Midwest Permaculture Presents:

A Permaculture Primer
by Emily Hahn
Forward by Becky Wilson
Editing and Layout by Milton Dixon

Midwest Permaculture – Stelle, IL
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Forward

Earlier this year (2015) we received an email from a college student asking us for some statistics regarding a permaculture plan for a family of four. My response basically was “it depends”. When we begin our design work the first step includes a site assessment followed by honing in on the vision that our clients have. Next, we assess what they have that can contribute to a Permaculture project i.e. Do they have more time or more money? Are they hands on folks or will they hire help? Are they looking for income or are they offsetting the need for income? Are there any specific needs or challenges on the property? Emily was looking for something more general for planning purposes on a hypothetical property. After she completed her project, she sent us a copy. When we saw it, we realized that others might find her research project very helpful and informative. As such, with her agreement, we decided to make her illustrations and text more available to a wider public. With the assistance of Milton Dixon’s editing skills they are now in a public format that is easy to share on the internet. We hope that you find them practical, useful, and inspiring.

Becky Wilson – Cofounder, Midwest Permaculture
November 2015

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About the Author

Emily Hahn is a recently-graduated Landscape Architecture student from Penn State University. Her goals as a designer are to creatively shape spaces in unique, site specific ways, utilizing scientific process and beautiful form. She hopes to transform everyday spaces into new and extraordinary places which go above and beyond the social/human needs of the space to create diverse and sustainable designs.

This Permaculture Primer was completed as a part of a 4th year interdisciplinary design studio project with Penn State’s Visiting Scholar Peter Lynch. A core component of the design project was determining sustainable approaches to suburban development in the State College, Pennsylvania area of the Ridge and Valley region. Through the integration of permaculture practices a sustainable model was created for an existing farmstead. The information in this booklet was gathered from various permaculture websites, blogs, articles and books including: Sepp Holzer’s Permaculture: A Practical Guide to Small-Scale, Integrative Farming and Gardening, Bill Mollison’s Permaculture Two, and Edible Cities by Judith Anger, Dr. Immo Fiebrig and Martin Schnyder.

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Editor’s Note

Permaculture as a design science is unique among other systems because it makes use of ethics. What are ethics? On his website permaculturist David Holmgren states: “Ethics are culturally evolved mechanisms that regulate self-interest, giving us a better understanding of good and bad outcomes”. Essentially, ethics are a tool that allows us to evaluate our actions and guide us toward a desirable end result. In permaculture, there are three ethics by which we design.

Earth Care – People Care – Future Care

These three ethics guide all permaculture designers and designs towards a future for people on this earth, the only acceptable outcome of any action we take.

Permaculture’s principles, rather than being an evaluation tool, are patterns of the possible actions that can be taken in order to meet the test of the ethics. They’re derived from the observation of natural ecosystems, being thoroughly time tested. Each is universally adaptable in its application and infinitely variable in its manifestation. Sometimes it may seem that there are many versions of the principles, for example thirty-five from Mollison versus twelve from David Holmgren. What’s important to remember is that whichever set one chooses to use, they all describe the same thing: patterns that successfully work within the limits of our planet.

I find Holmgren’s principles offer a succinct and well-designed format for these patterns; more detailed information is available from his website Permaculture Principles.

1. Observe and Interact
2. Catch and Store Energy
3. Obtain a yield
4. Apply Self-Regulation and Accept Feedback
5. Use and Value Renewable Resources and Services
6. Produce No Waste
7. Design From Patterns to Details
8. Integrate Rather Than Segregate
9. Use Small and Slow Solutions
10. Use and Value Diversity
11. Use Edges and Value the Marginal
12. Creatively Use and Respond to Change

The ethics and principles, while at the core of permaculture, may also seem too theoretical as a starting point. That’s where this primer comes in, giving examples of how they might play out in a given situation. The infographics give a sense of how these important tools can manifest in the world and how different elements in a design might fit together.

