



Fruit Trees, Bushes, and Vines for Natural Growing in the Ozarks

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Native pawpaws, persimmons, and muscadines, as well as other non-native species and lesser-known varieties of well-known species, can be grown in the Ozarks naturally, without pesticides. This publication discusses how to overcome common challenges of growing fruit trees, vines, and bushes in the Ozarks and suggests what to look for when choosing a variety that will thrive locally.



Jumbo muscadine. Photo: Guy K. Ames, NCAT

Return of the Natives?

Because of culture and tradition, we think of the apple before the pawpaw, the peach before the persimmon, the seedless grape before the muscadine. As good and nutritious as apples, peaches, and seedless grapes are, they are subject to a myriad of pests and diseases in the Ozarks, and most varieties of these fruits can hardly be grown at all without regular applications of pesticides. On the other hand, native pawpaws, persimmons, and muscadines require no pesticides at all to yield their bounty. And there are other non-native species and lesser-known varieties of well-known species that can be grown in the Ozarks naturally

without pesticides. This holds broadly true for all of the upper South, especially the southern highlands from the Arkansas and Missouri Ozarks east, through the southern Appalachians, to the Virginia Piedmont.

The heat and humidity of Ozark growing seasons are especially conducive to pests and diseases of fruit trees, vines, and bushes. Unfortunately, apples, peaches, and grapes—especially varieties like Gala apple, Redhaven peach, and Flame Seedless grapes—commonly sold in local retail nurseries and big-box stores are susceptible to these local pests and diseases.

Such plants cannot be grown without the help of

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Local pawpaw thinking globally over a cup of coffee. Photo: Guy K. Ames, NCAT

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synthetic pesticides and fungicides. People wanting to grow organically or naturally need fruit plants that can be managed without synthetic pesticides. Even home fruit growers who may have no objections to pesticides are busy with the details of life, jobs, and families and frequently do not get around to spraying at the proper time (usually well before symptoms are seen) or simply forget to spray at all. Because of this, species and varieties

that can be managed with few or no applications of pesticides are the most desirable.

Most of this publication revolves around fruit species and variety choices. However, for the true beginner, let’s summarize the basic challenges and possible responses for Ozark fruit growers.

What to Do about Common Problems for Fruit Plants

There are problems other than diseases and pests that can afflict almost all fruit plants in the Ozarks. Some suggestions appear below on how to improve growing conditions for most fruit plants.

Weeds

We have enough rainfall in the Ozarks to make weeds problematic for all plants, but young plants are especially vulnerable to competition for nutrients, water, and sunlight. The best non-toxic weed-control option for fruit plants is some combination of mulching and hand weeding. Mulching benefits plants in many ways, but weed control and keeping the soil moist are key. Some weeds, like Bermudagrass, can be especially pernicious, and growers should try to keep such aggressive, invasive weeds from becoming established, especially while the plants are young. Older trees, bushes, and vines can tolerate some competition, but growers should be aware that the weeds will steal nutrients and water from the fruit plants, so try to minimize such competition as much as possible.

All mulching materials are not equal. The so-called “fabric mulches” widely available in garden supply stores usually provide excellent weed control but do not add organic matter to the soil. Grass clippings and leaves provide organic matter

Scope and definitions

For the purposes of this document, “natural” means without pesticides, especially synthetic ones that have become suspect in the popular mind. “Organic,” often used casually as a synonym for “natural,” now has a legal definition for the purposes of regulating organic farming so that consumers can be assured that their food is free of synthetic agricultural chemicals and has a minimal impact on the environment.

The subject matter in this publication is limited to woody perennial fruit plants: trees, bushes, and vines. Non-woody perennials, like strawberries and blackberries, are excluded primarily because they are well-known, easy to grow naturally, and are relatively short-lived, thus easier to replace. Perennial fruiting trees, bushes, and vines require a larger investment in time and money, so making good choices in the beginning is important.

but can also harbor weed seed, and many weeds push right through such loose material. Wood chips, in University of Arkansas organic apple research, came out on top in trials comparing grass clippings, shredded newspaper, and the chips. One big advantage of wood chips is that they don't harbor mice, rats, or voles because these rodents cannot tunnel through them. Mulch materials should NOT be mounded around the trunks because of the possibility of inciting collar rot on the trunks, and everything but wood chips should be pulled about 12 inches away from the trunk during the winter to discourage rodents from gnawing on the trunks.

Poor Soil

Poor soils for fruit plants can be those that are too rocky, clayey, poorly drained, too well drained (droughty), acid, and/or infertile, and we have all of these in the Ozarks. Luckily, there are remedies for almost all of these, and, *once established*, woody plants are often quite tolerant of these conditions. Read on for some simple ideas on how to deal with soil problems.

