PAWPAWS AND PERMACULTURE

What is Permaculture?

Permaculture is an approach to designing our landscapes based on the successful relationships we see in healthy ecosystems. First, we observe how natural patterns are working together to make a whole system thrive. We then take the outline of these patterns and apply them to our landscapes and lives to create largely self-functioning and productive systems (plantings).

That's permaculture in a nutshell. Now, let's break it down into projects that relate to growing pawpaws.

Swales on Contour

A popular permaculture technique that has proven hugely effective, especially with the pawpaw, is the swale on contour: the ultimate raised bed that passively harvests water. Swales on contour create the conditions pawpaws love, which are on banks that have good drainage near ample water. I have seen dramatic growth differences in pawpaw trees planted on swale berms compared to those planted nearby in flat ground.

Swales on contour are marked out level, perpendicular to the slope, so that sheeting water slows and sinks in. The swale-building process is discussed in detail in my book, *Edible Landscaping with a Permaculture Twist*,[1] so I will simply outline the idea here.

Swales on contour make beautiful sinuous flowing beds that just naturally fit the landscape while passively harvesting rain water.

1 *Edible Landscaping with a Permaculture Twist* is available at www.ecologiadesign.com. This book provides step-by-step processes for setting up a diverse and low-maintenance edible landscape for pawpaws and other fabulous uncommon fruits, plus details how to establish food forests, swales, hügelkultur, and much more.

Contour of slope can easily be found using a simple A-frame level (which takes about 10 minutes to construct from scrap wood) or a transit level. A basin is then dug and the soil mounded on the downhill side, creating a berm. Depending on the design, the basin can then be filled with wood chips, mulched with straw, or left to grow as grass and becomes a path alongside the berm. Since the basin is perfectly level along the slope, incoming water stops and sinks into the ground water, effectively harvesting and holding moisture in the root zone. Passive water harvesting with swales on contour, in combination with groundcover plants, a.k.a. living mulch, will keep your landscape verdant and productive even during dry periods. Design to recline!

Small-scale swales with moderate incoming water can fit easily into most landscapes. Be mindful of two things: do not to raise the berm too high, as this can subject it to drying winds, and remember that swales on contour are harvesting water into the water table for quite a distance past the berm; to avoid flooding, don't build them just above your house!

Food Forest Model

Food forests are not about growing food *in* the forest, but, rather, *like* the forest. When we look at healthy forests, we see a lot going on—overstory trees, midstory trees, understory trees, shrubs, groundcovers, vines—all working as a powerful and productive collective. If we take the observations of these successful symbiotic patterns and transfer them to our landscape planning, we are starting with nature's most dynamic design: wisdom.

So, instead of just sticking your fruit tree in a sea of grass with a dinky mulch ring, you design a mini ecosystem for your pawpaw tree planting. You design a "guild" of companions to support its needs and set the stage for successful growth and production that is not reliant on our constant inputs.

