

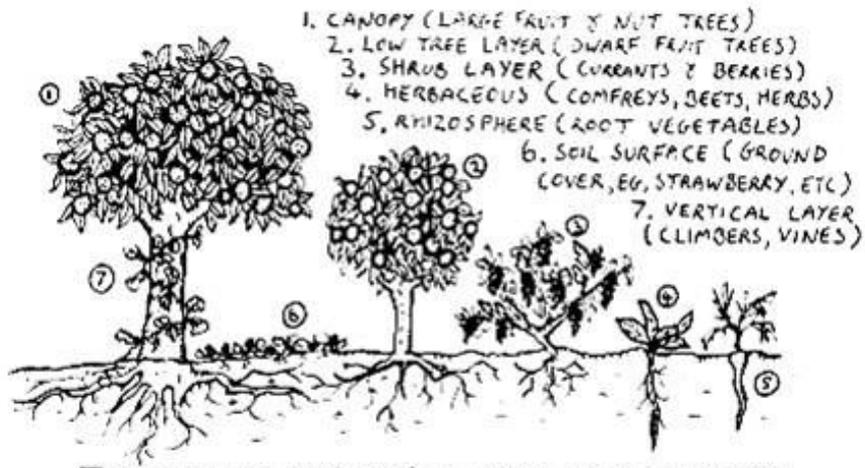
# The Cultivate Kansas City Edible Forest Garden

## Planning, Design & Establishment

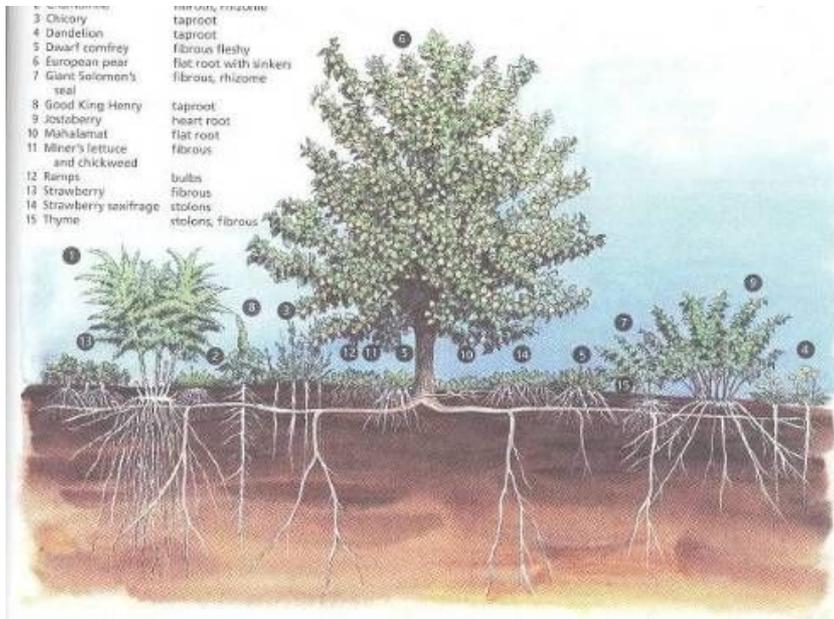
*By Daniel Dermitzel*

*[stadtbauer@gmail.com](mailto:stadtbauer@gmail.com)*

*Funded through an Audubon - Toyota TogetherGreen  
Conservation Fellowship, 2010*



THE FOREST GARDEN: A SEVEN LEVEL BENEFICIAL GUILD



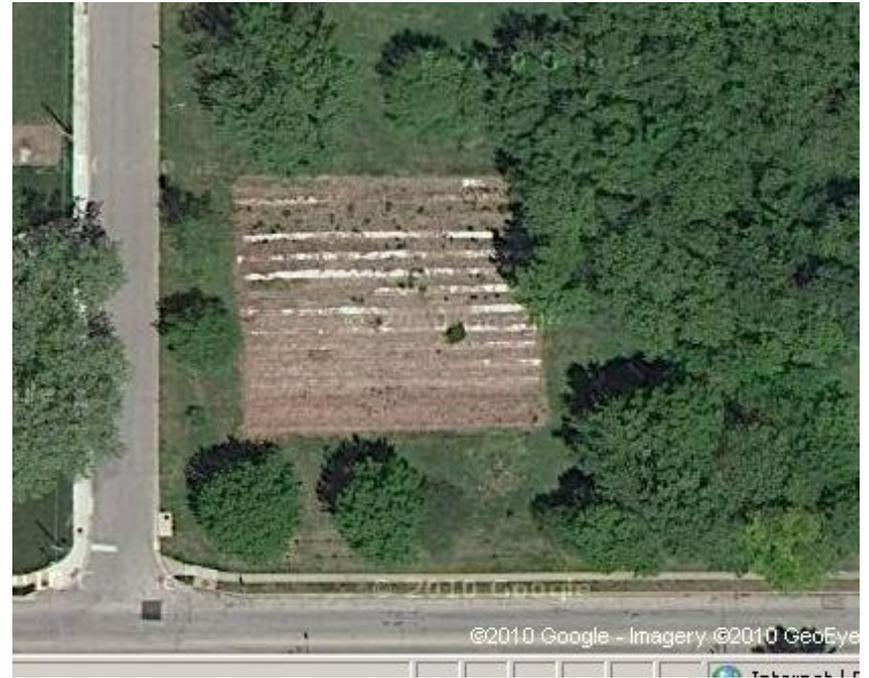
Seven layers of a fully developed forest garden (top)  
 Below ground the roots occupy different layers (bottom)



Tillage-based agriculture (top) and no-till forest floor permaculture (bottom)

## Edible Forest Garden Site Characteristics:

- 100' x 100' (just under ¼ acre)
- previously in annual vegetables
- loamy soil, no restrictive features in top 80"
- well-drained, high water holding capacity
- pH = 6.5
- organic matter: 2.6%
- surrounding tree community: sweet gums and oaks, a redbud, in the existing forest we observed hackberries, oaks, walnuts, maples, ash and elm trees, honey locust, dogwoods and more.

