

# The Natural Farmer

## Edible Forest Gardens: an Invitation to Adventure - Spring 2002 Special Supplement on AgroForestry

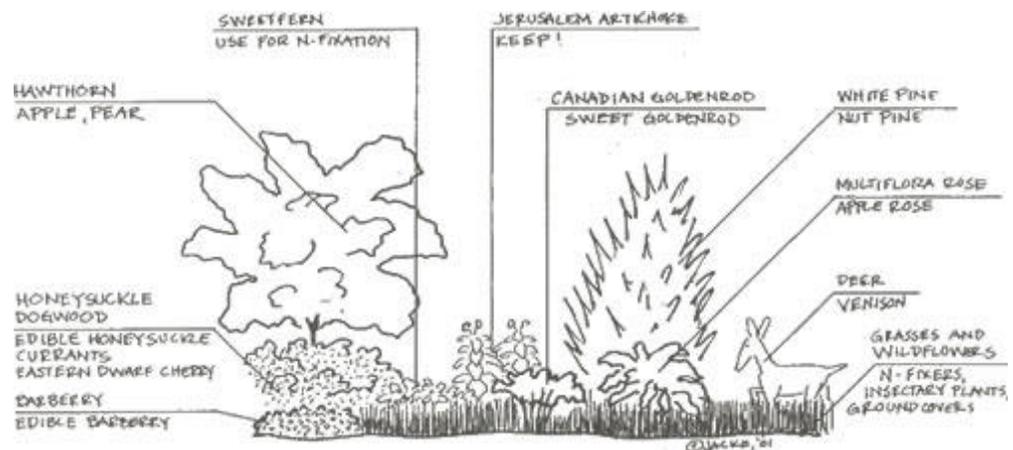
Excerpted from the forthcoming book *Edible Forest Gardens: A Delicious and Practical Ecology*  
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*"Come among the unsown grasses bearing richly,  
the oaks heavy with acorns, the sweet roots in unplowed earth . . ."*

**Ursula K. LeGuin, Always Coming Home**

Picture yourself in a forest where almost everything around you is food. Mature and maturing fruit and nut trees form an open canopy, and if you look carefully you can see fruits swelling on many branches — pears, apples, persimmons, pecans, chestnuts. The shrubs that fill the gaps in the canopy bear raspberries, blueberries, currants, hazelnuts and other lesser known fruits, flowers and nuts at different times of the year. A diverse

assemblage of native wildflowers, wild edibles, herbs, and perennial vegetables thickly covers the ground. You use many of these plants for food or medicine, while others attract beneficial insects, birds and butterflies, act as soil builders or simply help keep out weeds. Here and there vines climb on trees, shrubs or arbors with fruit hanging through the foliage — hardy kiwis, grapes, and passionflower fruits. In sunnier glades large stands



**Mid-Succession Ecological Analogs: old fields usually contain diverse, highly productive species. We can mimic such ecosystems by including existing useful species and by substituting useful species with similar niches in the place of less useful species. The same principle applies to every stage of succession. Survey your existing flora, find out what you can use, and figure out what you can substitute that has more direct human uses. The Ecological Analog process is one of the more direct ways to design forest gardens like the ecosystem we want to model.**

of Jerusalem artichokes grow together with groundnut vines. These plants support one another as they store energy in their roots for later harvest and winter storage, their bright yellow and deep violet flowers enjoying the radiant warmth from the sky.

### **What Is an Edible Forest Garden?**

An edible forest garden is a perennial polyculture of multi-purpose plants — many species growing together (a polyculture), most plants re-growing every year without needing to be re-planted (perennials), each plant contributing to the success of the whole by fulfilling many functions. In other words, an edible ecosystem: a consciously designed community of mutually beneficial plants and animals intended for human food production. Edible forest gardens can provide more than just a wide variety of foodstuffs; the seven F's apply here: food, fuel, fiber, fodder (food for animals), fertilizer and "farmaceuticals", as well as fun. A beautiful, lush environment is either a conscious focus of the garden design, or a side-benefit one enjoys.

The forest garden mimics forest ecosystems, those naturally occurring perennial polycultures originally found throughout the humid climates of the world. In much of North America, your garden would soon begin to revert to forest if you were to stop tilling and weeding it. Annual and perennial weeds would first colonize the bare soil. In a few years, shrubs would follow the weeds as the dominant plants. Finally, the pioneer trees would move in, and a forest would be born. It can take many decades for this process, called succession, to result in a mature forest.