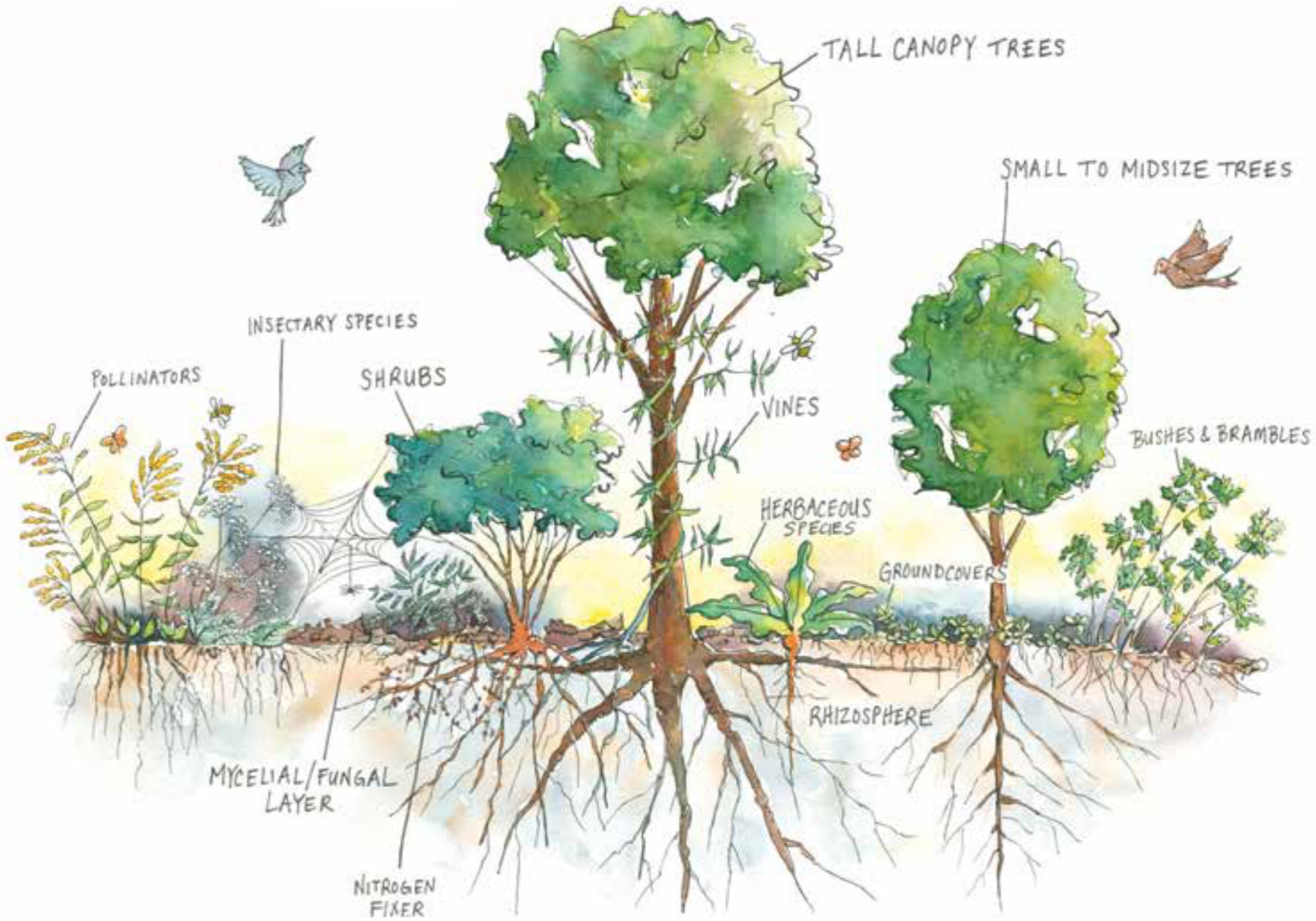
I like to break the larger food forest concept down into "patches" to simplify the approach.

The first ingredient in building this mini food forest patch is good soil and moisture retention that support fungi; in turn, these fungi build healthy soils. In Chapter 4 in the Planned Planting section, I cover sheet mulching and deep mulching of woodchips to start soil building and draw in the fungi. Remember, it's all about the fungi!

Once your soil building is in place and you are ready to plant, consider designing in the young fruit tree plant guilds. See Chapter 5: Eco-logical Tree Care, for more information on companion plants.