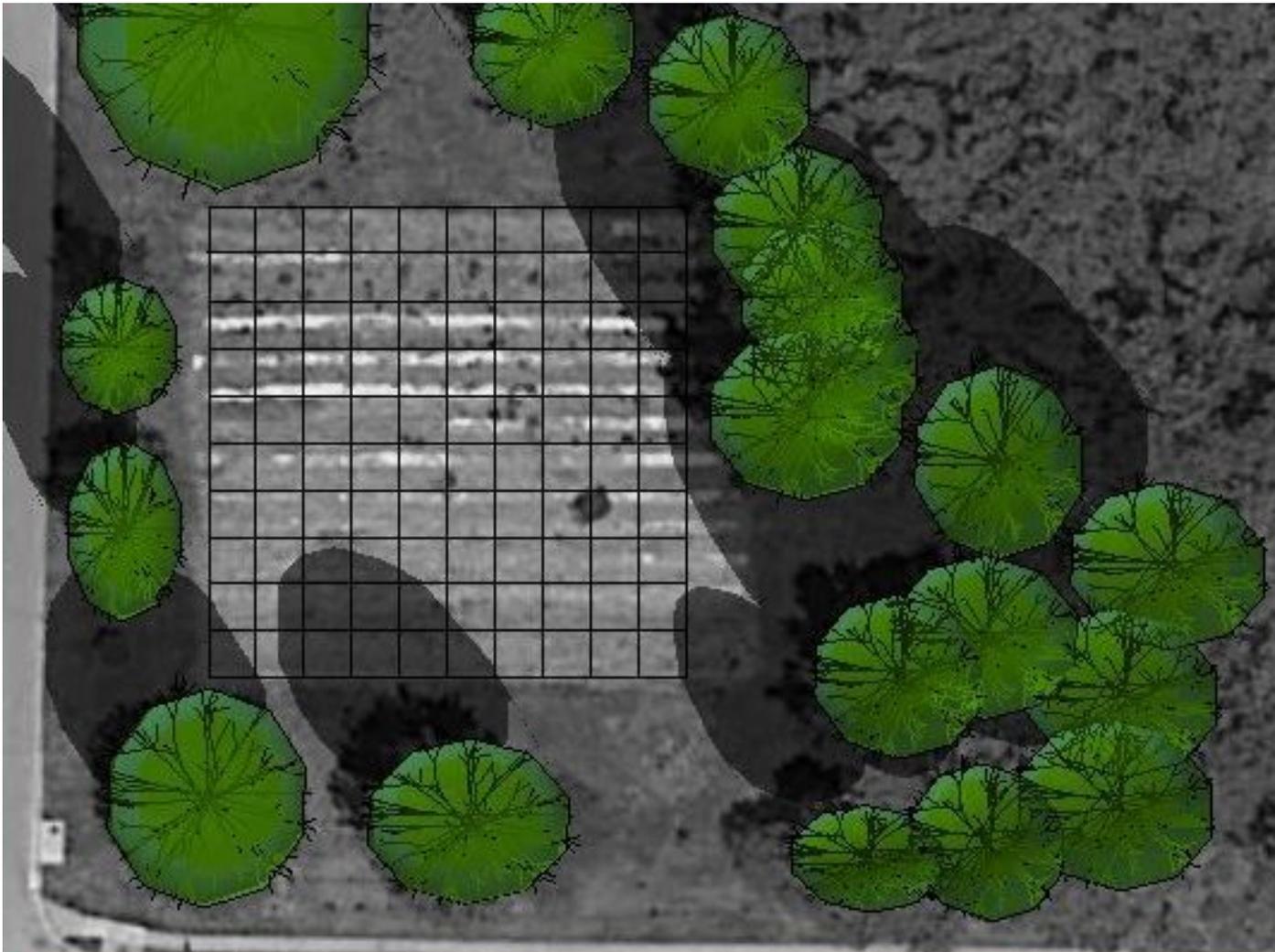


*Forest garden site prior to being converted from organic vegetable cultivation (2009)*