Adding organic matter helps break up clay soils, gives life to sandy and rocky soils, improves water absorption and retention, and adds nutrients. However, there can be too much of a good thing. When planting in a clay or rocky soil, for instance, if the grower fills the hole with too much organic matter, he or she can unwittingly be producing a situation like growing in a pot: the roots don't extend beyond the nice hole with all of the good soil and can even become tangled and "pot-bound." So,

in a clay or rocky soil, no more than 25% of the backfill in the hole should be potting soil or compost or some other organic matter-rich material. You want to encourage the roots to extend out into the surrounding soil. Unlike a clay soil, it's hard to add too much organic matter to a sandy soil; the roots will easily extend into the sand.

You can also encourage the roots when first planting in a clay soil by making sure that the sides of the planting hole are not perfectly round and/or glazed. A typical shovel can glaze the sides of a hole dug in clay soil, but an auger is really bad for creating that condition. The simple remedy is to score or rough up the sides of the hole with your shovel and make sure you don't curl or bend the roots when placing the plant in the hole. It's better to prune back the roots a little than to bend them, but better yet would be to dig a square hole or otherwise provide channels for root extension. In other words, avoid root constriction.

Regarding drainage, there is internal drainage based on soil texture (clay, sand, and loam) and external drainage based on topography. Clay provides poor internal drainage; a very sandy soil can be too well-drained (droughty). A sandy loam soil is best for most fruit plants, though additions of organic matter make it better still. Our common red and orange clays are indicative of some soil oxygen as these colors are the result of iron oxides (rust) in the soil, so such soils can be used for planting and made better by adding organic matter and taking care during planting as described in the preceding paragraph. Black, white, and gray clays should be avoided altogether



Adding organic matter to the soil by keeping fruit plants mulched with organic materials will gradually improve the texture and fertility of that soil. Photo: Rex Dufour, NCAT

because they are usually too wet and, wet or dry, do not provide enough oxygen for plant roots; not much can be done with them for the purposes of fruit growing.

External drainage refers to the water flow over a piece of land. All fruit species adapted to the Ozarks are intolerant of standing water, so avoid boggy spots or areas where the water drains out too slowly. Stone fruits, like plums, peaches, and cherries, are especially intolerant of poorly drained conditions.

If the soil is excessively droughty because it's sandy and/or on a slope, provide a slightly raised berm on the downside of the hole to encourage the water to collect and drain out more slowly.

Acid soils (technically, anything below pH 7) are the norm in the Ozarks; in fact, undisturbed forest soils of the Ozarks are usually around pH 5.2 to 6.0. Fortunately, most fruit plants are tolerant to anything down to pH 5.7 or thereabouts. Blueberries require a highly acid soil (ideally between pH 4.8 to 5.2), so a blueberry grower might actually need to further acidify the soil with a sulfur-based product (but do it according to a soil test). Pears are generally fine with the native pH. Other fruit plants will usually do best in soils that are only slightly acidic (pH 6.0 to 6.5), but they are generally tolerant and can perform well enough in any soil from pH 5.8 to 7.2. The grower will need to have a soil test to ascertain soil pH (see below). The remedy for an acid soil is agricultural-grade crushed limestone applied as per instructions that will come with your soil test results.

Soil samples can be submitted to your county Cooperative Extension office, or you can buy simple soil-testing kits online. Ozark soils are notoriously poor in nutrients, but most trees, including fruit trees, are not particularly demanding. Adding nutrients in elemental form, as in most commercial fertilizers, should be done in accordance with a soil test, but annual or semi-annual applications of compost and mulch on top of the soil (don't put any type of fertilizer in the planting hole) usually provide adequate fertility for home growers. Though technically not organic or "natural," products like Jobe's Tree and Fertilizer Spikes™ are safe and effective ways to provide season-long, slow-release nutrition to young fruit plants.

Past three years of age, most fruit plants do well enough on the fertility provided by decaying

mulch and maybe a shovel or two of compost. If you detect nutrient deficiency symptoms like yellow leaves or stunted growth (fruit trees should put on a minimum of about 12 inches of new growth every year), increase applications of compost or winter applications of manure. If fertility issues seem pressing, consider quick-release fertilizers like compost tea or manure tea, fish emulsion, or non-organic liquid fertilizers like Miracle-Gro™.

Frost Pockets and Other Topographical Factors

Warm air rises and cold air sinks. In the spring, when fruit plants are blooming, tender young flowers are susceptible to freezing temperatures. Therefore, the commercial orchardist seeks higher ground to avoid crop losses from such untimely freezes. But this doesn't necessarily mean that you shouldn't try growing perennial fruits if you live at a low elevation, like along a creek or river. It does mean, however, that you might have the occasional year with a late frost that takes your crop but leaves the crop of your friend or relative who lives and gardens on a hill or ridgetop.