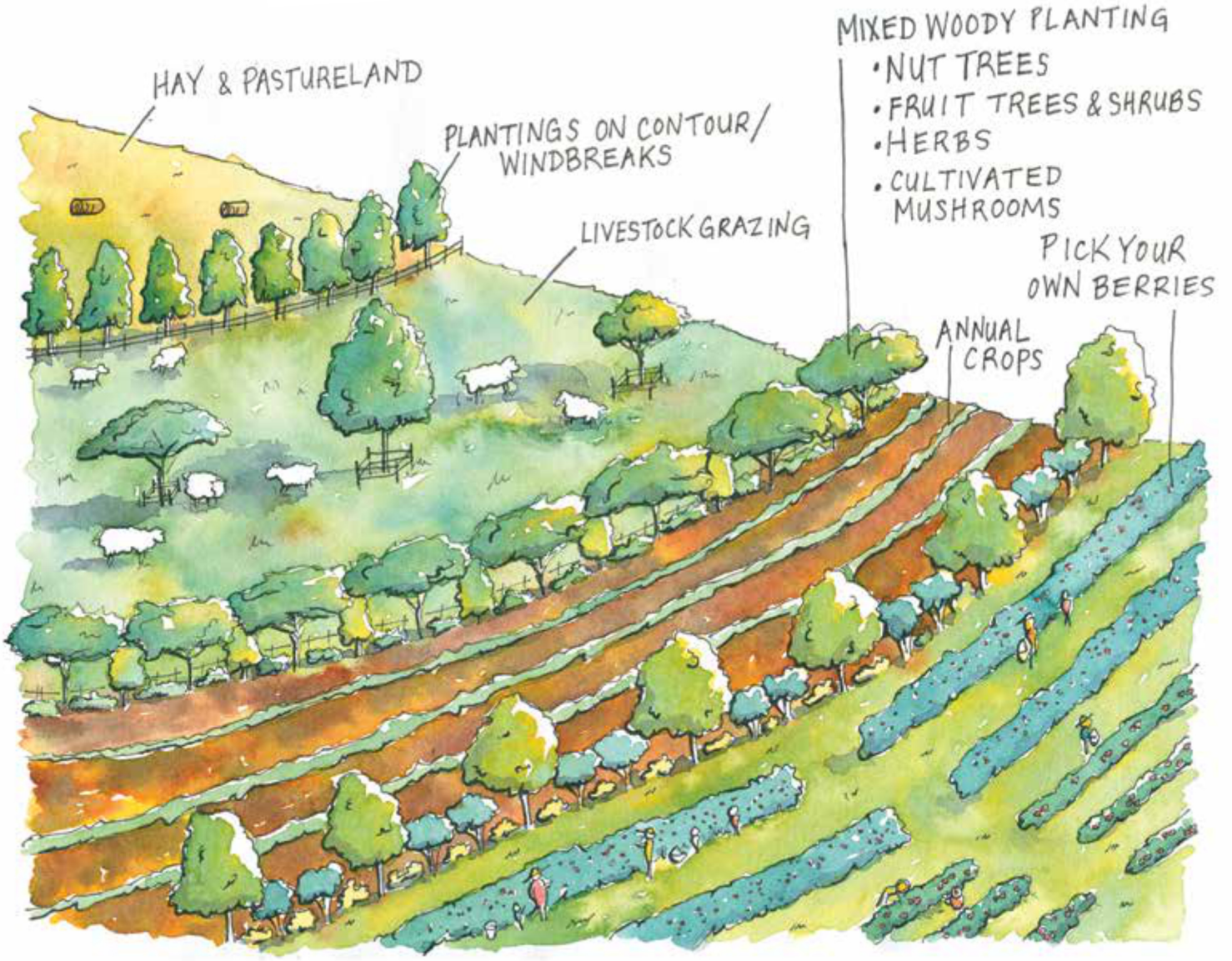
Two well-spaced sheet-mulched food forest patches for a pair of pawpaws and companion plants.

Food Forest Model



A food forest on your landscape can be any as small as 10' x 10' or as large as you'd like to make it, as well as any shape that fits the space or aesthetic.

AGROFORESTRY



Beyond the Patch: Pawpaws in Agroforestry

For those with space and market interest in growing pawpaws, agroforestry models are the way to go. Agroforestry incorporates woody perennials (trees, shrubs, etc.) with field crops and/or animals. With agroforestry, you get to stack enterprises for diverse harvests and ecological benefits.

Pawpaws stack well into an agroforestry model—especially with animals—since the trees are not palatable to grazing animals . . . even goats! Chris Chmiel, a "pawpaw elder" and permaculture practitioner, combines an extensive pawpaw orchard in Athens, Ohio, with his flock of goats. The chemical *Annonaceous acetogenins*[2] found in the pawpaws leaves, twigs, and bark make them a rare candidate for browsers. Chris notes that the goats help keep the pawpaw understory free of competing growth and donate natural fertility that also helps draw in the pawpaw's main pollinator, the glorious fly. Chris and his wife, Michelle Gorman, operate Integration Acres, which offers commercially available pawpaw pulp, vinaigrette, chutneys, and goat milk cheeses. Integration Acres also incorporates other non-timber forest products, including cultivated mushrooms, ginseng, goldenseal, and spicebush, with pawpaws in adjacent areas not frequented by goats.