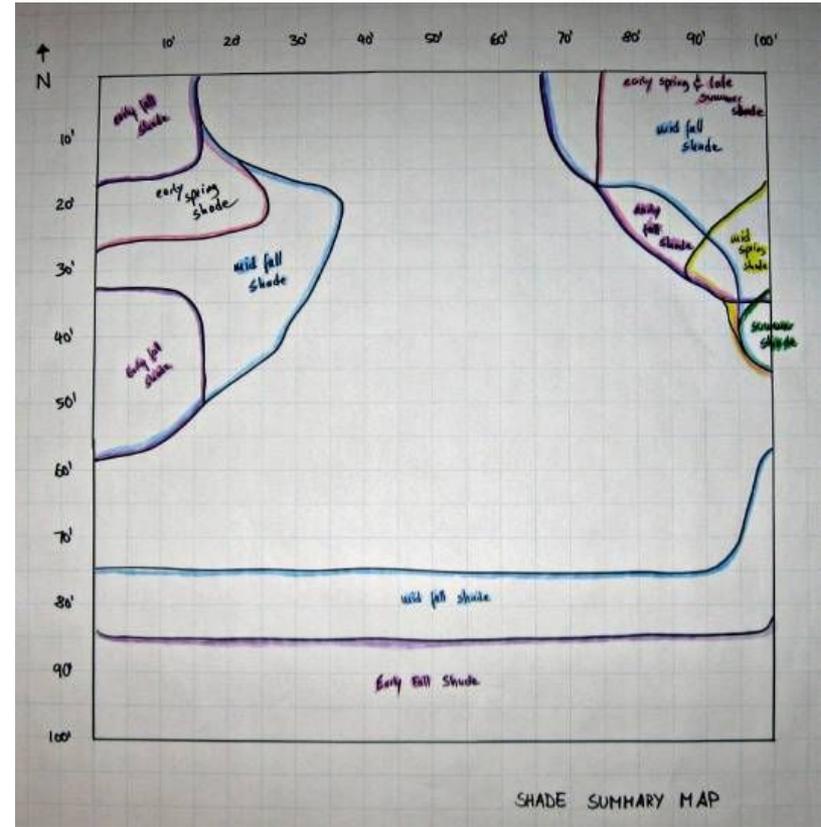
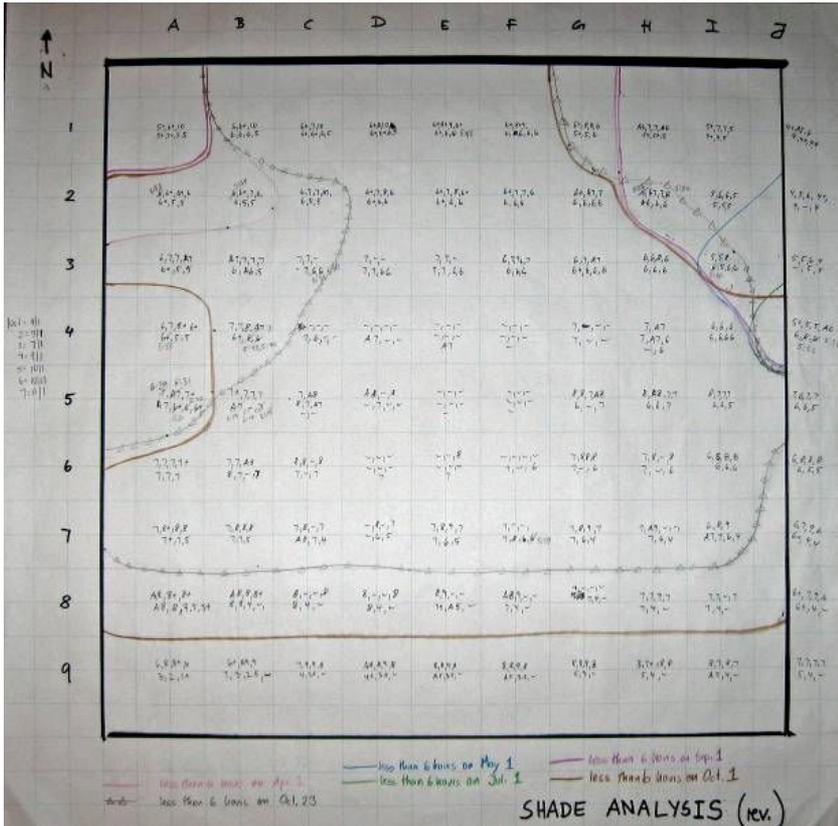
# Measuring the Height of the Trees



## 365-Day Shade Analysis Using Google Sketchup



# Shade Analysis





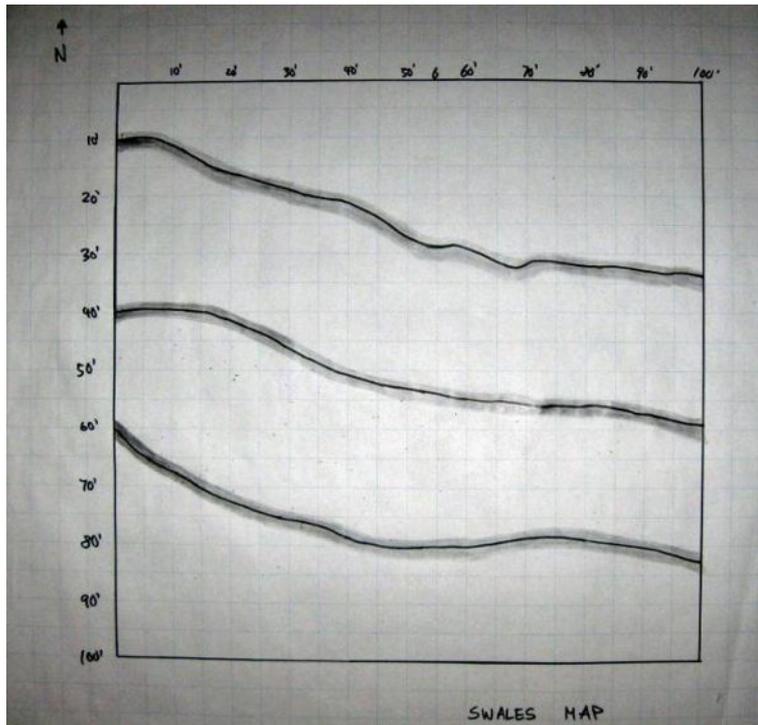
*Forest garden site in grass and weeds in the fall of 2010*



*Establishment strategy: final tillage followed by seeding of white clover*



7.2 % Slope: Infiltration swales can help capture water



# Construction of Infiltration Swales





Finished swales. The berms are mulched with straw to prevent erosion.