We humans work hard to hold back succession — mowing, weeding, plowing, spraying. If the successional process were the wind, we would be constantly motoring against it. Why not put up a sail and glide along with the land's natural tendency to become forest? Edible forest gardening is about expanding the horizons of our food gardening across the full range of the successional sequence, from field to forest, and everything in between.

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## A Sampling of Edible Forest Garden Plants

### Perennial Herbs

Onions	Allium cernuum A. tricoccum A. cepa, etc.	Delicious greens, bulbs, pest control, some quite shade tolerant.
Wild Cabbage	Brassica oleracea	Perennial kale, tree collards, per.broccoli
Sea Kale	Crambe maritima	Blanched shoots, delicious flower buds.
Turkish Rocket	Bunias orientalis	Custardy leaves, shade tolerant.
Nettles	Urtica dioica	Spring greens, nutrient accumulator.
Wood Nettle	Laportea candensis	Native, spring greens, shade, also stings!
Sweet Cicely	Myrrhis odorata	Sweet, anisey foliage, flowers, seeds, shade tolerant, attracts beneficial insects.
Mountain Sorrel	Oxyria digyna	Good flavor, native, sun or shade. Buckler- leaved
Sorrel	Rumex scutatus	Tasty, good clumping groundcover.
Good King Henry	Chenopodium bonushenricus	Spinach flavor leaves, asparagus-like shoots, shade tolerant.

### Vines

Hardy Kiwis	Actinidia argua, Maypop, A. kolomikta	High vitamin C fruit, woody.
Passionflower	Passiflora incarnata	Great flowers, tasty fruit, herbaceous.

### Trees

Walnuts	Juglans species	
Hickories	Carya species	Nuts, timber.
Chestnuts	Castanea spp. & hybrids	Nuts, timber.
Mulberries	Morus alba, M. rubra	Nuts, timber.
Persimmons	Persimmons	Fruit, coppice.
Nut Pines	Diospyros virginiana, D. kaki, Pinus edulis, P. cembra, P. pumila. P. flexilis,	Fruit. Nuts, windbreaks.
Pawpaw	Asimina triloba	Highly nutritious fruit, part-shade.

### Shrubs

American Plum	Prunus americana	
Chickasaw Plum	Prunus angustifolia	Fruit, thicket-forming.
Saskatoon	Amelanchier alnifolia	Fruit, thicket-forming.
Hazelnuts	Corylus species	Fruit, comm. varieties available.
Currants	Ribes species	Nuts, thicket-forming, some trees. Fruit, can fruit in part-shade.

### Easy to Grow

#### Fungi

Shiitake	Lentinula edodes	Oak log dwelling, tasty, medicinal.
Kuritake	Hypholoma sublateritium	Logs, sawdust, stumps, tasty, native.
Shaggy Mane	Coprinus comatus	Hardwood chips (mulch), tasty, native.
Reishi	Ganoderma species	Stumps, logs, native, tasty, medicinal.
King Stropharia	Stropharia rugoso-annulata	Hardwood chips, straw, soil, compost, mulch, tasty, native.

Besides the direct human uses, it is critical to design the forest garden for self-renewing self-fertilizing self-maintenance. Most plants used in forest gardens are self-renewing perennials or self-sowing annuals. Continuously mulched and otherwise undisturbed soil allows a healthy and diverse soil community to develop. Including plants that can fix nitrogen, accumulate subsurface soil minerals, act as a source of mulch, or a combination of these functions also improves soil fertility. Some species provide food or habitat for insectivorous birds, or predatory and parasitic insects that devour pests, reducing and at least potentially eliminating the need for pest and disease management work. Selecting and locating plants based on their suitability for the site's soil conditions and microclimate, the amount of labor they require, their ecological roles and their ultimate size helps reduce the amount of maintenance they need and increase their yield. By mimicking the way nature does her work, we can reduce the work we do to get our sustenance to mulching, some pruning, occasional weeding, and minimal pest and disease management depending on the crops you grow. Oh, and then there's the harvesting!