Chris also works with improving native pawpaw stands surrounding their homestead by clearing around productive trees that yield chop and drop mulch, mushroom wood, and select wild varieties. Chris points out that working with existing stands can jumpstart production and sales, whereas a pawpaw orchard can take six plus years to begin harvesting. Chris was awarded a grant from Sustainable Agriculture Research & Education (SARE) to research "Increasing Production in Native Stands of Pawpaws."[3]

Another fine agroforestry model that incorporates the pawpaw is exemplified by Red Fern Farm in southeastern Iowa. Tom Wahl and Kathy Dice have successfully mixed the pawpaw into a diverse you-pick agroforestry system that interplants chestnuts, hazelnuts, persimmons, cornelian cherries (fruiting dogwood), heartnuts, and aronia (black chokeberry).

See Resources appendix for contact information for Integration Acres and Red Fern Farm.

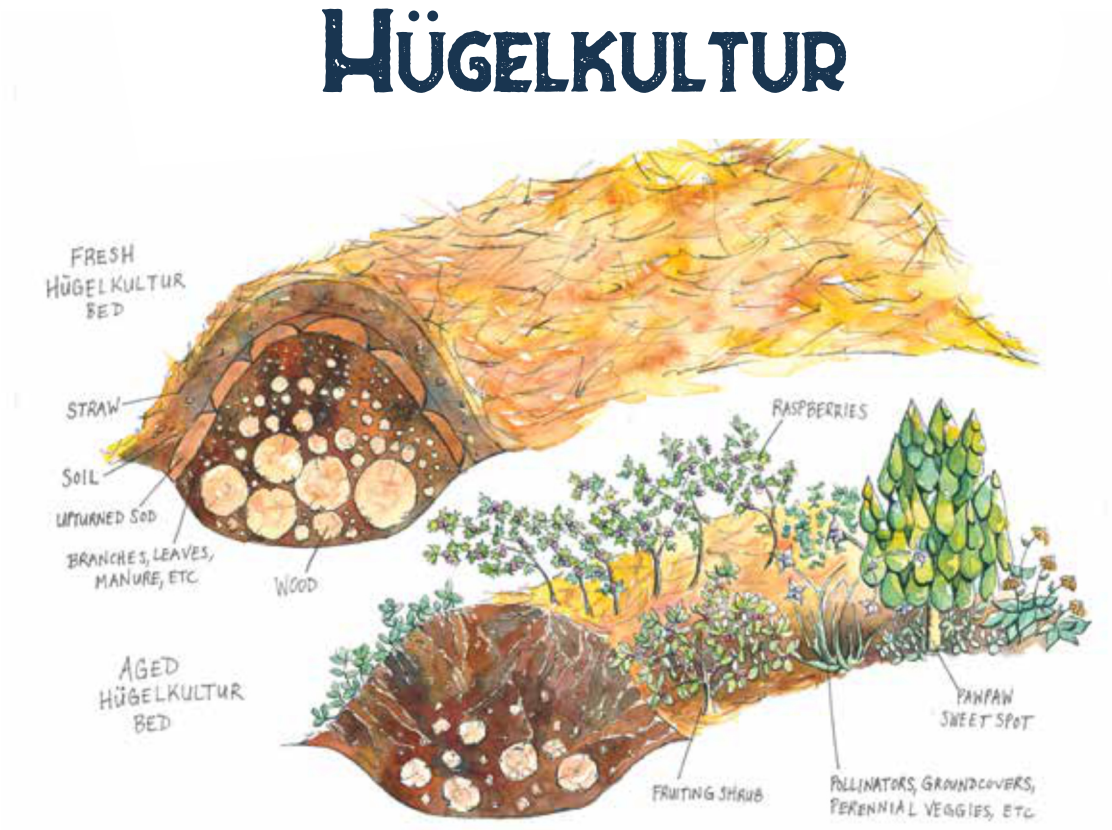
2 To read what National Institute of Health (NIH) says about Annonaceous acetogenins, visit www.cancer.gov/publications/dictionaries/cancer-drug/def/annonaceous-acetogenins.