	A	B	C	D	E	G	H	I	J	K	L	M	N	O
1	Zone	ER	Latin	cutout	Common	type	pollin	shade tolerance (Crawford)	sun preference (Jacke)	N-2	size-1 mostly	OGW	spacing (raintree)	size (edible landscaping)
2	E		matteuccia struthiopteris		ostrich fern	herb			part to none					
3			petasites japonicus gigan.		tulsi / giant butterbur	herb		1	part to none		46			
4	G		bunia orientalis		turkish rocket	herb		0.5	full to part					
5	E		chenopodium bonus henricus		good king henry	herb		0.75	full to part					
6	E		chicorium intybus		chicory	herb			full to part					
7	E		orambe maritima		sea kale	herb		0.5	full to part					
8	E		helianthus tuberosus		jerusalem artichokes	herb		0.5	full to part					
9			hemerocallis spp.		daylilies (flower buds eaten in Asia)	herb			full to part					
10			levesticum officinale		lovage	herb		0.5	full to part					
11	E		mentha x piperita		peppermint	herb			full to part					
12	E		rheum cultarum		rhubarb	herb		0.75	full to part					
13			symphytum officinales		comfrey	herb		0.75	full to part					
14	E		urtica dioica		stinging nettle	herb			full to part					
15	MB 4		aquilegia canadense		columbine (flowers&stems)	herb		0.75	full to none					
16	E		asparagus officinalis		asparagus	herb		0	full					18" spacing
17	G		borago officionalis		borage	herb			full					
18			bunium bulbocastanum		earth chestnut / pig nut	herb		0.5	full					
19	E		chamaemelum nobile		chamomile	herb			full					
20	E		fragaria ssp		strawberry	herb	A/B1	0.75	full		6" to 8"			
21	rv		lupinus perennis		lupine	herb			full	y				
22	E		montia perfoliata		miner's lettuce	herb			full					
23	G,E		allium ssp		potato onion, welsh onion, ramps, egypt.	herb								
24			habitzia tamoides		caucasian spinach	herb		0.75						
25	E		oxyria digyna		sorrel	herb								
26	E		pimpinella saxifraga		burnet's saffrage	herb								
27	E		polygonatum biflorum		solomon's seal	herb								
28	E		rumex acetosa		french sorrel	herb								
29	E		taraxacum officinale		dandelion	herb								
30	f		asarum canadense		wild ginger (MB 4 stars) NOT SAFE?	p-s herb			1	part to none				
31	E		gaultheria procumbens		winter green	p-shrub	A		part to none		0.5'		1'	0.5 to 1 spacing
32	F		rubus flagellaris		dewberry (MB 2 stars)	p-shrub	A		full to part					
33	E		vaccinium macrocarpon		cranberry	p-shrub	A, p, r, t, 2		full					
34	G		aronia melanocarpa	y	black chokeberry	shrub	A	0.75	full to part		3-6			
35	U		decaisnea forgesii		blue bean	shrub	A	0.5	full to part					
36	G		eleagnus multiflora	y	goumi	shrub	B1	0.75	full to part	yes	5-6	6	7 (4 in hedge)	
37	6?	G	gaultheria shallon	y	salal	shrub	A	1	full to part		sun 2, shade 5+	sun 2, shade 4		
38	G		gaylussacia baccata		black huckleberry	shrub	B		full to part					
39	G		kiackia spectabilis		black huckleberry (see above)	shrub			full to part					

Plant selection: first a “universe” of approximately 80 plants was compiled from which to choose. Criteria for inclusion: “edibility rating” & hardiness. Plant budget for trees and shrubs: \$3,200.

**TABLE 2.2. Summary of the edible-forest-garden pattern language**

**Patterns at the Landscape Scale**

*Fit the forest garden site into the larger context so that it helps create these larger patterns, and these larger patterns support each forest garden site.*

- |                               |                         |
|-------------------------------|-------------------------|
| 1 Productive Landscape Mosaic | 2 Islands and Corridors |
|-------------------------------|-------------------------|

**Patterns at the Site Scale**

*Fit the forest garden into the living, breathing, working landscape of the site so that it generates the greatest ease, health, and diversity.*

- |                       |                        |
|-----------------------|------------------------|
| 3 Patterns That Arise | 6 Outdoor Living Rooms |
| 4 Habitat Diversity   | 7 Zones and Sectors    |
| 5 Site Repair         | 8 Zones of Water Use   |

**Patterns of the Garden**

*Define the garden's fundamental structure using a more or less formal geometry, ...*

- |                   |             |
|-------------------|-------------|
| 9 Dynamic Patches | 10 Mandalas |
|-------------------|-------------|