Essentially, edible forest gardening is the art and science of putting plants together in woodland-like patterns that forge mutually beneficial relationships, creating a food production system that is more than the sum of its parts. The idea is that by growing fruits, nuts, vegetables, herbs, mushrooms and other useful plants and animals in a way that mimics natural forest ecosystems you can create a beautiful, diverse, high yield system that is largely self-maintained.



photo courtesy of David Jacke

**Plum tree with Coltsfoot (wide leaves) growing at the base and kiwi climbing the tree at Bullock Brothers Farm, Orcasis, WA.**

### **Gardening LIKE the Forest vs. Gardening IN the Forest**

There are many ways to garden IN the forest. These include the restoration of natural woodlands, ecological forestry, agroforestry, and the creation of primarily aesthetic woodland gardens. These and other forms of gardening IN the forest are not what we are talking about. Edible forest gardening is not necessarily gardening IN the forest. It is gardening LIKE the forest.

Gardening LIKE the forest involves forming a deep understanding of the dynamics, patterns and principles that govern the structure and function of healthy, naturally occurring forest ecosystems. We then adapt this knowledge to mimic the structures and functions that meet our needs and help the garden ecosystem to meet its own. We use the forest as a design metaphor, a model of structure and function, while we adapt the design to focus on meeting human needs in a small space. We then participate in the evolution of an ecosystem in our back yards that can teach us about ecology and ourselves as we eat our way through it.

While you can transform an existing piece of woodland into an edible forest garden and have it work well, we don't necessarily recommend it. In many ways it's better to start from scratch in an area currently free of trees. That way you can improve soil conditions before planting, and then create a canopy of highly productive plants where all the sun is, with additional bonus yields from the lower, shadier layers. When you use existing woods, the opportunities for high total system yields decrease unless you kill trees first or happen to be lucky enough to have persimmons, walnuts, hickories or other crop trees in the canopy already.

The most well-known aspect of mimicry in forest gardening is the creation of multiple layers of vegetation in the garden similar to the layers of vegetation in healthy forests. However, vegetation layers are only one of the five physical architectural elements we must work with to create a forest garden. We must also understand the functions, and mimic the structures, of the soil horizons and the density, patterning and diversity of forest vegetation. For example, ecological research has shown that natural ecosystems exhibiting what we call "lumpy texture" tend to have larger and more diverse bird populations and higher levels of predatory insects in the canopy.<sup>‡</sup> When we create orchards with the trees evenly spaced, all the same size, age and species, with no shrubs, and a monotonous understory, we create smooth split pea soup texture. This reduces predator diversity and abundance, increases our work load, and pushes us towards chemical controls of one kind or another.

In addition to physical architecture, ecosystems exhibit "social structure" and structures of change through time (AKA successional patterns). These also offer opportunities for reduced maintenance and increased yields if we pay attention and design well. Social structure includes the design and husbanding of the food webs both above and below ground, as well as associations of plants and animals called guilds that partition resources and create webs of cooperation and interdependence. The increasingly sophisticated science of soil food webs is demonstrating exciting results such as the near elimination of the need for fertilizer in some systems, and radical reductions in diseases and pests simply by supplying the resources and conditions necessary for all the elements of a healthy soil food web to thrive. Resource partitioning guilds in particular are essential to the design of high yield polycultures. When we understand the root patterns of different plant species, for example, we can mix and match associates that will use different parts of the soil profile. This allows us to pack individual plants closer together without increasing competition between them, while actually increasing the volume of soil resources the system as a whole uses. Such an arrangement has the highest chance of creating a polyculture that yields more per unit area than the same number of crop plants grown in monoculture.

What all of this means is that when we forest garden we design and garden not only with plants, but with insects, birds, microorganisms and all the other life forms with whom we share our home. We work and garden not as master and servants, but as co-participants in the play of life. The greater our understanding of our partners in this endeavor, the greater our ability to work consciously with them to create harmonious garden patterns. Basically, it comes down to this: don't plant trees, plant ecologies!

### **The Garden of Eden: It Sounds Great, But Is It Practical?**

Eric and I like to think of edible forest gardening as recreating the Garden of Eden, and from the description at the beginning of this article, it sounds as if it is. Is such an abundant, low maintenance food garden really possible?

