Managing Forestlands For Non-Timber Forest Products

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What are Non-Timber Forest Products

NTFP Markets Today

- Significant part of "forest products" economy
- Ginseng
  - $30 million/yr.
- Ramps
  - $3 million/yr.
- Maple Syrup
  - $25 million/yr.
- Goldenseal
  - $1.4 million/yr.
- Mushrooms
  - $41 million/yr.
- Floral Greens
  - $81 million/yr.
Forest Farming

- Not a new concept!
- Use natural habitats and attributes of forest
  - Shade
  - Soils
  - Moisture regimes
- Works with other forest management goals
- High value in small areas

Forest Farming Production Methods

Woods-Cultivated Production
- Modified natural growing sites
- Tilled raised beds
- Natural shade
- Labor intensive
- More maintenance
- Great for seed/rootlet production

Wild-simulated
- Natural growing sites
- No tilling or soil manipulation
- Least labor/inputs
- Longer harvest cycles
  - 5-10 yrs. depending on species
- Best option for small growers

Wild-simulated ginseng plants scattered among natural forest vegetation.
Different Methods Yield Different Results

Woods-cultivated vs. Wild-simulated

NTFP Growing Site Characteristics

- Habitat characteristics for **most** medicinal/edible NTFP’s:
  - North to East facing aspects
  - Moderate slopes
  - 75%-90% shade
  - Rich, moist, well drained soils
  - Open understory
  - Leaf litter and organic matter

Other Site Considerations

- Not all sites suitable
- Many forests impacted by past land use
  - Row crops
  - Grazing
  - Repeated timber harvests
- Soils can be eroded, degraded, or depleted

Historic aerial photos can help determine past land use and site suitability.
PRODUCTION AND MARKETING OVERVIEW FOR SELECT NTFP CROPS

NTFP Crops

- Native to eastern hardwood forests
- Requires deep shade
- 75%-90%
- North and East facing slopes
- Related to Asian or Korean ginseng (*Panax ginseng*)
- Slow growing
- Most profitable NTFP

American ginseng (*Panax quinquefolius*)

- Native to eastern hardwood forests
- Requires deep shade
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- Related to Asian or Korean ginseng (*Panax ginseng*)
- Slow growing
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Ginseng Life Cycle

Source: Pennsylvania DCNR. Photo by Eric Burkhart
Wild-Simulated Production

- Best option for landowners
  - Least inputs & labor
  - Least susceptible to disease
- Most valuable NTFP
  - $600-$800/dry lb.
- 10 year harvest cycles
  - Older roots look identical to truly "wild"
- Vulnerable to poaching and deer browse

Ginseng Habitat Indicators

- Trees:
  - Sugar Maple, Poplar, Beech, Ash, Buckeye, Red Oak, Walnut
- Understory Plants:
  - Rattlesnake fern, Sword fern, Solomon’s seal, Baneberry
  - Black cohosh, Trillium, Wild ginger, Bloodroot, Spicebush, etc.

Planting Wild-Simulated Ginseng

- Plant in fall
  - Before peak leaf drop
- Remove large sticks/debris
- Rake leaves off in strips and scuff soil with rake
  - 4’-5’ wide, 40’-50’ long
- Broadcast seeds
  - 5-7 seeds/sq. ft.
- Move up hill & rake leaves down over seeded area
- Leave space for foot paths
- Repeat
Rules & Regulations

- Wild-simulated growers regulated by wild laws!
- C.I.T.E.S (1975) Appendix II
- Ohio Division of Wildlife
  - License dealers
  - Set harvest season
  - Track harvest data

Marketing

- $500-$800/dry Lb.
  - Prices rise through season
  - Mixed-age batches best
- Dry roots can’t be sold before September 15
- Sell to:
  - Licensed buyers
  - Direct to consumers
- Learn applicable regulations prior to sale

Goldenseal (*Hydrastis canadensis*)
Goldenseal (*Hydrastis canadensis*)

- The “Herbal Antibiotic”
- Rhizome with many fibrous roots
  - Approx. 1/4”-3/4” thick
- Bright yellow color
- Grown from rootlets or seed
- Harvested after 5-8 years

Life Cycle

- Juvenile plants:
  - Single leaf and stem
- Mature plants (3-4 yrs. old):
  - Forked stem with 2 leaves
  - Flower almost immediately after emerging

Life Cycle Cont.