*... or by patterning the forest garden so that it mimics natural ecosystem architecture and composition, ...*

- |                         |                                   |
|-------------------------|-----------------------------------|
| 11 Temporary Shrublands | 15 Mature-Forest Forest Gardens   |
| 12 Minithickets         | 16 Gaps and Clearings             |
| 13 Oldfield Mosaics     | 17 Forest Gardens in the Woods    |
| 14 Woodland Gardens     | 18 Shifting-Mosaic Forest Gardens |

*... or by applying forest-gardening principles to the cultural landscape, maintaining or mimicking aspects of that landscape, but transforming it at its essence.*

- |                 |                             |
|-----------------|-----------------------------|
| 19 Copses       | 21 Microforest Garden       |
| 20 Forest Edges | 22 Suburban Landscape Mimic |

**Patterns in the Garden**

*Define the landform and circulation patterns before defining vegetation patterns.*

- |                              |                             |
|------------------------------|-----------------------------|
| 23 Pits and Mounds           | 26 Paths and Nodes          |
| 24 Definite Pathways         | 27 Rootlike Path Geometries |
| 25 Strategic Materials Depot | 28 Keyhole Beds             |
|                              | 29 Pathway Width            |

*Determine your establishment, reestablishment, and management patterns.*

- |                                       |  |
|---------------------------------------|--|
| 30 Patch Disturbance and Regeneration | 33 Relay Plantings                     |
| 31 Instant Successions                | 34 Disturbance and Maintenance Regimes |
| 32 Nuclei That Merge                  |  |

*Define the overall structural goals that help you select the organisms, species, and varieties you want.*

- |                                     |   |
|-------------------------------------|---|
| 35 Diversity of Life Forms          | 40 Layers of Harvest                      |
| 36 Extraordinary Edibles Everywhere | 41 Staggered Harvests, Clustered Harvests |
| 37 Gourmet Decomposers              | 42 Nectaries Always Flowering             |
| 38 Three-Layer Minimum              | 43 Native Species                         |
| 39 Lumpy Texture                    |   |

*Define species placement patterns within the larger patterns defining the structure of the garden as a whole.*

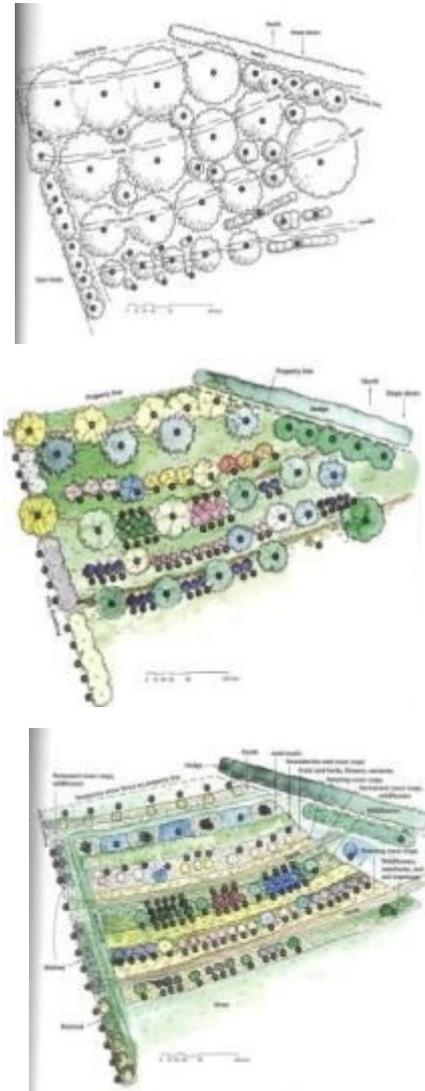
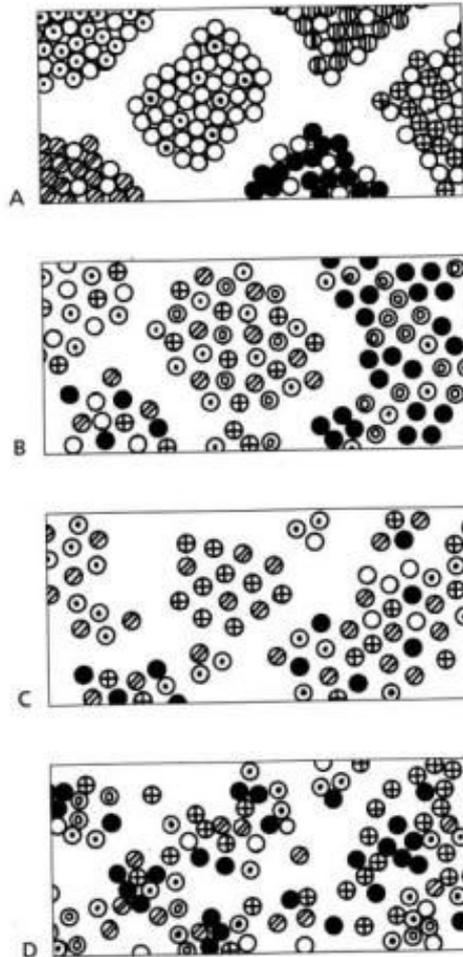
- |                               |                                 |
|-------------------------------|---------------------------------|
| 44 Polyculture Patches        | 49 Ground-Cover Carpets         |
| 45 Pockets of Production      | 50 Drifts, Clumps, and Scatters |
| 46 Flower-Petal Beds          | 51 Functional Plants Throughout |
| 47 Cluster Planting           | 52 Expansive Plant Containers   |
| 48 Cross-Pollination Clusters |                                 |