## A Few Lessons From a Little History

Though ancient in many ways, the notion of edible forest gardening is relatively new to modern western culture and especially to the modern North American continent. The people of tropical Africa, Asia, and Latin America have a long tradition of using a multi-storied agriculture integrating trees, shrubs, livestock, and herbaceous crops. They grow fodder trees in pastures that provide windbreaks, livestock forage and shade. Some of these trees also improve the soil by fixing nitrogen from the air and putting it into the soil. Alley cropping systems combine rows of nitrogen-fixing and food trees with strips of annual crops like corn and potatoes. The multi-storied "food forest" systems used in many parts of the tropics mimic the rainforest, growing such crops as coconut, oil palms, bananas, coffee, pineapples and ginger. Village and home-scale tropical forest gardens have existed in Java since at least the 10th century, and comprise 15% to 50% of village cultivated lands.<sup>††</sup> Forest gardens work in tropical climates, and have for a long time.

There is also strong evidence that similar systems were in place in cooler climates hundreds of years ago. For example, some species of temperate forest trees are able to sprout from the stump and regrow vigorously after being cut down. These stump sprouts, called coppice ("cop - iss"), are used as fuel, fiber, fodder or mulch, depending on the species. The coppice forestry systems of medieval Britain and other parts of Europe were the core of integrated systems of land use and building construction wherein logs, poles, saplings and brush were all used as structural materials. Coppice plots also provided critical habitat for wild game mammals and birds, as well as abundant semi-wild foods and medicinal plants that formed an essential part of the Medieval diet.

Several continuously coppiced "stools", or stumps, in Britain have been proven to be 500 to 800 years old, demonstrating that coppicing can dramatically prolong a tree's life span.<sup>†††</sup> These very stable, sustainable agroforestry systems existed for hundreds of years before declining and being almost totally lost during the industrial revolution. In addition, the more we learn about the culture and agriculture of the Indians of eastern North America, the more we understand the sophistication of their forest management strategies. Clearly, the record shows that forest garden-like systems have been viable and practical in temperate climates. Isn't it possible for us to do far better now if we put our hearts and minds to it?

A small but growing number of people in the cold climates of the world have been developing these ideas for the current era. J. Russell Smith's seminal 1950 work *Tree Crops: A Permanent Agriculture* first sparked interest in the potential of agroforestry in temperate as well as tropical and sub-tropical



photo courtesy of David Jacke

**Path through garden showing trellised kiwi, fruits and vegetables. Owner: Charlie Headington, Greensboro NC.**

climates throughout the world. However, tropical countries and large scale tree crop systems received most of the resulting research attention.

Robert Hart got things going for backyard folks with his inspirational book *Forest Gardening*, first published in Britain in 1991. Hart's vision of temperate climate forest gardening was the result of his work with tropical agroforestry systems, his Gandhian beliefs and his backyard experiments. His forest garden in Shropshire, England is an incredibly beautiful testament to his vision, and the oldest known temperate climate forest garden in the world (started in 1981). Patrick Whitefield followed Hart's book with his more practical *How to Make a Forest Garden*, a solid book with a British focus. These two pieces, combined with Bill Mollison and David Holmgren's works on permaculture ("permanent culture"), have sparked widespread interest in and planting of forest gardens throughout Britain. These gardens all demonstrate the potential of edible forest gardens, if not the actual benefits.

Edible forest gardens have been slower to spread in North America. Few people have heard of the idea, so the examples are fewer and farther between — but they exist. Forest gardeners have planted in the maritime climate of coastal Washington state, at 7,000 feet in the cold, dry Colorado Rockies, in the hot, humid city of Greensboro, North Carolina, and in chilly southern New Hampshire, all with at least some success.

Forest gardens are viable in small urban yards and large parks, on suburban lots, or in a corner of a rural farm. We have seen examples ranging from a 2 acre rural research garden to a jungle of food plants on a quarter acre lot, to a heavily planted 30 X 50 foot embankment behind an urban housing project. Smaller versions are definitely possible: though it might stretch the word "forest" rather far, the same principles and ideas still apply. Despite the name "forest garden" it is best if your site has good sun, but, of course, if your land is shady and wooded you can use the ideas, information and plants of forest gardening.

## **Spanning the Gamut: Forest Gardens Examples**

Forest gardens can come in a multitude of sizes, shapes and habitats, from rural to urban, from open shrubland or woodland to dense forest. Let's explore some of the possible permutations so that you can have some pictures in your minds' eye. We intend what follows to be suggestive rather than prescriptive or comprehensive. Our book will contain many more images, patterns and examples of forest garden design.

