Introduction to Forest Farming

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Forest Resources and Environmental Conservation
Objectives Today...

**What** – Define forest farming; crops and products

**Who** – Get to know you

**Who/When/Where** – History of forest farming

**Why (and Why Not)** – Benefits and challenges of forest farming

**How** – Getting started!!
What is Forest Farming?
What is Forest Farming?

The cultivation or management of specialty crops / understory plants in an established or managed forest.
Agroforestry

*Tree-based agriculture*

- Forest farming
- Silvopasture
- Alley cropping
- Windbreaks
- Riparian buffer
- Tree-based agriculture
WHO is a Forest Farmer?

• Who here is practicing Forest Farming?
  Where are you located?
  What are you farming?

• Who here knows a Forest Farmer?
  Where are they located?
  What are they farming?
StoneRoot Farm, Floyd VA

- Woods-grown shiitake mushrooms
- Wild-simulated ramps
- Forest farmers
WHO/WHEN/WHERE?
History of Forest Farming
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• **World-wide**: greater tradition of forest farming in developing countries
History of Forest Farming

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- **North America:** not new...people have been farming the woods for generations (Native Americans to European settlers)
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• **Appalachia**: ginseng growers say harvesters have been nurturing “seng” for generations
History of Forest Farming

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*Forest farming is not new...but the SCIENCE is! (young, undeveloped, and full of questions)*
WHAT can you farm in your woods?
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Non-Timber Forest Products

NTFPs
Non-Timber Forest Products NTFPs

• Originate from forest plants and fungi, not timber-based, may be tree-based

• Fungi, moss, lichen, ground covers, herbs, shrubs, trees

• Roots, tubers, leaves, barks, twigs, fruits, fungi, sap and resin, wood

• From within and on edges of natural, manipulated or disturbed forests
Categories of NTFPs

• Medicinal / dietary supplements
• Edible / culinary
• Floral / decorative
• Crafts
Medicinal / Dietary Supplements

- Ginseng
- Goldenseal
- Black cohosh
- Blue cohosh
- Blood root
- Basswood
- Slippery elm
- False unicorn
- and MANY more
NTFP Enterprises - Medicinal Products

Number of Enterprises

- 0
- 1 - 10
- 11 - 20
- 21 - 50
- 51 - 100
- 101+
- No Data
Edible / Culinary

- **Mushrooms** — shiitake, oyster, lion’s mane
- **Vegetables** — ramps (wild onions)
- **Nuts** — acorn flour (gluten-free)
- **Syrups** — maple, walnut
- **Honeys**
- **Fruits**
Decorative

- Florals
- Landscaping
- Greenery

Red-twist dogwood
Forsythia
Moss
Pine straw
Crafts

- Vines
- Branches
- Cones
- Foliage
- Bark
- Roots
- Burls
- Culls
WHY consider Forest Farming?
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• Improve health and biodiversity of your forest
• Increase acreage of managed woodlands
Appalachian Region Landownership

- State government: 6 million ac. (7%)
- Local government: 1 million ac. (1%)
- National Forest: 7 million ac. (8%)
- Other federal: 2 million ac. (2%)
- Family forests: 53 million ac. (62%)
- Business & other private**: 17 million ac. (20%)

** Includes corporations, non-family partnerships, tribal lands, non-governmental organizations, clubs, and other non-family private groups.
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• Economics – possible **additional**, **diverse**, and **quicker** income streams
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• Alternative to cutting trees
Low Volume Removals

Percent of All Live Volume Removed

(Cubic feet of total wood material removed as a percent of all live volume on forested land)

- Greater than 5
- 2.1 to 5.0
- 1.1 to 2.0
- 0.5 to 1.0
- Less than 0.5

Source: U.S. Forest Service.
WHY consider Forest Farming?