**Garden Elements**

*Embellish and enrich the garden you have created with specific elements that bring higher diversity and functionality.*

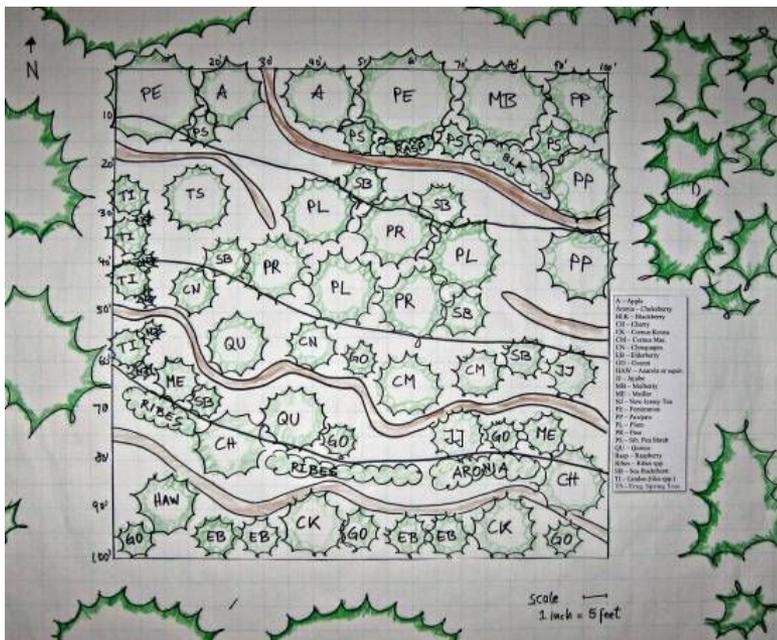
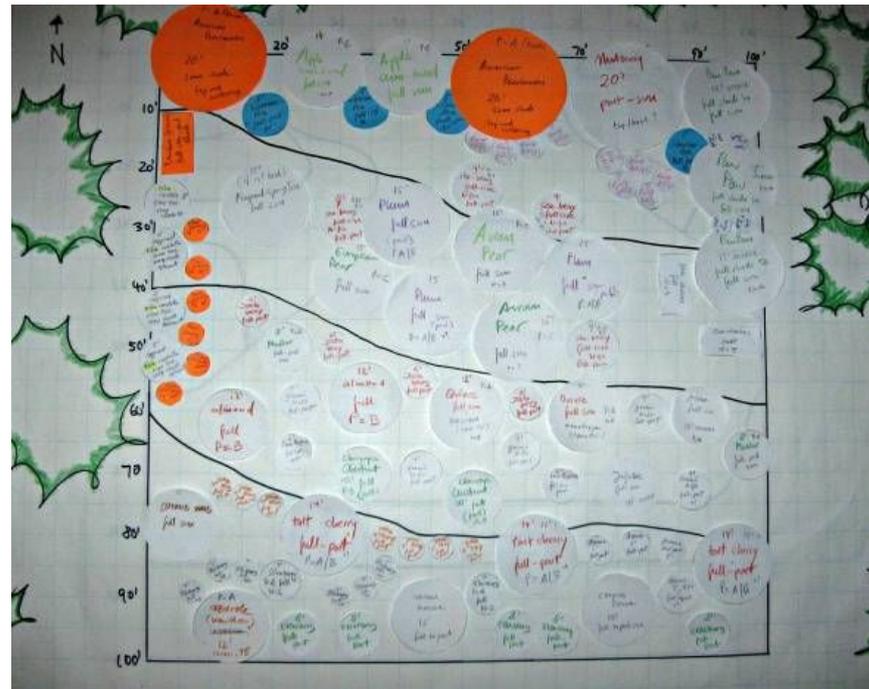
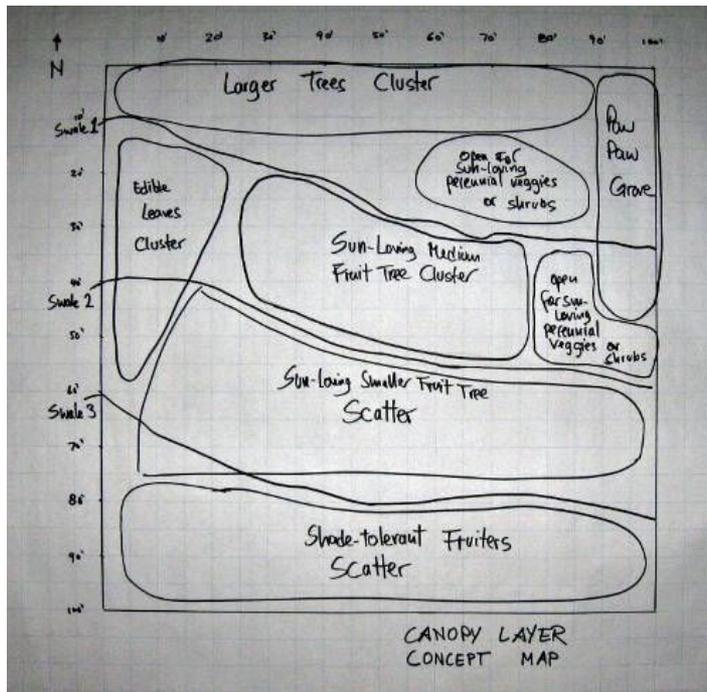
- |                       |              |
|-----------------------|--------------|
| 53 Living Soil        | 56 Mulch     |
| 54 Habitat Elements   | 57 Dead Wood |
| 55 Fruitful Footpaths |              |