## **Forest Garden in the Woods**

If you already have a woodland on your property, you can inventory it, and then add to and subtract from the existing plant community. The results can vary from minimal change in the structure of the existing woods with the main task the underplanting of perennial vegetables and medicinals, to adding to the woody understory with shrubs and shade-tolerant trees, to making openings and planting a successional sequence that will refill the gap(s) you make with useful species from the canopy on down. Such a planting scheme will vary from wild, essentially unmanaged, higher risk plantings to semi-wild, partially managed plantings, to highly maintained gardens-in-the-woods, depending on goals, site preparation, species selection, and existing vegetation character. An understanding of the dynamics of gaps in mature forest succession will be helpful in managing some such systems. In these kinds of cases, we strongly urge the use of primarily native species to support and restore native ecosystem integrity, if not only native species if they will meet the design goals or the site is relatively free of exotic plants.

## **Woods Edge Forest Garden**

An abrupt line usually marks the edge between forest and field in most cultivated landscapes: woods with tall trees stop immediately at the edge of a mown or cultivated area, with little or no transitional vegetation. In most natural landscapes, broad areas of transition characterize the edges between significantly different habitats such as field and forest. These "edge zones" usually contain a variety of microclimates in a small space, and this typically creates highly productive and highly diverse ecosystems — a phenomenon known as the "edge effect". We can use such edges to advantage by planting both in the woods and in the field to create broad areas of transition with a diversity of useful species.

## **"Instant Succession" Forest Gardens**

When presented with an open field or lawn in which to plant your edible forest garden, you can design the garden as an "instant succession".[↑↑↑↑↑↑↑↑](#) In an instant succession you design the garden at each stage of its development from perennial herbs, to shrubs and herbs, to young trees, to "climax forest", and then plant all the species for every stage of succession at once. You must start by designing the climax stage first, and then design backwards in time step-by-step towards the present, fitting all the shorter-lived, sun-loving plants for the earlier stages around the longer-lived plants for the later stages. Such a dense planting should need minimal maintenance for many years as long as you plant enough groundcovers and sun-loving plants for the first years and put all the longer term plants at reasonable spacings. Instant successions require a large initial investment of time, money and information. They also need a lot more hands-on research to determine how they work best, but they are also quite fun and interesting. If you have a large space to convert to forest garden, then you must be ambitious to undertake this strategy in an all-at-once manner. See "Nuclei That Merge" below for another way to fill a large space with forest garden.

## **The Suburban Landscape Mimic**

Urban and suburban dwellers with aesthetic concerns can still create a forest garden, even in their front yard. In this situation, the aesthetic goals will have more influence on the garden design than is likely in any other circumstance, so that plant selections will be made with this criterion in mind. Many edible and otherwise useful plants are quite beautiful. The forest garden can fit into a range of aesthetic styles from formal to informal, and edible plants can work as screening, groundcovers, and fit into a variety of color and texture schemes.

## **Micro-Forest Gardens and Nuclei That Merge**

Even if you have a very tiny space in which to plant, say in an urban yard or even a rooftop somewhere, you can still plant a forest garden. Though it might stretch the word "forest" to the breaking point, you can apply the same principles to a small space with as few as two or three semi-dwarf trees and associated plants that fill a 30 foot circle or a 15 by 45 foot rectangle . For larger spaces, you can use a pattern such as this to create forest garden nuclei that quickly achieve self-maintenance and then grow outward to eventually merge. This mimics the overall development pattern of many plant communities during succession. It can be a great way to grow your own nursery stock, reduce the up-front labor and investment, and adapt over time to the realities of which plants do well, and which don't, on your particular site.