Is your land flat ridgetop or bottomland? Or if it slopes, in what direction does it slope? In general, south- and west-facing slopes in the Ozarks are hotter, drier, and have poorer soil than east- and north-facing slopes. Other factors being equal, north- and east-facing slopes are better for most fruiting plants. Ridgetops are also acceptable, but bottomlands can be problematic because of frost pockets (see preceding paragraph) and possible flooding. Fruiting plants that bloom in the spring (almost all of them) can be delayed in their blooming by a few days by placing them on north- and east-facing slopes; the south- and west-facing slopes warm up faster in the spring and can induce earlier bloom, thereby making the plants more subject to late, blossom-killing frosts. Plants that would probably benefit from delayed blooming include apples, pears, peaches, plums, and apricots, so plant them on north-facing slopes if available.

In a few situations, where it's the whole plant and not just the blossom that needs protection, southern aspects might be preferred. This would be the case when the plant in question has borderline cold-hardiness in our area, such as figs, Asian persimmons, and muscadines. Plant these on south-facing slopes or against south-facing buildings.

Ozark soils are notoriously poor in nutrients, but most trees, including fruit trees, are not particularly demanding.

Southern aspects can also be beneficial to bunch grapes, which require a certain amount of summer heat to bring their crops to the highest sugars.

Deer, Squirrels, Birds, and Other Vertebrate Pests

With the very notable exception of pawpaws, most fruit plants, especially young ones, are subject to the depredations of deer, rabbits, and rodents. Later, when plants begin to fruit, you can add squirrels, raccoons, and birds to the list of vertebrate pests. Exclusion with fences and cages (see photo) is the most direct, and usually most effective, means of management. Dogs, if they are fenced in the planting area, can be very helpful. Repellent scents and scare devices are often only temporarily effective, until the pests figure out it's a bark with no bite (and that's the problem with these vertebrate pests: they learn). There are too many specific plans, ideas, and products related to vertebrate pest control to tackle here. Just cage or fence young plants to exclude deer and rabbits. Later, if you have problems with vertebrate pests, contact the county Cooperative Extension agent or ATTRA at 800-346-9140 or www.attra.ncat.org.



Young fruit tree caged for protection from deer. The cage is five feet tall. If the mesh is any bigger than this, deer will stick their muzzles inside the cage and continue to damage small limbs. Photo: Guy K. Ames, NCAT



Cedar apple rust on Arkansas Sweet, an heirloom variety. Note that being from Arkansas and being an older, heirloom variety did nothing to impart resistance to the disease. The rust-resistant variety William's Pride (a modern variety from Indiana) immediately adjacent to this tree exhibited no symptoms of rust at all. It's wise to assume little based on a variety's age or origin. Photo: Guy K. Ames, NCAT

Fruits for Natural Growing in the Ozarks

Apples

Despite the (short and somewhat exaggerated) history of apple production in the Ozarks, we have always been at the southernmost edge of apple adaptability, and climate change may put us over that edge. In 2012, the USDA officially changed most of the Ozarks' plant hardiness zone to 7a and 7b, a full zone warmer than a generation ago. In general, greater heat aggravates pest and disease problems, and apples are showing the strain.

By chance and by design of plant breeders, there are apple varieties displaying high levels of resistance to most of the major apple diseases. Cedar apple rust, scab, mildew, and, to a lesser degree, fire blight can all be largely ignored by natural growers, IF they choose the right resistant varieties.

Fire blight (affecting the tree; see photo in the pear section) and the summer rots (affecting the



Fuji with one of the summer rots. Also note the sooty blotch and flyspeck on the skin. Photo: Robyn Metzger, NCAT

fruit) are proving themselves limiting factors for natural and organic apple growers in our area. Fire blight, bacterial in origin, can devastate susceptible varieties (e.g., Gala, Jonathan, and Gravenstein), even killing mature trees in one season when the pressure is high (when it stays wet for extended periods, beginning at bloom, the primary infection period). Heirloom varieties, especially in our climate, are not necessarily resistant to fire blight or other diseases.

Synthetic fungicides are necessary and available for commercial growers to combat the summer rots, but nothing comparable currently exists for natural growers, even if they wanted to spray. Thankfully, there are some options and strategies that will allow natural growers to grow some apple varieties in NWA. First, the designation “summer rots” provides a clue. Choosing apple varieties that are the earliest and latest maturing helps growers simply escape the worst infection period for the rots: the summer.

Pruning apple trees correctly and disposing of the prunings can *help* to manage apple diseases, including blight and rots. Opening the tree to air and sunlight helps plant surfaces dry out before infection can occur. This takes place without pruning when the trees are very young: the so-called “honeymoon years” (beginning fruit growers sometime mistake this phenomenon for actual resistance, only to be surprised by diseases as the tree gets older). The pathogens that cause fire blight and the summer rots persist on the trunks,

limbs, twigs, and fruit mummies (the dried up rotted fruit still hanging on the trees) and so build up and get worse over time. Keeping the tree open and diseased wood and fruit mummies removed and destroyed will help considerably.