3 The final report can be viewed online: https://projects.sare.org/project-reports/fnc00-315/.

Hügelkultur Beds

I would be errant to not mention hügelkultur beds and pawpaws! Hügelkultur is an old Germanic word basically meaning wood covered with soil and mound culture. It is what happens naturally in an old forest where trees have fallen and decades of leaves have covered the wood, inviting the fungi in to munch it all down into rich compost. These hügelkultur mounds can be created on our landscapes in a variety of scales to build long-term fertility and moisture retention. The moist environment of the soil-covered wood draws in fungi to begin the composting process, which ultimately releases nutrients and holds moisture for plantings. Typically, hügelkultur beds are planted with cane fruits (such as raspberries) or fruiting shrubs that can handle the shifting that takes place over the years of breakdown. I have found a sweet spot, however: in the hügel design for pawpaws, of course! When a hügelkultur bed is built and the soil is dumped over top of the wood, a certain amount of the soil naturally cascades down to the base, which makes a nice deep, loose planting soil. This is a happy place for pawpaws, as they gain the benefits of the hügelkultur water harvest and eventual nutrient release.

For more detailed information on creating hugelkultur beds, see my book, Edible Landscaping with a Permaculture Twist, which devotes an entire chapter to the subject.



Building up wood in the hugelkultur bed

Voila! Hugelkultur bed covered!

Greywater Berms

Greywater berms are also a perfect place to plant pawpaw trees since they are basically built-in passive irrigation. Greywater is the used water coming from your sinks, shower, and washing machine that gets gravity-fed or pumped out to shallow troughs in the landscape.[4] The greywater troughs at our home are 2-feet wide by 20-feet long and only a few inches deep; and they are bermed on either side, with contoured planting beds. As long as you are using eco-groovy soaps and cleaners, the raised beds on either side of the trough basically become sub-irrigated beds. Our greywater berms are planted with black currants, gooseberries, and pawpaws.[5]

Greywater trough with raised beds on either side reuses precious water and nutrients

Landscape Planting Ideas

From stunning fruit-tree lined driveways to front yard specimens to edible woodland gardens, the pawpaw highlights landscapes with dense tropical foliage, attractive growth form, and low-hanging fruit. A few ideas for adding pawpaws to the landscape follow. Pawpaw trees graft well with:

- City lots (resilient tree)
- Townhome yards (close spacing)
- Suburban lawns (island and foundation plantings)
- Under power lines (limited height)
- Businesses and urban areas (specimen trees)
- Adjacent to drainage ditches (self-watering)
- Rain gardens (stacking functions)
- Along driveways and parking areas (using microclimates)
- Edible woodland gardens[6] (shade tolerant)
- In swales (contour planting)

4 Regular house plumbing or individual appliances, such as a washing machine, can be easily retrofitted into greywater systems, thereby putting your wash water to good use! For more info on greywater systems, check out greywateraction.org.

5 Greywater beds can be extra helpful to pawpaw plantings in regions that are typically too dry for the lush Asimina tribola.

6 I designed an edible woodland garden at Top Chef Bryan Voltaggio's Volt restaurant in Frederick, Maryland, that highlights a pair of pawpaw trees mixed in with currants, ginseng, sweet woodruff, fiddlehead ferns, spicebush, and mushroom logs, along with a few other plants. The pawpaws were positioned so their deep green lush foliage can be marveled at by diners sitting in the alcove dining room eating pawpaw tarts—touché!