## **Large Scale Forest Garden**

Eric and I know of forest gardens that range in size from 30 feet by 50 feet to over 2 acres. Once you get over, say, a one-half acre size, and if you want to establish the canopy layer all at once, some broad scale techniques may come in handy. At the Agroforestry Research Trust in Devon, England, Martin Crawford has established a model forest garden that demonstrates one of these techniques. Planting all of the trees for the canopy first and at about the same time, Martin had young trees standing in a grassy field. One year, Martin killed the grass in an 8 foot wide strip using heavy, black woven polyester sheeting as a mulch. The next year he moved the black poly to the neighboring 8 foot strip, and planted the killed zone heavily with aggressive groundcover plants chosen for a variety of functions, but primarily to fill the ground plane with vegetation other than grass. Each year he continued this process. As the converted ground area grew, the pace of conversion could increase since more stock was available to divide. In the meantime, Martin planted his shrub crops across the 2 acres in clusters under the trees and within the already converted ground layer using the sheet mulch technique. Over a few years, this enabled Martin to convert the herbaceous understory to sun-loving and semi-shade tolerant species that improve the soil and attract beneficial insects, as well as providing useful products for consumption and sale. As the trees grow and cast deeper and deeper shade, Martin will convert the ground layer into more shade tolerant edibles and ground covers. The result is a large forest garden with a dense ground layer and growing canopy and shrub layers over a few short years.

## **An Invitation to Adventure**

As a "new" idea, many of the practical considerations of forest gardening have yet to be worked out in complete detail, especially for North America. Only a few of the species grown by British forest gardeners will adapt well to North American climates and soils. Many native North American plants have good forest gardening potential, particularly wild edibles, medicinals and beneficial insect attracting plants, but are relatively untested in such systems. There is strong positive evidence, including much farming, gardening and ecological information spread across many different references, places and people. Eric and I have seen a number of good on-the-ground examples and undertaken enough attempts to create these gardens ourselves to know that it can work, and that it can work better than anyone has yet achieved. With clear thinking and more knowledge, especially more accessible information about the ecology of useful plants, Eric and I feel sure that the edible forest garden idea will be of interest to and within reach of many people throughout the temperate world. But there is still much to learn, and this is where you come in.

We invite you to join in a lifetime of quiet adventure. Ecological systems at their essence operate on relatively simple principles, yet have endlessly fascinating intricacies. Many delicious and useful plants stand ready for use in forest gardens, and many more exist with great potential for selection and development. We know much about the basics of edible forest garden design and management, but there is still so much more to learn. It seems we have many lifetimes worth of creative interest and fulfilling enjoyment ahead.

We seek to learn from our own wetlands, fields, thickets, and forests the ways living things have adapted to our climate and land, and to mimic these systems with productive agricultural ecosystems. The goal is to create mutually beneficial communities of multi-purpose plants for our own sustenance, and thereby to include ourselves in the natural system. We seek to recreate the Garden of Eden, and, as Bill Mollison says, "why not?"

## Resources: PLANTS AND MUSHROOMS

- **Oikos Tree Crops**, PO Box 19425, Kalamazoo, MI 49019, 616-624-6233 - Many kinds of plants. Oaks!
- **Bear Creek Nursery**, PO Box 411, Northport, WA 99157 - A good catalog of a nice variety of trees and shrubs with a permaculture flair.
- **Edible Landscaping**, PO Box 77, Afton, VA 22920 800-524-4156 - "Containerized plants sent year round", nice variety, some not hardy here, some hard to find.
- **St. Lawrence Nurseries**, 325 State Hwy 345, Potsdam, NY 13676, 315-265-6739 - Carries extremely cold hardy species and apple varieties, plus some "different" stuff.
- **Tripple Brook Farm**, 37 Middle Road, Southampton, MA 01073, 413-527-4626 - A small operation with a wide variety of interesting plants - herbs to trees.
- **Prairie Moon Nursery**, Rt 3, Box 163, Winona, MN 55987, 507-452-1362 - The other best, ecological source for wildflower seed, plants and mixes.
- **Garden in the Woods**, 180 Hemenway Rd, Framingham, MA 01701-2699, 508-877-7630 - Excellent source for native wildflower seeds and plants from the New England Wildflower Society.
- **Perennial Vegetable Seed Co**, P.O. Box 608, Belchertown, MA 01007 [www.perennialvegetable.com](http://www.perennialvegetable.com) - THE ONE AND ONLY source specializing in perennial vegetables, from our own Eric Toensmeier.
- **Wild Earth Native Plant Nursery**, P.O. Box 7258, Freehold, NJ 07728, 732-308-9777 - A wide variety of nursery propagated native plants.
- **Fungi Perfecti**, P.O. Box 7634, Olympia, WA 98507. 360-426-9292 - Mushroom spawn & products for the home grower. Run by author Paul Stamets (see below).
- **Field & Forest Products**, N 3296 Kozuzek Rd, Peshtigo, WI 54157, 715-582-4997 - More mushroom spawn and products for the home grower.