# Designing the Forest Garden



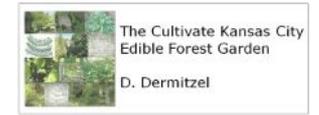
**FIGURE 2.14A-D.** Different patterns of tree distribution for woodland gardens encourage structural diversity. (a) Tight clumps of one or a few species with consistent spacing within and between clumps whose total cover value exceeds 40 percent. (b) Clumps of varied sizes and species mixtures, but with consistent spacing between trees. (c) Varied clump size and spacing between clumps. (d) Varied clump size, spacing between trees, and spacing between clumps. Similar patterns can be used for shrubs and herbs. *Adapted from Rothwell and Patterson, 1995.*

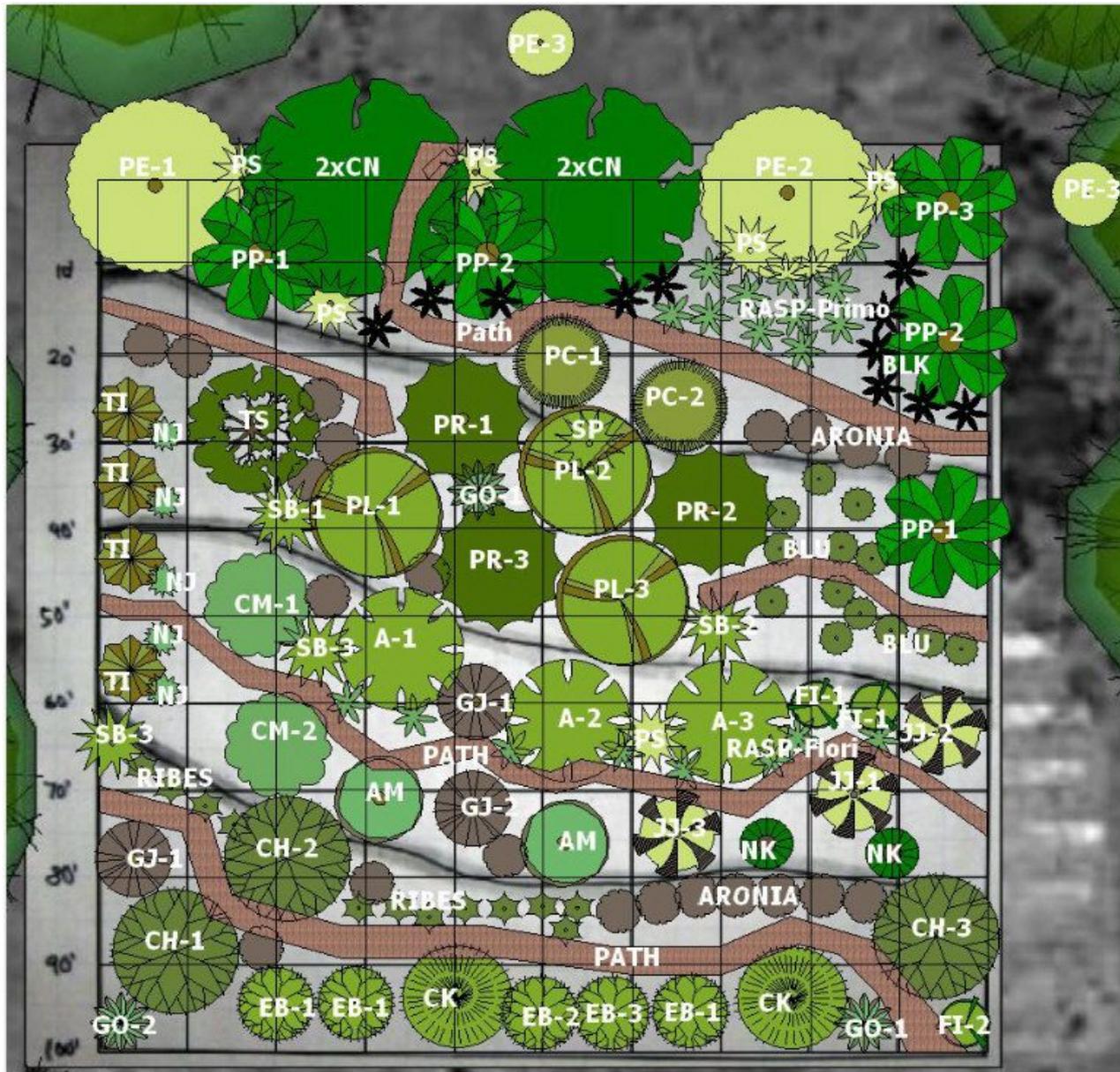




**Forest garden design process:**

- 1) Concept Map (top left)
- 2) Using paper cutouts to experiment with plant arrangements (top)
- 3) Finalizing design (left)