Insects that want to eat your apples are legion. If you’re not spraying at all, get used to lumps, dings, dimples, and the occasional “worm” in the fruit—there will still be plenty of apple for you to eat or preserve. If you are willing to spray, Surround™, a product made from finely ground kaolin clay, is non-toxic and repels a wide variety of pests, but it washes off with rain so has to be applied often, especially in rainy years. Do a Web search to find Surround™ in small, garden-scale quantities. It is a labeled “organic” product.

Apple tree trunk borers (two species of beetles; it’s the larvae of these beetles that bore into trunks) are particularly troublesome for young trees left unprotected. Protect them by wrapping the trunk with window screen, making sure the screen is snug against the ground and, at about 18 inches high, tied off with a twist tie or twine. Be sure to loosen the ties at least once a year to keep from girdling the tree.



A mature apple tree wrapped with window screen for trunk borer control. Such exclusion measures are even more important for newly planted and young trees. Photo: Guy K. Ames, NCAT

Bluntly put, most apple varieties, especially the ones people know from the grocery store, seem to do poorly in the Ozarks without a full spray schedule. This includes Gala, Fuji, Golden

Delicious, Honeycrisp, Jonathan, Braeburn, and many more.

The following have very good to excellent flavor, ripen very early or very late (which is important in order to miss the worst of the summer rots), and have proven to grow well and produce more or less consistently in the Ozarks: Arkansas Black, Arkansaw (aka Mammoth Black Twig), Bevan's Favorite, Black Limbertwig, Pristine, Stayman Winesap, Virginia Beauty, and Williams Pride.

There are many other apple varieties that are marginally adapted here, producing excellent fruit when the weather is amenable (not too wet and hot). The following have excellent flavor and very good resistance to all of the major apple diseases except the summer rots: Priscilla, Enterprise, Mollies Delicious, Florina, Liberty, and Orleans.

Dwarfing apple rootstocks will work if you baby them like a prize rose: plant on a slightly elevated berm or mound, apply lots of compost, and avoid letting the soil ever dry out. Still, dwarfing rootstocks are susceptible to diseases and insects. Semi-dwarfing rootstocks, like MM.111, are best adapted to our conditions. Seedling rootstocks are okay, too, but may take up to eight years to come into bearing.



Arkansas Black as grown in the author's unsprayed orchard in Northwest Arkansas. Note the small dings and dents: the dents are from hail; the thick skin spared Arkansas Black, but every other variety's skin was broken and opened the fruit to rot organisms. Virtually no other apple variety—and Arkansas Black probably by virtue of its thick skin—has any appreciable resistance to insects. Photo: Guy K. Ames, NCAT

Stone fruits

Based on decades of evidence, stone fruit like peaches, plums, sweet cherries, apricots, and nectarines will produce virtually nothing in a no-pesticide situation most years in our climate. There are many culprits, but the major inhibiting factor is brown rot, which is spread and favored by our rain and high humidity.



Brown rot on peach. Photo: A.R. Biggs, West Virginia University Extension

The only stone fruit that will produce consistently without spraying in our climate is the tart cherry, and even it can suffer greatly from mildew and cherry leaf spot, especially in wet years. Nevertheless, in most years, tart cherries do quite well here with virtually no effort. Several varieties would probably work, but Montmorency has a proven record of success in the Ozarks and some historical value, being a variety that Thomas Jefferson grew.



Tart cherries in a bowl. Photo: Bob Bors, University of Saskatchewan

Cherry roots are susceptible to root rots, so avoid heavy, clay soils and plant on a spot with good drainage.

If you must try any stone fruit other than tart cherries, try early-ripening peaches like Candor, Harbinger, Harken, and Derby. Natural growers will lose the crops most years, but if you are to have any hope, keep the tree pruned well for sunlight and air circulation, remove all “mummies” (dried up rotten fruit from the preceding year that function as a source of disease), and pray for drought. Sometimes these earliest-maturing peaches produce good fruit in a no-spray situation simply because they’re exposed to the diseases and insects for a shorter period of time compared to other, later-maturing, varieties.

Pears, European

There are several European pear varieties that will do well under our conditions. Pears are much better adapted to the Ozarks than apples. The proof of this is in the landscape. If you’re a hiker and come across old Ozark homesteads, you can often find pear trees still standing and producing (one such homestead well-known to hikers is Granny Henderson’s cabin along the Buffalo River in Newton County, Arkansas). You will only very rarely find apple trees on such old, abandoned homesteads.

Among the European pears that can be grown here naturally are Magness, Maxine, Moonglow, Potomac, Keiffer, and Ayers. The well-known Bartlett variety and virtually all of the pears with French names (e.g., D’Anjou, Comice, and Bosc) will be devoured by fire blight in our climate within a few years of planting.