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Allows landowners with a patch of forest to grow useful plants and not have to cut timber to make money
WHY NOT consider Forest Farming?
WHY NOT?
Challenges of Forest Farming

- More intensive management
- Task of learning new skills may be daunting
- Markets can be hard to find and navigate
- Economics – initial capital investment can be high
- Risk – wildlife pressure, poaching
HOW to Farm Your Forest?
Getting Started!
Getting Started!

- Site assessment
- Personal assessment
- Market assessment
- Resources
Find out what you have!

(*Site Assessment*)

- **Trees** — species, size, health, density
Find out what you have!

*(Site Assessment)*

- **Trees** — species, size, health, density

- **Understory plants** — species, abundance; existing plant populations you can manage vs. indicator species
## Plants Associated with Ginseng and Goldenseal

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Association</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adiantum pedatum</td>
<td>Maidenhair Fern</td>
<td>39%</td>
</tr>
<tr>
<td>Sanguinaria canadensis</td>
<td>Bloodroot</td>
<td>36%</td>
</tr>
<tr>
<td>Botrychium virginianum</td>
<td>Rattlesnake Fern</td>
<td>35%</td>
</tr>
<tr>
<td>Caulophyllum thalictroides</td>
<td>Blue Cohosh</td>
<td>29%</td>
</tr>
<tr>
<td>Galium triflorum</td>
<td>Bedstraw</td>
<td>27%</td>
</tr>
<tr>
<td>Prosartes lanuginosa</td>
<td>Yellow Mandarin</td>
<td>27%</td>
</tr>
<tr>
<td>Actaea racemosa</td>
<td>Black Cohosh</td>
<td>27%</td>
</tr>
<tr>
<td>Aristolochia macrophylla</td>
<td>Dutchman’s Pipe</td>
<td>26%</td>
</tr>
<tr>
<td>Osmorhiza claytonii</td>
<td>Sweet Cicely</td>
<td>25%</td>
</tr>
<tr>
<td>Viola canadensis</td>
<td>Canadian Violet</td>
<td>25%</td>
</tr>
</tbody>
</table>

Source: Kauffman, G. NFNC
Find out what you have!

(Site Assessment)

- **Trees** — species, size, health, density

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- **Site Features** — aspect (N, S, E, or W), slope, moisture, soil test!!
Find out what you have!

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• **Site Features** — aspect (N, S, E, or W), slope, moisture, soil test!

• **Wildlife pressure and security**
Find out what you want!

*(Personal Assessment)*

- Time you want to devote
- Money you want to spend
- Income you need to make
- Interests
- Long-term **goals** for your forest
2 Ways to Farm Your Woods

Woods Cultivated

- Higher inputs/costs; lower price point
- Higher yield/acre; more predictable
- Shorter rotation
- Less natural

Wild Harvesting/Wild Simulated

- Lower inputs/costs; higher price point
- Lower yield/acre; more uncertain
- Longer rotation
- Mimics nature
RAMPS

Woods Cultivated

Wild- Simulated
GINSENG

Woods Cultivated

Wild- Simulated
### Woods Cultivated

#### Table 8
Projected Six-year Budget for One-half Acre of Woods-cultivated Ginseng

<table>
<thead>
<tr>
<th>Seed:</th>
<th>24 pounds at $65/lb.</th>
<th>$1,560</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site preparation and planting: 300 hours x $10/hr.</td>
<td>$3,000</td>
<td></td>
</tr>
<tr>
<td>Care and Maintenance 1,000 hours x $10/hr.</td>
<td>$10,000</td>
<td></td>
</tr>
<tr>
<td>Harvesting seeds and roots: 650 hours x $10/hr.</td>
<td>$6,500</td>
<td>$19,500</td>
</tr>
<tr>
<td>Materials and Equipment:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemicals (primarily fungicides but also rodenticides, herbicides, insecticides, fertilizer, gas and oil)</td>
<td>$1,000</td>
<td></td>
</tr>
<tr>
<td>Rear-tined tiller for bed preparation:</td>
<td>$1,000</td>
<td></td>
</tr>
<tr>
<td>Backpack sprayers: 2 x $125</td>
<td>$250</td>
<td></td>
</tr>
<tr>
<td>Garden seeder:</td>
<td>$75</td>
<td>$2,325</td>
</tr>
<tr>
<td>Drying:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addition of insulation and drying racks to existing room or shed</td>
<td>$600</td>
<td></td>
</tr>
<tr>
<td>Energy cost to heat (50¢/lb. of dried root)</td>
<td>$150</td>
<td>$750</td>
</tr>
<tr>
<td>Total Cost:</td>
<td>$24,135</td>
<td></td>
</tr>
<tr>
<td>Expected Yield: 300 pounds of dried roots</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross Profit: 300 lbs. x $100/lb.</td>
<td>$28,000</td>
<td></td>
</tr>
<tr>
<td>Net Profit at End of Nine Years:</td>
<td>$5,865</td>
<td></td>
</tr>
</tbody>
</table>