Milton Dixon
Editor
Permaculture

a philosophy of permanent agriculture systems utilizing natural patterns and ecosystem biodiversity to maintain productive and relatively low maintenance food producing landscapes

- **Guilds** within the permaculture farm create miniature self-sustaining ecosystems performing a variety of functions
- **Fruit Trees** provide food for humans and chickens (via fallen fruit and insects) while providing partial shade for the guild
- **Grain Field** provides for humans and after the harvest the chickens clean up remaining grain that would otherwise go to waste
- **Greenhouse** oriented with south-west exposure catches sunlight and allows plants to grow throughout the winter while helping to heat the chicken coop during the day
- **Stormwater** flows off the roof and is captured in a rain barrel which provides the chickens with water
- **Island** provides protection for ducks and geese and creates additional edges within the pond
- **Pigs** wallow in the marshy land near the pond and remove unwanted plants and fallen fruit and vegetables from around the site
- **Chicken Manure** enters the pond and acts as fertilizer
- **Chicken Coop** receives heat from the greenhouse during the day and provides heat to the greenhouse during the evening from the chickens, manure is also used as fertilizer for the plants
Components and Design Strategies

PERMACULTURE ZONES
areas within a permaculture design arranged based on how often each space is visited and how much maintenance is required

ZONES
1. Closest to the house and along frequently traveled paths
   - Seedlings in need of frequent watering
   - Salad Vegetables
   - Favorite Flowers
   - Commonly Used Herbs
   - Compost Collection
2. Also frequently visited but less often than zone 1
   - Small Fruit Trees
   - Shrubs
   - Trellised Fruit
   - Bramble Berries
   - Ponds
   - Windbreaks
   - Vegetables that only fruit once
   - Unruly Rambling Vines
3. Large, low maintenance trees and crops
   - Large Fruit/ Nut Trees
   - Main Crop Areas
   - Large Pastures
4. Utilized for gathering wild foods and growing timber
5. Unmanaged brush (like a wildlife preserve)

ECO TONES
the edge condition or transition zone between two different ecosystems; known for hosting a diverse range of species

Less Diverse with Minimal Edge Conditions

More Diverse with Greater Edge Area
Components and Design Strategies

GUILD
a grouping of plants, animals and insects working together to ensure the survival of the whole system

COMPONENTS OF A GUILD
1. Food for Us
   fruits, vegetables, staples, legumes, nuts, fats and animals

2. Food for the Soil
   nutrients, nitrogen (legumes), organic matter

3. Diggers and Miners
   reach into the soil to pull up minerals (trees, root crops, ants, termites, worms, beetles, mice)

4. Groundcover
   plants that keep the soil from drying out and prevent weeds taking over

5. Climbers
   maximize vertical space (beans, passion fruit, cucumbers)

6. Supporters
   provide a structure for the climbers (trees, shrubs, stalks, houses, walls, fences)

7. Protectors
   strong smelling plants to deter insects (onions, chives, spices, lemon grass, pungent flowers)
   habitat for natural predators such as frogs, birds, and beneficial insects, living fences of thorny and sharp plants
Components and Design Strategies

FOOD FOREST
a system which mimics the natural forest ecosystem with food producing species to create a self-regulating, ecologically stable, food producing forest
not gardening in the forest, gardening like the forest

1. Canopy - timber, nut, fruit
2. Sub-Canopy - fruit, nut
3. Shrub Layer - fruit, nut, hardy herbs
4. Herbaceous Layer - herbs, vegetables
5. Groundcover/Creeper Layer - herbs
6. Underground Layer - root crops
7. Vertical/Climber Layer - fruit
8. Aquatic/Wetland layer - herbs
9. Mycelial/Fungal Layer - mushrooms
Components and Design Strategies

PONDS/AQUACULTURE SYSTEMS
the incorporation of bodies of water into a permaculture design which increases biodiversity and opportunities for supporting a range of plant and animal species

USES WITHIN A PERMACULTURE SYSTEM
1. Stormwater Storage
2. Use as Irrigation
3. Biodiverse Habitat
4. Edible Water Species
5. Freshwater Fish, Mussels and Clams

Edge Plants increase the biodiversity of the pond and help to provide shade and erosion control

Marginal Plants with roots in the water and the majority plant out of the water provide shelter for fish and amphibians