Pears don’t have as many insect pests as apples, and pears are not bothered by borers. Fire blight is the main threat to pears. The varieties listed above are resistant but not immune. In certain years conducive to this disease, even resistant varieties will get some fire blight and judicious pruning during dormancy will be necessary to remove fire blight-infected limbs. Over-fertilizing pears will increase their susceptibility to blight. Unless the tree looks really stunted or shows other signs of nutrient deficiency, it’s probably best to not fertilize pear trees at all. Fire blight-resistant pears are a very good choice for the Ozarks.

European pears require picking while just shy of ripe and “curing” (sitting at room temperature)

after picking to reach their best flavor. At this point they will be soft and very juicy, and you might understand why pears were once considered the fruit of royalty, while the apple was more properly peasant fare! Other than fresh eating, pears are suitable for preserves, juice, and fermented pear cider known as perry.



Fire blight on Surecrop pear in Northwest Arkansas.
Photo: Guy K. Ames, NCAT

Wild *Pyrus calleryana* seedlings are probably the best pear rootstocks for our bioregion, though any seedling will probably suffice. There are “dwarfing” pear rootstocks available, but they haven’t performed consistently in the eastern United States.



Magness pear. Photo: Guy K. Ames, NCAT

Pears, Asian

Only three Asian pears, Korean Giant, Koyama, and Shinko, have to date exhibited high levels of resistance to fire blight in our area. Korean Giant and Shinko, especially, have proven very easy to grow in the Ozarks.

Other Asian pear varieties that have shown moderate resistance to fire blight include Clear Moon (Meigetsu), Seuri, Niitaka, Chojuro, and Shinseiki. These moderately resistant varieties will almost certainly suffer some blight strikes in certain years but can often still be grown successfully with dormant-season removal of blighted wood and avoidance of anything that can increase tree vigor, like fertilizers and heavy pruning. Vigorous, succulent wood is more susceptible to the bacteria that causes fire blight.

Everything said about the European pears is true for Asian pears also, except that the fruits of the Asian types don't need to be cured; they are ready to eat off the tree. Apart from jams, jellies, and preserves, an exceptionally good use for Asian pears is to dry them. Dried Asian pears have the texture of "gummy bears" and are at least as sweet!



Koyama Asian pear. Photo: Guy K. Ames, NCAT

Blueberries

Even with few pests in the Ozarks, the highbush blueberry is one of the most common failures in our area's gardens and homesteads. The reason can be traced back to this plant's native habitat: moist or wet peat of moderate to high acidity in and around marshes, swamps, lakes, and flood-prone areas. Because the highbush blueberry

didn't need root hairs in such an environment, it never evolved them. The practical implications of this is that, to be successful here, the blueberry needs: 1) planting in a hole augmented with a lot of peat moss; 2) drip irrigation so that the plant roots never dry out; and 3) high soil acidity accomplished and maintained by application of sulfur according to soil tests. The most common cause of plant loss is probably failure to irrigate throughout the season, even after fruit harvest. The plants would even need to be watered during the dormant season if we were to suffer a winter drought.

Ozarkblue, Bluecrop, and Summit are among the varieties recommended for the Ozarks. Everyone knows what to do with blueberries: baked goods, smoothies, and preserves are all healthy treats.

Juneberries

Closely related to our native serviceberry, juneberries look a lot like blueberries, but, unlike blueberries, the plants are drought tolerant and not picky about soil pH. They are sweet, with an almond aftertaste from the small, edible seeds. They are very easy to grow naturally. They can be used any way a blueberry can be used, and the almond flavor imparts a special taste to pies and cobblers.



Juneberries. Photo: Guy K. Ames



Jujubes. Photo: Guy K. Ames, NCAT

Jujubes

Jujubes are another very easy fruit to grow. They have no pests except deer. They thrive in poor and droughty soils and love the heat but can take the cold. Maybe the only problem is that some varieties are a little thorny. The varieties Li and Lang are good and widely available. There is variation in flavor among the varieties; however, the flavor is often compared to apples when fresh but a date when dried. A 15-minute simmer in a shallow pan of water caramelizes the sugars, resulting in a candy-like treat, and, perhaps, that's where the name of the movie theater candy originated.

Mulberries

Mulberries grow all over the Ozarks without any encouragement. If you like mulberries and bother to taste them, you'll note considerable differences regarding size and flavor. Often the berries are insipid, with no tartness to moderate the sweetness. Illinois Everbearing is a superior native red mulberry with large berries (1.5 inches long) and excellent sweet-tart flavor. It bears fruit from spring to fall, while the native mulberries usually bear just two to three weeks in the spring.

Mulberries can be used any way blackberries or raspberries can be used.