- Mature plants develop berries after flowering
  - Turn from green to red
- Ripen mid-July to August
  - Collect and plant immediately
- Roots harvested late summer - fall
Cultivation Methods

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<thead>
<tr>
<th>Woods-Cultivated</th>
<th>Wild-Simulated</th>
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<tr>
<td><img src="image1" alt="Cultivation Methods" /></td>
<td><img src="image2" alt="Cultivation Methods" /></td>
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Marketing

- Most ginseng buyers also buy goldenseal
- Wholesale root:
  - $22/dry Lb.
- Planting stock:
  - $18-$30/fresh Lb.
- Value-Added Products:
  - Powders, salves, extracts
  - Preference for sustainably cultivated materials

Other Woodland Medicinals

- Black cohosh
- Bloodroot
- Blue cohosh
- Solomon’s seal:
  - Lower value
  - Best for value-adding
- Landscape/Native Garden potential
- Planting Stock
- Follow goldenseal guidelines
Diversity is Key

Overview

- Largest native tree fruit in North America
- Tropical flavors
  - Mango, pineapple, banana flavors
- Grows in forests, riparian areas, forest edges, and open fields
- Long history of cultivation
- Sole host to zebra swallow-tail – eats leaves
- Cultivars developed for full sun and high yields

Pawpaw
**Cultivation Strategies**

- Manage wild trees/patches
  - Crop tree release
- Graft/plant cultivars with wild growing stock
- Orchards
  - Space 8’ centers, rows 12’-18’ apart
  - Mowing, irrigation, & weed control
  - Needs cross-pollination for fruit production
  - Genetic diversity

**Harvesting and Yields**

- 5-7 years until fruiting
- Harvest August-October
  - Ripen over 2 weeks
- Pick when:
  - Skin yellows
  - Brown blemishes
  - Soft when squeezed
  - Aromatic
- Cultivars yield the best
  - 50-75 lbs./tree/year
  - Shelf life @ 5-7 days
  - 2-3 weeks if refrigerated
  - $1.50-$3.00/Lb.

**Ramps (Allium tricoccum)**
Overview

- Allium species
- Flavor of garlic and onion
- Long history of harvest
- Becoming specialty item in restaurants & urban markets
- Overharvesting is a problem
- Almost exclusively wild harvested
- Cultivation & mgmt. needed
- Opportunity for new growers

Ramp Characteristics

- 2-3 leaves
  - 6-8” long & 1-2” wide
- Short stalk 2-3” long
- Small bulb similar to green onion
  - Grows from March-May
- Flowering stalk 6-8” tall
  - Small white flowers
  - Insect pollinated & self compatible
  - Shiny black seeds

Ramp Cultivation

- Plant bulbs early March
  - Plant 3” deep with bulb tip just above surface of soil
- Plant seeds in fall
  - Use wild-simulated method
- 5-7 years to harvest from seed
- Source of Planting Stock
  - Ramp Farm Specialties – www.rampfarm.com
  - Collect seed from existing patches
Harvesting & Marketing

- Harvest mid-April to mid-May
- Sell for $21-$28/Lb.
  - Farmers markets
  - Local restaurants
  - Mail order sales
- Value-added potential
  - Ramp pasta, ramp crackers, pickled ramps, ramp mustard, ramp gravy mix, dehydrated ramps, canned ramps

Mushrooms

- Grown on inoculated hardwood logs or wood chips
  - Shiitake – Oaks & Sugar Maple
  - Oyster – Poplar
  - Lions Mane - Oak
- Mushrooms produced after 12-18 months
- 2-4 Lbs./per log/yr.
- Wholesale; $8-$10/Lb.
- Retail $10-$16/Lb.
Log Selection and When to Cut

- Don’t use your best trees
- Logs 3”-8” diameter
- Cut when dormant
  - Spring inoculation
    - February/March
  - Fall inoculation
    - Late September/October
- Inoculate within 2-3 weeks

Log Inoculation and Incubation

- Drill holes 2” deep every 4”-6”
- Space rows 2”-3” apart
- Hammer in plugs/Fill with sawdust spawn
- Cover holes with melted wax
- Place in shaded area to incubate
  - Dappled light
  - Exposed to rainfall
  - 1” rain/water each week

Stacking Logs In The Laying Yard
Fruiting and Harvesting

- Fruit naturally when conditions are right
- Can be “Force Fruited”
  - Soak in water 24 hrs.
  - Fruiting begins 4-5 days later
- Harvest when small for best quality
  - Curled cap & thick flesh
  - Keep rain off developing caps
- Refrigerate in paper bags or waxed cardboard boxes

Reasons For Failure

- Logs drying out
  - #1 cause of failure
- Water shortage during pinning/fruiting
- Bad spawn - contaminated
- Contamination of the log by wild fungi
- Poor substrate for selected species

Discoloration of spawn, indicating contamination by bacteria or other fungi

Resources

- Contact me if you have any questions
  - tanner@ruralaction.org
  - 740-677-4047
- Rural Actions Website
  - www.ruralaction.org
- Appalachian Beginning Forest Farmers Coalition
  - YouTube channel – “Forest Farming”
  - Lots of video resources
- “Growing & Marketing Ginseng, Goldenseal, and Other Woodland Medicinals” by Scott Persons & Jeanine Davis
- “Farming The Woods” by Ken Mudge & Steve Gabriel