Freshwater Mussels/Clams filter the water, removing organic matter and turning it into readily available nutrients and provide an additional food source

Partially Submerged Log creates additional habitat for smaller fish and frogs to hide from predators

Floating Rooted Plants provide shade to keep the water cool and are food for insects and fish

Irregular edge adds diversity

Stepped slopes and an island create niche habitats

Floating Plants extract excess nutrients and provide shade

Submerged Plants Absorb CO2 and keep the water oxygenated, food for fish
Components and Design Strategies

MICRO-CLIMATES AND LANDFORM
the creation of various landforms and planting arrangements to provide specific climates suited to a variety of species

FROST POCKETS
Cold air flows across the landscape and pools in low lying areas or in places where obstructions prevent it from easily flowing past. These low areas are called frost pockets and can get to dangerously low temperatures for plants.

RAISED BEDS
Raised beds can be constructed to create a series of micro-climates which allow a variety of plants to thrive in a small area. The soil between the beds retains moisture while the tops receive more sun and have drier soils.

TERRACES
Terraces built into slopes can maximize the growing potential for a given area and reduce the risk of soil erosion.

HERB SPIRALS
Herb spirals are productive, energy efficient, vertical gardens. The spiral creates a range of micro climates for different herbs. Dry, sun loving species are planted at the top and moisture loving species towards the bottom near the small pond.
Species and Functions

ANIMAL SYSTEMS
the integration of animals into a permaculture system utilizing their natural habits to minimize workloads and their produce to supplement the outputs (i.e. grazing unwanted plants, producing milk, eggs etc.)

- **POULTRY**
  - 100 per acre
- **GOATS/ SHEEP**
  - 4 per acre
- **SWINE**
  - 4 per acre
- **CATTLE**
  - .5 per acre
- **BEES**
  - 10 Hives Suggested

- Increase Garden Fertility
- Remove Insects/pests
- Low Soil Impact
- Eggs
- Meat
- Minimal Space

**BREEDS**
- Ameraucana
- Black Australorp
- Cuckoo Maran
- Delaware
- Rhode Island Red
- Welsummer
- Mallards
- Styrian Chickens
- Geese
- Ducks
- Quail
- Increase Garden Fertility
- Manage Vigorous Plant Growth
- Can Damage Trees
- Milk
- Cheese
- Wool/Yarn
- Minimal Space

**BREEDS**
- Sheep - American Blackbelly
- Black Welsh Mountain
- Bluefaced Leicester
- Clun Forest
- Cotswold
- Goats - Nubian
- Toggenburg
- Oberhasli

- Increase Garden Fertility
- Living Plows Turn Up Soil Surface
- No Damage to Trees
- Clean up Fallen Fruit (preventing disease)
- Meat
- Pleasant Workers
- Minimal Space

**BREEDS**
- Swabian-Hall
- Duroc
- Mangalitsa
- Turopolse
- Mulefoot
- Tamworth
- Large Black
- Kunekune

- Increase Garden Fertility
- High Soil Impact (compaction)
- Milk
- Meat
- Lots of Fencing
- Large Areas

**BREEDS**
- European Bison
- American Bison
- Yak
- Water Buffalo
- Scottish Highland
- Hungarian Steepe
- Dahomey Miniature
- Guernsey
- Red Poll
- Ayrshire
- Randall Blue Lineback

- On Site Pollination
- Honey
- Opportunity to Provide Pollination Services
- Minimal Maintenance
- Minimal Space

**SPECIES**
- Italian
- German
- Carniolan
- Buckfast
- Caucasian
- Russian
- Minnesota Hygienic
- Cordovan
- Midnite
- Starline
- Double Hybrid
# Species and Functions

## Plants

### 1. Canopy Layer
- Alder
- Black Cherry
- Chestnut
- Lime
- Linden
- Basswood
- Hazelnut
- Honey Locust
- Monkey Puzzle Tree
- Mulberry
- Oak
- Osage Orange
- Pea Tree
- Pecan
- Hickory
- Pine Tree (pine nuts)
- Persimmon
- Walnut