Pawpaw

The pawpaw is a nutritious, delicious native fruit that thrives in partial shade. **DEER DON'T LIKE** the plants, but they and every other creature like the fruit. There are improved cultivars

available that provide consistently tasty fruit. The pawpaw plant has no serious pests, though the trees are sometimes attacked in August by the asimina webworm, which is easily controlled by hand removal or with sprays of the biological insecticide *Bacillus thuringiensis*. Slow to get started, pawpaws eventually become a 12- to 15-foot-tall tropical-looking tree. In the wild, the pawpaw is an understory tree, and it requires shade when young but eventually bears best in full sun. Growers can provide shade by placing a tomato cage over the young plant and topping it with window screen (see photo.) The cage can be removed after a couple years.



Fayetteville, a local Northwest Arkansas pawpaw that once resided on the Fayetteville square. Photo: Robyn Metzger, NCAT

Pawpaws seem to lose some of their unique flavors with cooking, so the best uses, other than fresh eating, are in ice cream, sorbet, and smoothies. However, if you want to try baking with them, they substitute quite well in any recipe calling for bananas. The seeds are easily removed and the pulp can be frozen for later use.



Young pawpaw with shade cage. The shade and cage are removed after a year or two or when the plant outgrows the cage. Photo: Guy K. Ames, NCAT



Yates American persimmon. Photo: Guy K. Ames, NCAT

American Persimmons

Improved varieties of this native fruit are available, and some of them (Yates and Early Golden, for example) are very tasty. You need to be aware of the astringency of the unripe fruits—let them get good and soft before eating. The trees don't require pruning unless you want to keep them from getting too tall. They have few pests but seem to be among the favorites of tent caterpillars in the fall (simply remove the webbed “tents” by hand or with poles), and raccoons and possums relish the ripe fruit.

Persimmon pulp is readily separated from the seeds using a colander and a little elbow grease. Pulp can be frozen for later use, such as in sweet breads where it can substitute for applesauce or zucchini pulp. Persimmon-black walnut bread is a delicious all-American treat.

Asian Persimmons

Similar to American persimmons but with much larger fruit, the Asian persimmon hasn't performed well in the past in the Ozarks because of a lack of cold hardiness. However, in concert with a slightly warming climate and good siting, a few Ozark growers are having some luck with the varieties reputed to be the hardiest: Great Wall and Ichi-Ki-Kei-Jiro. Also, the American-Asian crosses Nikita's Gift and Rosseyanka show promise. Nevertheless, Asian persimmons will still have to be considered an experimental crop for now. If you do experiment, try to site Asian persimmons against a south-facing wall or otherwise give them a southern exposure.

Grapes

If you've tried to grow common, especially seedless, grape varieties in our area, you already know

that all or very nearly all of the grapes turn to hard, inedible little “raisins” before they ripen. This is because of black rot (not the same causal organism as the black rot on apples). Even the seedless grapes from the University of Arkansas, beautiful and delicious as they are, succumb to this and other grape diseases if not sprayed regularly with synthetic fungicides. Such grapes are for commercial growers. Natural growers will need to go back to grape varieties bred for disease resistance over 100 years ago by T.V. Munson, who collected breeding material from among the wild grapes of Arkansas, Oklahoma, and Texas. Several of his varieties are capable of producing big, beautiful, delicious clusters without fungicides (something that no modern seedless variety can boast in the Ozarks). These spray-free varieties include Champanel, Atoka, America, Carman, Elvicand, and Marguerite. For better (grape seeds are good for you) or worse, all the Munson grapes are seeded.



Unsprayed Carman grapes. Photo: Kim Daniel

Birds become serious pests as harvest approaches and the grapes begin to develop color. Bird netting is virtually indispensable from veraison (color development) to harvest.

The need for trellising is a challenge, but this can also be a great opportunity for training grapes up and over entryways and arbors.

Also, in order to grow large, beautiful, sweet clusters, grapes have to be pruned heavily during dormancy. Beginning growers often have trouble pruning grapes to the degree necessary

to produce high-quality fruit. Once you take the pruning instructions at their word, it's not hard, you won't hurt the plants, and you will be tastefully rewarded!

Because they are seeded, these Munson grapes don't make very good raisins, but they are great for jelly, juice, and wine. Because the seeds contain so much nutrition, I puree whole grapes and freeze for later use in smoothies or baked dishes.

Muscadine Grapes

Being able to grow muscadines in the Ozarks is, perhaps, significant compensation for climate change. Officially, the muscadine is not adapted to the Ozarks, but with the USDA acknowledging that our area is now a zone warmer than it was 40 years ago, a few homesteaders and gardeners are successfully growing this native American grape. Borne singly on stems, not in bunches, muscadines can be large (nickel diameter is common; some are larger), super sweet (some approaching 20% sugars), and strongly grape-flavored but with a distinct muskiness that fans of muscadines adore.

Having evolved in America's South, they are highly resistant to all the grape diseases that plague most bunch grapes. Birds are still problematic but seemingly less so than with bunch grapes.