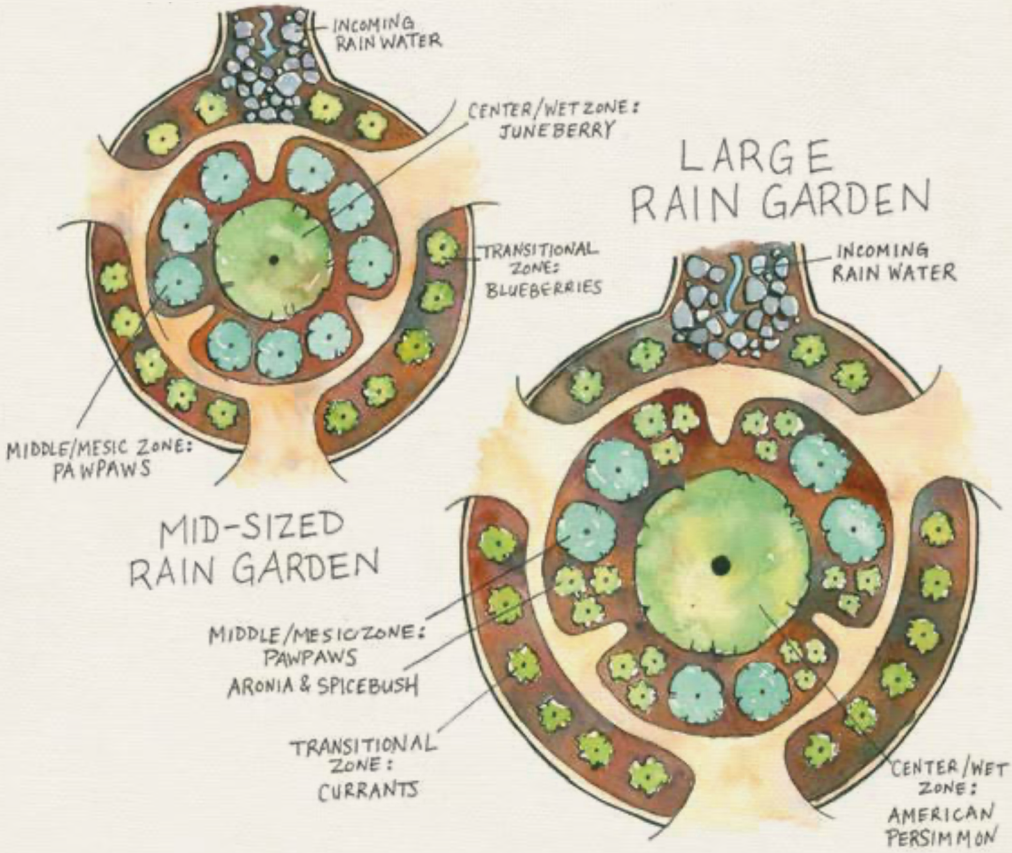
PAWPAW RAIN GARDENS

Mid- to large-sized rain gardens that have transition zones with a balance of good drainage and access to deep moisture are sweet spots for pawpaws and other favorite edible all-stars. The "Pawpaws in Rain Gardens" illustration shows a sample of working with the different depths and moisture levels found in most rain gardens. In the mid-sized rain garden, we depict the center/wet zone planted with juneberry (*Amelanchier sp.*);the middle/mesic planted with pawpaws ringed around the juneberry; and the transitional zone with blueberries ringing around the pawpaws.

For a larger rain garden space or for a large island planting, I recommend placing an American persimmon in the center, then a ring of pawpaws intermixed with spicebush and aronia, followed by an outer ring of black currants. An added bonus to the cornucopia of fruit this design brings is mixing the golden autumn foliage of the pawpaws and spicebush with the reds of the aronia and persimmon.

For permaculture resource information, please see the Resources appendix.

PawPaws is Rain Gardens



Long Creek Permaculture
Frederick Maryland

THANK YOU!

We hope you've enjoyed this short intro to the fantastic and amazing pawpaw.

It gets much more delicious the more you explore..

For more resources, videos, books, and courses on easy to grow fruits, mushrooms, food forests, and much much more visit:

www.Michael-judd.com

Stayed tuned to for new guides, videos and courses that will help make your life more fruitfull!

Subscribe to email updates

Blessings, Michael & Ashley Judd

WHO IS MICHAEL JUDD?

Michael Judd has worked with agro-ecological and whole-system designs throughout the Americas for over two decades, focusing on applying permaculture and ecological design. His projects increase local food security and community health in both tropical and temperate growing regions. He is the founder of **Ecologia Edible & Ecological Landscape Design**, **Project Bona Fide**, an international nonprofit supporting agro-ecology research, and co-founder of **SilvoCulture**, a Maryland based nonprofit which is helping plant 1 million nut trees in the Mid-Atlantic region. He is also the author of For the Love of Paw Paws – book and online course.

Michael lives with his family on a permaculture haven nestled along the foothills of the Blue Ridge Mountains near Frederick, Maryland. The Judds' homestead consists of 25 acres of mixed woodlands, food forests, gardens, and a nursery designed for experimentation and education.

Above: Michael Judd in a PawPaw Patch
Below: PawPaw Fest at Long Creek Permaculture

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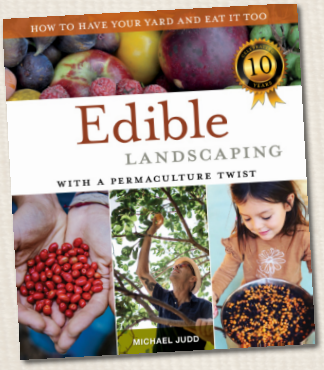

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