### 2. Sub-Canopy
- Apple
- Sweet Cherry
- Tart Cherry
- Jujube
- Juniper
- Hazelnut
- Mayhaw
- Medlar
- Paw Paw
- Pea Tree
- Asian Pears
- Mimosa
- Plum
- Quince
- Rasin Tree
- Serviceberry
- Sumac
- Willow

### 3. Shrub Layer
- Alder
- Aronia/Chokeberry
- Bamboo
- Tart Cherry
- Blueberries
- Bougainvillea
- Elderberry
- Goji Berry
- Gooseberry
- Gomi
- Hazelnut
- Juniper
- Mayhaw
- Nanking Cherry
- Oak
- Osage Orange
- Pea Shrub
- Rosemary
- Roses
- Sage
- Sumac
- Wineberry

### 4. Herbaceous Layer
- Asparagus
- Buckwheat
- Borage
- Calendula
- Chicory
- Fennel
- Licorice
- Plantain
- Sorrel
- Stinging Nettle
- Turkish Rocket
- Yarrow
- Red Clover
- Columbine
- Echinacea
- Ginseng
- Holyhock
- Oregano
- Parsley
- Sea Kale
- Wild Angelica
- Wintergreen
- Vetch
- Creeping Blueberry
- Mint
- Horseradish
- Sage
- Sorrel
- Wild Angelica
- Wintergreen

### 5. Ground Covers
- Chokeberry
- Calendula
- Red Clover
- Blueberries
- Ground Raspberry
- Hog Peanut
- Ostrich Fern
- Salal/Shallion
- Sage
- Stinging Nettle
- Sweet Potato
- Yarrow
- Creeping Blueberry
- Mint
- Rosemary
- Sea Kale
- Strawberries
- Turkish Rocket

### 6. Underground
- Camas
- Carrots
- Ginseng
- Groundnut
- Hog Peanut
- Licorice
- Horseradish
- Parsley
- Radishes
- Skirret
- Sweet Potato
- Turnips

### 7. Vines/Climbing
- Cucumber
- Hog Peanut
- Hops
- Kiwi
- Malabar Spinach
- Maypop
- Passion Fruit
- Pea Vines
- Sweet Potato
- Wisteria
- Vetch
- Grapes

### 8. Wetland Layer
- Cattail
- Bulrush
- Reedmace
- Common Reed
- Mayhaw
- Water Lotus
- Water Spinach
- Willow
- Water Chestnuts
- Watercress

### 9. Fungal Layer
- Reishi/Ling Chi
- Shaggy Mane
- Shitake
Permaculture Precedents

**OIKOS TREE CROPS - permaculture nursery**
- LOCATION: Kalamazoo, Michigan
- ESTABLISHED: 1980
- COMPONENTS: Fruits, Berries and Shrub Crops, Tree Crops, Nuts, Perennials, Perennial Vegetables
- KNOWN FOR: Unique and heirloom varieties long forgotten, specially selected for ease of growth and productivity

**KRAMETERHOF, SEPP HOLZER - permaculture farm**
- LOCATION: Burgenland, Austria
- ESTABLISHED: 1962
- COMPONENTS: Fruits, Vegetables, Grains, Animal Products, Fish/Aquatics, and more
- KNOWN FOR: Most productive permaculture farm in the world (at nearly 5,000 ft) run by Sepp Holzer, permaculture expert

**DJANBUNG GARDENS PERMACULTURE - Education Centre**
- LOCATION: Australia
- ESTABLISHED: 1993
- COMPONENTS: Cold Temperate through Tropical Plantings, Technologies, Water Systems, Animals etc.
- KNOWN FOR: A permaculture college in Australia, a comprehensive and demonstrative site

**EAST FEAST FESTIVAL BEACH - Community Food Forest**
- LOCATION: Austin, Texas
- ESTABLISHED: Proposed
- COMPONENTS: Fruit, Vegetables, Enhancing the Soil, Preserving Natural Land
- KNOWN FOR: Urban permaculture inspired by the Beacon Food Forest in Seattle
Permaculture Precedents

BEACON FOOD FOREST - Community Food Forest
7 acres

LOCATION
Seattle, Washington

ESTABLISHED
2014 (first phase)

COMPONENTS
Edible Arboretum
Berry Patch
Nut Grove
Community Garden
Kids Garden

KNOWN FOR
Recent project designed at the completion of a permaculture design course, a community garden for foraging

PERMACULTURE BALCONY - Fabienne Frölich Apartment Permaculture
< 25 square feet

LOCATION
Eisengasse, Basle, Switzerland

ESTABLISHED
Early 2000's

COMPONENTS
Herbs
Spinach
Vegetables
Vines
Mushrooms etc.

