter

1 cup dark brown sugar (packed)

½ teaspoon table salt

½ cup light corn syrup

¼ cup dark corn syrup

1 tablespoon bourbon whiskey

1 tablespoon vanilla extract

2 cups chopped pecans (roasted)

3 large eggs

Roasting the Pecans

Spread whole pecans onto a baking sheet lined with parchment paper and roast in a 350°F oven for 10 minutes. Stir the pecans halfway through the roasting time to ensure even roasting. Allow the pecans to cool, and then chop.

Pie Crust

Dice butter into cubes and place in freezer for 15–30 minutes along with the shortening and a bowl of water. Combine the flour, sugar

and salt in a food processor and pulse several times to mix. Add the butter and shortening and pulse 8–12 times, until the butter is the size of peas.

With the processor running, pour the ice water down the feed tube and pulse until the mixture begins to come together.

Dump the dough out onto a board and press it together, forming the dough into a disk. Wrap the dough in plastic wrap and refrigerate for approximately 30 minutes. Roll out dough on a well-floured board into a circle, rolling from the center out, turning and flouring so the dough does not stick to the board. Roll the dough onto the rolling pin and transfer to a 9-inch pie dish.

Mold the dough into the pie dish, making sure the edge of the dough sits securely on top of the rim of the dish. This will prevent the sides of the crust from sliding down during baking.

Line the pie shell with parchment paper and fill with pie weights (or dried beans). Place the pie dish on a cookie sheet and cook the pie shell for 20 minutes at 400°F on the middle oven rack.

Remove pie weights by lifting out the parchment paper by the corners and continue to cook pie shell for another 5 minutes.

Pie Filling

While the pie crust is baking, proceed to making the filling. In a medium saucepan over medium heat, melt the butter. Stir in the brown sugar and salt until combined. Add the corn syrup, and bring the mixture up to a boil, stirring continuously so the filling does not burn on the bottom of the saucepan. Continue to stir and allow the mixture to boil for 1 minute, and then remove from heat. Stir in the bourbon, vanilla, and chopped pecans. Allow the mixture to cool for 5 minutes, stirring occasionally. Stir in the eggs. Reduce oven temperature to 350°F. Pour the filling into the hot pie crust. Place the pie dish still on a cookie sheet back into the oven on the lower third oven rack.

Bake at 350°F for 35–45 minutes. The filling should still be slightly jiggly when removed from oven. Allow pie to cool on a cooling rack. Serve warm with vanilla ice cream or whipped cream.

Key Lime Pie

1 prepared 9-inch (9 ounces) Graham cracker crust or pastry pie shell

1 can (14 ounces) sweetened condensed milk

3 eggs

½ cup fresh Key lime juice

½ cup caster sugar for meringue topping

Separate egg whites from egg yolks. Make sure there is no trace of yolk in the whites! Begin by beating the sweetened condensed milk, lime juice and egg yolks in a small mixer bowl. Pour the mixture into the baked pie shell. Bake at 350˚F for 8 minutes. While baking the filling, beat eggs whites in a large, clean mixer bowl on high speed until soft peaks form, and then add sugar gradually until meringue forms hard peaks.

Spoon the meringue over the top of the hot pie and use a spoon to form peaks. Bake at 350˚F for 10–15 minutes, or until meringue begins to brown. Meringue may be omitted and replaced with dollops of fresh, whipped cream decorating the edge of the cooled pie.

Note: A true Key lime pie is yellow in color, not green! A slice is also wonderful dipped in dark chocolate and frozen on a stick! Should you decide to try this delicious treat, leave meringue, whipped cream and any other topping out.

Making Jam

A good quantity of strawberries, peaches, cherries, plums, blueberries, or similar

Sugar or sugar with added pectin

Lemon juice

Clean the fruit, removing any stones, leaves or other indigestible parts, and wash. If the fruit is *not* a small berry, then cut it up into small pieces. Weigh the fruit and add the same weight of sugar to it. If you are using an especially juicy fruit, you may prefer to use sugar with added pectin. Pectin is naturally present in most fruits and will cause the jam to "set," but some fruits contain less pectin and some contain more, so it is often helpful to add some.

Sprinkle the fruit and sugar with lemon juice (which will prevent fruit from browning and discoloring) and stir well. Cover the container and let the mixture rest for at least one hour in a clean, cool place to let the fruit absorb the sugar.