Pollination of muscadines is unusual. Varieties are either female or self-fertile. Female vines must have a self-fertile type within 50 feet in order to set fruit. Self-fertile varieties do not require another variety for pollination. If you can only plant one, it must be self-fertile.

The main problem for muscadines in the Ozarks is the occasional and prolonged winter cold snap. Beware of temperatures below -5° F, especially for prolonged periods—in such situations the aboveground parts of the plant might die back to the ground, but the roots will usually send up a new shoot. Choosing varieties for cold hardiness has allowed me to crop muscadines for more than 12 years now. According to North Carolina State University, the varieties Carlos, Magnolia, Sterling, Noble, and Nesbitt are among the most consistently cold hardy. I would add Summit, Jumbo, and Cowart to that list from my own experience. In Washington County, growers on some sites have experienced muscadine plant death while the same variety has survived on another site, so

south-facing slopes or ridgetops with good air drainage are probably superior planting sites. The variety Fry, the industry standard in major muscadine producing states, is NOT dependably cold hardy in the Ozarks.

Muscadines can be used like any seeded bunch grape, though some varieties, like Jumbo and Cowart, have tough, tart skins that some people find objectionable for fresh eating. For those who don't like the skin, place the grape with the stem scar facing upward in your mouth and squeeze or bite the grape. The pulp and juice will burst through the thick skin into your mouth. Other varieties, like Summit, have very tender, edible skins.

I must add one other note regarding usage: muscadine wine has a bad reputation in some circles for being syrupy sweet. This is the fault of the wine maker, not the grape! Fantastic wines can be made from muscadines, though the unique flavor of the muscadine grape will impart its own signature, which is unlike any European wine grape.

Zombie Fruit, Chinese Melon Tree, Chinese Che, and More

This fruit is so new to the American public that a common name has yet to stick. The Latin binomial, *Maclura* (formerly *Cudrania*) *tricuspidata*, therefore, might be helpful to find a source of plants. This unusual small tree is related to our native bois d'arc and, in fact, is usually grafted onto bois d'arc in the United States. Fruits look like miniature bois d'arc fruits but are much smaller (a little smaller than a golf ball), red, and taste like watermelon. It's very easy to grow naturally in the eastern United States. Though trees vary in the size and fruit flavor, no named varieties exist yet, either here or in China where it presumably originated.



Zombie fruit or Chinese mulberry. Photo: Guy K. Ames, NCAT

I know of no use other than fresh eating, but in that regard, be aware that the fruits ripen over an extended period of a month or more. They get better as the red gets deeper. They hang on the tree and must be plucked; they rarely just fall. They do ripen in October, so they could end up in Halloween dishes or edible decorations as the little brains they resemble.

Elderberry

One of the easiest plants to grow, elderberries are nutraceutical wonders whose health benefits have



Elderberries picked and ready to made into wine, jelly, fritters, pies, etc. Photo: Kim Daniel

graduated from folklore to medical fact. There have been reputable, published studies that confirm that elderberries fight inflammation, boost the immune system, and ease flu symptoms like fever, headache, sore throat, fatigue, cough, and body ache. Some studies have found that elderberry might be effective against H1N1, or swine flu. A few studies have suggested that elderberry could help with bacterial sinus infections or bronchitis. Folk medicine proponents go further and claim benefits against cancer, AIDS, and more.

Elderberries should not be eaten raw, but make delicious juice, jams, jellies, wine, tinctures, baked goods, and more.

Missouri Extension Specialist Pat Byers led a team of growers and researchers to develop ‘Wylde-wood’ and ‘Bob Gordon,’ which both produce huge panicles (the fruit-bearing structure) that far out-yield any previously named variety. The panicles of Bob Gordon are so heavy with fruit that they bend downward, making them less attractive to birds.

Conclusion

Though the plants discussed in this publication are relatively easy to grow organically, they will still need to be pruned, watered, and mulched to thrive and produce. Additionally, apple borers will have to be deterred and other miscellaneous pests and diseases will occasionally become troublesome enough that intervention with natural techniques and products will be necessary. For more detailed information, contact ATTRA at 800-346-9140 or www.ncat.attra.org.

About the Author

In order to trust my observations, you should know a little about me. I bought land in the Ozarks in late 1971 and planted my first orchard of mixed fruit trees in the spring of 1972 in periodically flooded bottomland near Pyatt, Arkansas, in Marion County. Understandably (now!), most didn't make it more than two years and all have long since died.