KNOWN FOR
Incredibly productive small space

ASLA STUDENT AWARD - Residential Permaculture Plan, Vanessa Gilbert
< 1/4 acre

LOCATION
Muncie, Indiana

ESTABLISHED
Conceptual design

COMPONENTS
Vegetable Gardens
Aquaculture Pond
Chickens/ Greenhouse
Storm Water
Gathering Spaces

KNOWN FOR
Turning an unproductive lawn into a self sustaining paradise

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## Costs and Profit

**Implementation and Profit for 4 Models with Varying Scales**

### Model 1: Residential Permaculture System Per Person

<table>
<thead>
<tr>
<th>Component</th>
<th>Area (acres)</th>
<th>Area (ft²)</th>
<th>Initial Cost</th>
<th>Annual Cost</th>
<th>Gross Annual Profit</th>
<th>Net Annual Profit</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed Vegetables and Fruit</td>
<td>0.01</td>
<td>500.00</td>
<td>$290.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Herb Spiral w/ pond (1 per household)</td>
<td>0.00</td>
<td>13.00</td>
<td>$290.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Nut Trees (3 at 4’ + 5 tall)</td>
<td>0.00</td>
<td>80.00</td>
<td>$80.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5-6</td>
</tr>
</tbody>
</table>

Total Cost (1 person) $660.00
Total Cost (4 people) $2,640.00

### Model 2: Community Permaculture System

<table>
<thead>
<tr>
<th>Component</th>
<th>Area (acres)</th>
<th>Area (ft²)</th>
<th>Initial Cost</th>
<th>Annual Cost</th>
<th>Gross Annual Profit</th>
<th>Net Annual Profit</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed Vegetables and Fruit</td>
<td>0.75</td>
<td>32,670.00</td>
<td>$12,500.00</td>
<td>$40,500.00</td>
<td>$67,500.00</td>
<td>$27,000.00</td>
<td>1-7</td>
</tr>
<tr>
<td>Mixed Herbs</td>
<td>0.03</td>
<td>1,306.80</td>
<td>$42.00</td>
<td>$84.00</td>
<td>$128.00</td>
<td>$244.00</td>
<td>1</td>
</tr>
<tr>
<td>Nut Trees (84 fish + 1/3 surface crop cover)</td>
<td>0.07</td>
<td>2,970.00</td>
<td>$395.00</td>
<td>$78.00</td>
<td>$45.00</td>
<td>$167.00</td>
<td>1</td>
</tr>
<tr>
<td>Aquaculture (85 tens free range w/in gardens)</td>
<td>0.01</td>
<td>450.00</td>
<td>$715.00</td>
<td>$1,039.00</td>
<td>$1,214.00</td>
<td>$1,075.00</td>
<td>1</td>
</tr>
<tr>
<td>Honey Production (10 hives)</td>
<td>0.09</td>
<td>30.00</td>
<td>$5,422.00</td>
<td>$500.00</td>
<td>$1,200.00</td>
<td>$700.00</td>
<td>2-3</td>
</tr>
<tr>
<td>Mushrooms (250 logs)</td>
<td>0.02</td>
<td>729.00</td>
<td>$729.00</td>
<td>$1,260.00</td>
<td>$3,217.00</td>
<td>$1,931.00</td>
<td>4</td>
</tr>
<tr>
<td>Other (paths, play area, compost etc.)</td>
<td>0.00</td>
<td>871.30</td>
<td>$871.30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Cost $19,833.00
Total Cost (4 people) $79,332.00