After this, pour the mixture into a sufficiently large cooking pot. Bring the mixture slowly to a boil on low heat, stirring regularly. Depending on the fruit, you will need to boil the mixture for about an hour. The jam is ready when it is thick. You may check this by pouring a drop of the jam onto a cold plate. If it turns sticky and not too runny, it is ready.

To preserve the jam, pour into glass canning jars that have been sterilized by boiling them in water. You can also pasteurize the containers by washing them with boiling water. The lids should be sterilized as well. The jam should be poured rapidly into the still-hot containers. The containers should be sealed with lids. In this case, it's best to let the air bubble that is in the flask traverse the still-hot jam by turning it upside-down after the lid has been placed on or else take wooden skewers and poke along the sides (you will see the air bubbles release).

Tapenade

6 anchovies

1 tablespoon capers, rinsed and drained

1 cup pitted black olives

2–3 tablespoons extra virgin olive oil

There are many versions of tapenade. This one is quite basic. Blend the anchovies, capers and olives. For this, a blender is better than the traditional mortar and pestle. Add a few tablespoons olive oil until smooth. Serve on toast as an amuse-bouche, or with boiled eggs, or with goat cheese and roasted peppers, or on potato gnocchi.

Orange French Toast

6 eggs, lightly beaten

¾ cup orange juice

½ cup half-and-half cream

2 tablespoons sugar 1 teaspoon vanilla extract

½ teaspoon grated orange peel

8 thick slices cinnamon bread

¼ cup butter, melted

In a shallow bowl, combine the first six ingredients. Dip both sides of the bread into the egg mixture; let soak for 5 minutes. Place in a greased 15 × 10 × 1 inch baking pan. Cover and refrigerate overnight. Uncover, drizzle with butter. Bake at 325°F for 35–40 minutes (or until browned).

Lemon Pickle

12 small (or 6 large) lemons (thin skins preferred)

Juice of 1 large or 2 small lemons

½ cup salt

¼ cup red chili powder

½ cup sugar

3 teaspoons turmeric powder

1 teaspoons fenugreek seed

1 teaspoons black mustard seed

¼ teaspoons asafoetida powder (omit for gluten-free version)

Wash the lemons and dry well, leaving no water on the lemons. Trim off the stalk and any odd bits. Cut the lemons in to small pieces, ¾ inch on each side, and place in a bowl.

Dry-roast the fenugreek, black mustard and asafoetida together in a pan on a medium heat for about 5 minutes. Don't burn them!

Grind the roasted spices in a grinder, or else use a mortar and pestle. Add the ground spices, turmeric powder, salt, sugar and chili powder to the bowl and mix together well. Pack the mixture into a 2 quart jar, or use a couple of smaller jars. Don't fill quite to the top—allow at least 1 centimeter of space.

Sit the jar where it will receive heat from the sun. Bring the jar inside in the evening, and put it back out in the morning. Do this for at least a month in the summer, or two months in the winter. The warmth of the sun will help the pickle to ferment.

Watermelon Rind Pickles

3 quarts (or 6 pounds) watermelon rind (green outer skin removed)

¾ cup salt

3 quarts water

2 trays of ice cubes

9 cups sugar

3 cups 5% vinegar, white

3 cups water

1 tablespoon whole cloves

6 cinnamon sticks, cut in 1 inch pieces

1 lemon, thinly sliced, with seeds removed

Trim the pink flesh and outer green skin from thick watermelon rind. You want to use only the white of the rind. Cut into 1 inch squares or fancy shapes as desired. Cover with brine made by mixing the salt with 3 quarts cold water. Add ice cubes. Let stand 3–4 hours. Drain, then rinse in cold water. Cover with cold water and cook until fork tender, about 10 minutes, being careful not to overcook. Drain once again.

Combine sugar, vinegar, water and spices (try tying the spices in a cheesecloth package so you do not need to fish them out later). Boil for 5 minutes and pour over the watermelon; add lemon slices. Let stand overnight in the refrigerator.

The following day, heat the watermelon in syrup to boiling and cook slowly for 1 hour. Pack hot pickles loosely into clean, hot and sterilized pint jars. To each jar, add 1 piece of stick cinnamon from spice bag. Cover the rind with the hot syrup, leaving ½ inch headspace. Remove air bubbles and adjust headspace if needed. Wipe rims of jars with a dampened clean paper towel, and put lids on jars and proceed with canning process.

Makes approximately 4–5 pints. A note of caution: As this syrup has quite a bit of sugar in it, do *not* drop the hot syrup on your skin —the sugar base can burn you badly!

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