## Books and other Information

- **Edible Forest Gardens: A Delicious and Practical Ecology**, Dave Jacke with Eric Toensmeier, 2001.
- **Designing and Maintaining Your Edible Landscape Naturally**. Robert Kourik, 1986.
- **How to Make A Forest Garden**, Patrick Whitefield, 1996.
- "Agroforestry News", quarterly journal of the Agroforestry Research Trust, Devon, England, available through the Permaculture Activist Magazine, Box 1209, Black Mtn., NC 28711.
- **Gardening with Native Wildflowers**, Samuel Jones, Jr. & Leonard Foote, 1990.
- **Growing Gourmet and Medicinal Mushrooms**, Paul Stamets, 1993.
- **Nut Tree Culture in North America**. Richard A. Jaynes, editor, 1979. Northern Nut Growers Assoc.
- **Edible Wild Plants**, Lee Allen Peterson, 1977.
- **Backyard Fruits and Berries**, Miranda Smith, 1994.
- **Uncommon Fruits Worthy of Attention**, Lee Reich.
- **Native Trees, Shrubs and Vines for Urban and Rural America**, Gary Hightshoe, 1988.
- [www.soilfoodweb.com](http://www.soilfoodweb.com) ESSENTIAL info on soil food webs & how to manage them! Good links, too.
- [www.tandjenterprises.com](http://www.tandjenterprises.com) Sell BioVAM mycorrhizal fungi inoculant, good info and test results.
- [www.mycorrhizae.com](http://www.mycorrhizae.com) Mycorrhizal Applications, Inc., sells VAM & ecto-mycorrhizal inoculants.
- [www.icserv.com/nnga/](http://www.icserv.com/nnga/) Northern Nut Growers Association: excellent info and links!

- [www.nafex.org](http://www.nafex.org) North American Fruit Explorers, excellent group doing good R & D on unusual plants.
- [www.agroforestry.co.uk](http://www.agroforestry.co.uk) Agroforestry Research Trust website, go there or be square!

### **Edible Forest Gardens book Pre-publication sale**

The pre-publication sale of Dave and Eric's Edible Forest Gardens book continues. The manuscript will be complete shortly, and once it's finished, the price goes up. Current pre-publication price is \$25 postpaid, expected retail price is \$40 (mention TNF in your note to get the \$25 price until May 1, 2002). Edible Forest Gardens is the most complete and up-to-date reference manual on temperate climate forest gardening ecology and design ever to be published. Join over 130 other supporters of the Edible Forest Gardens Community Supported Authoring group. Your pre-publication purchase helps Eric and Dave keep eating while they finish the book, and you get an autographed copy mailed to your home immediately upon publication. Some members may get advance review opportunities. Send checks, mailing and shipping addresses and phone number to Dave Jacke, Native Harvest Designs, 56 High Street, Keene, NH 03431. Thanks for your continued support!

† Perry, David, 1994. Forest Ecosystems. Johns Hopkins University Press, Baltimore. Pages 202-3.  
MacArthur, R.H. and J.W. MacArthur, 1961. "On bird species diversity." Ecology. Pages 594-598.

†† Reijntjes, Colin, Bertus Haver Kort, and Ann Waters-Bayer, 1992. Farming for the Future: An Introduction to Low External-Input and Sustainable Agriculture. MacMillan Press, London. Page 38.

††† Rackham, Oliver, 1993. Trees and Woodland in the British Landscape: The Complete History of Britain's Trees, Woods and Hedgerows. Weidenfield and Nicolson, London.

†††† Hart, Robert A. de J., 1991. Forest Gardening. Green Books, Totnes, Devon, England.

††††† Douglas, J. Sholto and Robert A. de J. Hart, 1984. Forest Farming: Towards a Solution to the Problems of World Hunger and Conservation. Intermediate Technology Publications, London.

†††††† Whitefield, Patrick, 1996. How to Make a Forest Garden. Permanent Publications, Clanfield, Hampshire, England.

††††††† Permaculture One (1978) and Permaculture Two (1979), the first books on permaculture, are no longer in print, but have been succeeded by Introduction to Permaculture (1991) and Permaculture: A Designers Manual (1988), both from Tagari Publications, Tyalgum, NSW, Australia.

†††††††† Bill Mollison, Thanks.