### Model 3: Community Food Forest

<table>
<thead>
<tr>
<th>Component</th>
<th>Area (acres)</th>
<th>Area (ft²)</th>
<th>Initial Cost</th>
<th>Annual Cost</th>
<th>Gross Annual Profit</th>
<th>Net Annual Profit</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed Vegetables and Fruit</td>
<td>0.75</td>
<td>32,670.00</td>
<td>$12,500.00</td>
<td>$40,500.00</td>
<td>$67,500.00</td>
<td>$27,000.00</td>
<td>1-7</td>
</tr>
<tr>
<td>Mixed Herbs</td>
<td>0.75</td>
<td>32,670.00</td>
<td>$1,050.00</td>
<td>$2,260.00</td>
<td>$4,230.00</td>
<td>$6,133.00</td>
<td>1</td>
</tr>
<tr>
<td>Nut Trees (240 fish + 1/3 surface crop cover)</td>
<td>0.23</td>
<td>8,712.00</td>
<td>$1,311.00</td>
<td>$223.00</td>
<td>$700.00</td>
<td>$477.00</td>
<td>7-12</td>
</tr>
<tr>
<td>Aquaculture (85 tens free range w/in forest)</td>
<td>0.01</td>
<td>450.00</td>
<td>$715.00</td>
<td>$1,039.00</td>
<td>$2,114.00</td>
<td>$1,075.00</td>
<td>1</td>
</tr>
<tr>
<td>Honey Production (20 hives)</td>
<td>0.00</td>
<td>30.00</td>
<td>$5,422.00</td>
<td>$500.00</td>
<td>$1,200.00</td>
<td>$700.00</td>
<td>2-3</td>
</tr>
<tr>
<td>Mushrooms (250 logs)</td>
<td>0.01</td>
<td>729.00</td>
<td>$729.00</td>
<td>$1,260.00</td>
<td>$3,217.00</td>
<td>$1,931.00</td>
<td>4</td>
</tr>
<tr>
<td>Other (paths, play area, compost etc.)</td>
<td>0.00</td>
<td>871.30</td>
<td>$871.30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Cost $17,810.00
Total Cost (4 people) $79,332.00

*Areas for each planted component are stacked vertically within the forest, i.e. nut trees, mixed fruit and vegetables, and mixed herbs fit within the same .75 acres with 10% reduction in initial cost, annual cost, and gross profit for each component to account for reduced density per acre.

### Model 4: Profitable Permaculture Farm

<table>
<thead>
<tr>
<th>Component</th>
<th>Area (acres)</th>
<th>Area (ft²)</th>
<th>Initial Cost</th>
<th>Annual Cost</th>
<th>Gross Annual Profit</th>
<th>Net Annual Profit</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed Vegetables and Fruit</td>
<td>1.50</td>
<td>65,340.00</td>
<td>$37,500.00</td>
<td>$81,000.00</td>
<td>$155,000.00</td>
<td>$54,000.00</td>
<td>1-7</td>
</tr>
<tr>
<td>Mixed Herbs</td>
<td>0.50</td>
<td>21,780.00</td>
<td>$700.00</td>
<td>$3,192.00</td>
<td>$5,481.00</td>
<td>$4,083.00</td>
<td>1</td>
</tr>
<tr>
<td>Rotational Steers (for Nubian Goats)</td>
<td>0.00</td>
<td>304.500</td>
<td>$23,400.00</td>
<td>$9,600.00</td>
<td>$10,800.00</td>
<td>$9,800.00</td>
<td>1</td>
</tr>
<tr>
<td>Seta Cheese (60 Nubian Goats barn and facilities)</td>
<td>0.29</td>
<td>8,712.00</td>
<td>$7,420.00</td>
<td>$10,000.00</td>
<td>$46,100.00</td>
<td>$86,100.00</td>
<td>1</td>
</tr>
<tr>
<td>Honey Production (20 hives)</td>
<td>0.00</td>
<td>30.00</td>
<td>$5,422.00</td>
<td>$500.00</td>
<td>$1,200.00</td>
<td>$700.00</td>
<td>2-3</td>
</tr>
<tr>
<td>Egg Production (500 hens in coops, prairie in fields)</td>
<td>0.11</td>
<td>500.00</td>
<td>$7,951.00</td>
<td>$11,521.00</td>
<td>$13,950.00</td>
<td>$11,943.00</td>
<td>1</td>
</tr>
<tr>
<td>Aquaculture (1.00 fish + 1/3 surface crop cover)</td>
<td>1.00</td>
<td>43,560.00</td>
<td>$5,666.00</td>
<td>$1,160.00</td>
<td>$3,500.00</td>
<td>$2,384.00</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Cost $153,941.00
Total Cost (4 people) $616,060.00