In 1974, I moved to Newton County, Arkansas, and started planting more fruit plants: trees, for sure, but also grapes, raspberries, and currants this time. Most died or failed to thrive and in 1980, understanding that the organic gardening books I was reading failed to provide adequate help, I enrolled in the horticulture program at the University of Arkansas in Fayetteville, hoping to obtain a more scientific understanding of my failures. In 1983 I graduated with a Master of Science degree in horticulture under the patient tutelage of "Arkansas' Mr. Apple," Dr. Roy Rom, and I took a job at the Missouri Fruit Experiment Station in Mountain Grove, Missouri, in the Missouri Ozarks. While at the University of Arkansas and in Mountain Grove, I combed the research and the research plots for apple varieties and techniques that would enable me to manage the insect and disease scourges that made organic orcharding in the Ozarks all but impossible, at least for an aspiring commercial grower. Old research plots at Mountain Grove and trials of modern varieties at the University of Arkansas research farms exposed me to literally hundreds of apple varieties, a few of which, I thought, held some promise for organic culture.

I moved back to Fayetteville before too long and began working as a research assistant in the Department of Plant Pathology, still trying to deepen my understanding of the organisms and conditions at play in fruit orchards and vineyards. In 1989, the National Center for Appropriate Technology established an office in Fayetteville, and I signed on as a horticulturist working primarily with the ATTRA sustainable agriculture program. While working on ATTRA, I have been lucky enough to meet fruit growers from across the United States and around the world. I've walked orchards and talked with orchardists in California, Oregon, Washington, Idaho, Wisconsin, Missouri, Tennessee, Indiana, South Carolina, North Carolina, Maryland, New York, and

even in the foothills of the Himalayas in India (yes, they grow apples there). And because of the nationwide scope of NCAT's ATTRA project, I began to have a sense of the possibilities and limitations of organic fruit culture across the country.

One conclusion that I've come to (or more accurately, back around to) is, at least for the Ozarks, small and local is best. The Ozarks are a beautiful but harsh mistress, and commercial-scale organic orcharding is, for now and the foreseeable future, a very daunting row to hoe. But, as I've experienced, the same unsprayed, cosmetically imperfect apple that is passed over at my Fayetteville Farmers Market stand, if grown by a homesteader and picked from her own tree, will be greeted with joy and amazement at how beautiful and utterly delicious it is!

I hope this helps you grow healthy, delicious, nutritious fruit for yourself, family, and friends. But I further hope nothing I've written here keeps you from experimenting with varieties and techniques for natural fruit culture.



Guy K. Ames pruning a fruit tree. Photo: NCAT

Further Resources

Books

Uncommon Fruits for Every Garden. 2004. By Lee Reich. Timber Press, Portland, OR.

All the fruits discussed in Fruit Trees, Bushes, and Vines for Natural Growing in the Ozarks, plus several others, are covered in Reich's book. This is the book that has guided my explorations for unusual but adapted fruits for the Ozarks.

Tree Crops: A Permanent Agriculture. 1952 (rev.). By J. Russel Smith. Devin-Adair, New York, NY.

Originally published in 1929, this classic text was the inspiration for permaculture and other alternative agriculture ideas, books, and systems. Still very relevant today, this book is available online and as a reprint (with introduction by Wendell Berry) from Island Press, Washington, DC. Just search online for an electronic or hard copy version. Smith explores persimmons, mulberries, honey locusts, oaks, and many other tree crops as replacements for an annual agriculture dependent on plowing.

Restoration Agriculture: Real World Permaculture for Farmers. 2013. By Mark Shepard. Acres U.S.A, Austin, TX.

Shepard is a contemporary leader in thinking, applying, writing, and speaking on permaculture in the United States. His S.T.U.N. (Sheer Total Utter Neglect) system for fruit growing is only meant to be a little tongue-in-cheek. He's experimenting on his Wisconsin farm with fruit types that can withstand (near) sheer, total, utter neglect and still

produce usable fruit. This definitely means no pesticides, so his work is important for aspiring organic/natural fruit growers everywhere. Shepard can also be accessed through numerous lectures, parts of which are on YouTube.

Edible Forest Gardens, Vols. 1 and 2. 2005. By Dave Jacke and Eric Toensmeier. Chelsea Green, White River Junction, VT.

Voluminous indeed, this set covers "ecological vision," theory, and application for temperate climate permaculture. It will be more than the casual gardener will ever need, but indispensable for the serious permaculturist with a thirst for "the big picture."

Organization

North American Fruit Explorers (NAFEX)

www.nafex.org/index

NAFEX is a must for serious natural fruit growers. From its website:

"NAFEX is a network of individuals throughout the United States and Canada devoted to the discovery, cultivation and appreciation of superior varieties of fruits and nuts."

Members communicate via an online list and through Pomona, a quarterly journal published online in the Members Only section of the website and in one printed issue annually. A diverse assortment of interests and approaches are represented. NAFEX members are involved in collecting and growing well-known fruit like apples and pears, as well as "minor" fruit such as mayhaws, kiwis, persimmons, and pawpaws.

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in the Ozarks**

By Guy K. Ames, NCAT Horticulture Specialist

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www.attra.ncat.org

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