- A - Apple (1=Redfree, 2=Liberty, 3=Enterprise)
- AM - Serviceberry (Autumn Brilliance)
- \*ARONIA - Chokeberry (Viking & Nero)
- \*BLK - Blackberry
- \*BLU - Blueberry
- CH - Tart Cherry (1=Jubileum, 2=Danube, 3=Montmorency)
- CK - Cornus Kousa (Big Apple)
- CM - Cornelian Cherry (1=Pioneer, 2=Red Star)
- CN - Chinese Chestnut
- EB - Elderberry (1=Nova, 2=York, 3=Netzer)
- FI - Fig (1=Hardy Chicago, 2=unknown)
- \*GJ - Goji Berry (1=Crimson Star 2=Phoenix Tears)
- GO - Goumi (1=Sweet Scarlet, 2=Red Gem)
- JJ - Jujube (1=Lang, 2=Li, 3=Xu Zhou)
- NJ - New Jersey Tea
- PC - Peach (1=Redhaven, 2=Reliance)
- PE - Persimmon (1=Meader, 2=Early Golden, 3=mae)
- PP - Pawpaw (1=Penn Golden, 2=Davis, 3=Mango)
- PL - Plum (1=Shiro, 2=Superior, 3=Toca)
- PR - Pear (1=Moonglow, 2=Harrow Sweet, 3=Potomac)
- PS - Sib. Pea Shrub
- QU - Flowering Quince
- \*Rasp - Raspberry
- \*Ribes - Ribes spp.
- SB - Sea Buckthorn (1=Golden Sweet, 2=Sirola, 3=mae)
- TI - Linden (tilia cordata)
- TS - Toona Sinensis

\* planted in Spring  
(all others planted)



The canopy and shrub layers of our food forest (version 5, February 2012).



*Marking plant and path locations in the field*



*The first tree of the new edible forest garden is planted in Spring 2011: a Jujube or “Chinese Date”*



*More trees are planted and the clover grows strong*

# A Workshop On Designing Edible Forest Gardens



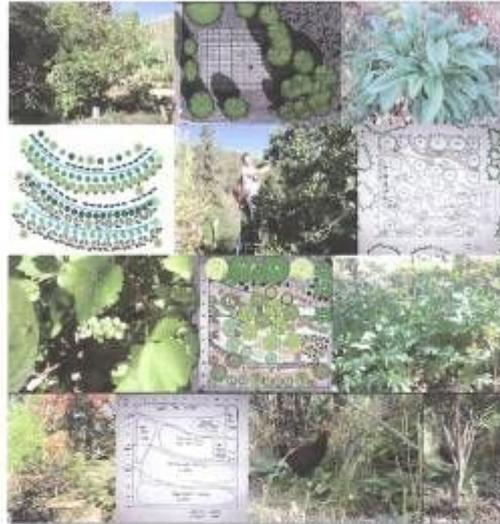
Steve Moring  
Vajra Farm



Matt Bunch  
Powell Gardens



Daniel Dermitzel  
KCCUA



Michael Ahnon, Forest  
Floor Permaculture



Cathy Bylinowski  
KCCUA



Steve Mann, Platte  
Prairie Ecosystems Mgmt

**Sunday, May 22, 2011**  
**12:30 PM – 5:30 PM**

*Please Note:*

To accommodate a few more participants, we will now hold the workshop at the Ramada at 7240 Shawnee Mission Parkway, OP, KS, 66202 and then travel to the nearby forest garden site together. Registration is required for this event due to space limitations. Please email [daniel@kccua.org](mailto:daniel@kccua.org) for all details. Thank you!

*For urban farmers, gardeners and landscape designers interested in growing productive edible greenspace.*

*See the step-by-step design process behind KCCUA's 1/4 acre experimental forest garden.*

*Learn about this sustainable method of perennial food production & start planting the productive green landscapes of tomorrow's urban food systems.*



with participation  
and help from:



Kana Permaculture  
Collaborative

**topics covered:**

- forest ecology
- site selection
- design approach
- plant selection
- getting the forest garden established
- case studies and local resources
- design exercise

**Suggested Donation: \$ 10.00**  
(includes materials)

- space is limited -

please register through [daniel@kccua.org](mailto:daniel@kccua.org)  
all information at [www.kccua.org](http://www.kccua.org).



The Cultivate Kansas City  
Edible Forest Garden

D. Dermitzel



*Edible Forest Garden Design Workshop 2011*



*The forest garden in 2012*



*The forest garden in 2012*





*The forest garden in June of 2012*



*The forest garden in 2014*





*The forest garden in the fall of 2012*





*The forest garden in the fall of 2012*



*The forest garden in the fall of 2012*



*The forest garden in the summer of 2014*



*The forest garden in the summer of 2014*



*The forest garden in the summer of 2014*



*The forest garden in the summer of 2014*



*The forest garden in the summer of 2014*



*The forest garden in the summer of 2014*



*The forest garden in the summer of 2014*



*The forest garden in the summer of 2014*



 The Cultivate Kansas City  
Edible Forest Garden  
D. Dermitzel

*The forest garden in 2014*



*Working mindfully in the forest garden 2014*





*Fifteen years later -- the food forest in 2025*



*Fifteen years later -- the food forest in 2025*



Thank you!

[www.danieldermitzel.com](http://www.danieldermitzel.com)  
[www.gamelanjourney.net](http://www.gamelanjourney.net)

For Information on Mindfulness Practice  
in the Tradition of Thich Nhat Hanh



[www.plumvillage.org](http://www.plumvillage.org)