### Wild- Simulated

#### Table 4
Projected Nine-year Budget for One-half Acre of Wild-simulated Ginseng

<table>
<thead>
<tr>
<th>Seed:</th>
<th>12.5 pounds at $80/lb.</th>
<th>$1,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site preparation and planting: 25 hours x $10/hr.</td>
<td>$250</td>
<td></td>
</tr>
<tr>
<td>Inspection and troubleshooting: 200 hours x $10/hr.</td>
<td>$2,000</td>
<td></td>
</tr>
<tr>
<td>Digging roots: 350 hours x $10/hr.</td>
<td>$3,500</td>
<td>$5,750</td>
</tr>
<tr>
<td>Materials and Equipment:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rake, pulaski, and digging tool (assume some equipment already on hand)</td>
<td>$50</td>
<td></td>
</tr>
<tr>
<td>Backpack sprayer, disease, and pest controls on hand for troubleshooting</td>
<td>$300</td>
<td>$350</td>
</tr>
<tr>
<td>Drying:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addition of insulation and drying racks to existing room or shed</td>
<td>$400</td>
<td></td>
</tr>
<tr>
<td>Energy cost to heat (50¢/lb. of dried root)</td>
<td>$40</td>
<td>$440</td>
</tr>
<tr>
<td>Total Cost:</td>
<td>$7,540</td>
<td></td>
</tr>
<tr>
<td>Expected Yield: 80 pounds of dried roots</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross Profit: 80 lbs. x $350/lb.</td>
<td>$28,000</td>
<td></td>
</tr>
<tr>
<td>Net Profit at End of Nine Years:</td>
<td>$20,460</td>
<td></td>
</tr>
</tbody>
</table>

*The per pound price of seed varies with quality and quantity, and from year to year with supply and demand. The best seed comes from disease-free gardens of fifth-year and older plants. There are roughly 7,000 seeds in a pound. A successful grower may eventually produce his own seed.*

Source: Persons & Davies, 2005
Planting Wild-Simulated

Source: Persons & Davies, 2005
Find your Market!

*Market Assessment*

- Farmers markets
- Local chefs
- Health food stores
- Florists
- Aggregators

Get out and visit these places, talk to people, find out what’s needed – discover your niche
Markets

• **Medicinals** – popular, high demand, US and international markets, good price point

• **Edible/Culinary** – everyone eats!!!, local food markets, organic possibilities, native plants, processing increases value

• **Decoratives** – popular, local and regional markets, seasonal

• **Crafts** – must add value!!!, local and regional markets, open to the imagination
Resources

• Websites
• How-to-videos
• Extension publications
• Books

• Networking – blogs, Facebook, etc.
Websites

- Virginia Cooperative Extension
  http://www.extension.org/forest_farming
- USDA National Agroforestry Center
  http://www.unl.edu/nac/forestfarming.htm
- The Center for Agroforestry
- Association for Temperate Agroforestry
  http://www.aftaweb.org/forest_farming.php
- Non-Timber Forest Products Information Exchange
  http://www.ntfpinfo.us/
Thank You!

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StoneRoot Farm
https://www.facebook.com/StoneRootFarm

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