### ACRES REQUIRED PER PERSON

<table>
<thead>
<tr>
<th>Permaculture Setting</th>
<th># of People</th>
<th>Time (years)</th>
<th>Produce (lbs)</th>
<th>Area (ft²)</th>
<th>Area (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>1</td>
<td>1</td>
<td>33'560</td>
<td>3,250</td>
<td>0.06</td>
</tr>
</tbody>
</table>

### Value Added Options
- Restaurant
- Organic Foods, Farm Stand
- Permaculture Design Courses
- Seedlings and Saplings
- Heirloom and Organic Seeds
- Compost and Compost Teas
- Goat Cheese
- Honey
- Wine
- Dairy Products (cheese, cream, yogurt etc.)
- Fresh Cut Flowers
- Maple Syrup
- Jam
- Wine
- Eggs
- Wool/Yarn
- Bacon
Permaculture Precedents Links

Oikos Tree Crops - http://oikostreecrops.com/
Krameterhof - http://www.krameterhof.at/
East Feast Festival Beach - http://festivalbeachfoodforest.weebly.com/
Beacon Food Forest - http://www.beaconfoodforest.org/
Permaculture Balcony - http://permaculturenews.org/2010/10/02/my-balcony/
ASLA Student Award - http://www.asla.org/2010studentawards/020.html

Recommended Resources

Gaia’s Garden – Toby Hemenway
Earth User’s Guide to Permaculture – Rosemary Morrow
An Introduction to Permaculture – Bill Mollison
Plant Guilds https://midwestpermaculture.com/plant-guilds/
http://permacultureprinciples.com – David Holmgren
Permaculture Principles and Pathways Beyond Sustainability – David Holmgren
Edible Forest Gardens Vol 1 & 2 – David Jacke & Eric Toensmeier
Permaculture – A Designers Manual – Bill Mollison

MidwestPermaculture.com
Midwest Permaculture

- Permaculture Design Certificate Courses
- Topical Workshops
- Internship Programs
- Speaking and Educational Services
- Permaculture Design Consulting & Services

Our Permaculture Design Certificate (PDC) courses cover the essential elements contained in the curriculum outlined by Bill Mollison, the originator of this world-class training. The richness of our trainings we believe comes from our 35-years of experience living in a sustainably-oriented community. As such we have many useful insights into what it takes to create ‘permanent culture.’ Successful permaculture projects are built upon whole-integrated design including such key elements as water, soil, food, energy, buildings and people. We’ll help you learn how to do that in most any climate.

Please Visit Our Website or Contact us.

Web:  http://midwestpermaculture.com
Email:  info@midwestpermaculture.com
Phone:  815-256-2215
Cell/Text:  815-782-2216

Student Comments on our Permaculture Design Certificate Courses

“I’m so glad I took this training. It opened my eyes to what I was missing by just reading the books on permaculture & sustainability.”
AI
(32 –Federal Aviation - Security)

“Everything we did at the course had a reason and tied back into the underlying concepts being taught. Each demonstration, each example was relevant.”
Catherine
(46 –University Prof./Writer/Farmer)

“Taking my PDC course with Midwest Permaculture two years ago set me on a much more focused path and has been instrumental in enriching my life in many ways. Being guided by the ethics and principles of permaculture has set me free, bringing me joy every day in the work I do, the people I invite into my life, and the choices I make.”
Deanna
(45 – Botanic Garden Horticulturist)

“The information, design methods, networking, and even food were beyond my expectations. Taking this course has re-ignited a fire in me that had been only embers. There is hope for the human species.”
Ron
(60 - Landscape Architect)