Managing Forestlands For Non-Timber Forest Products

PRESENTED
BY
TANNER R. FILYAW
RURAL ACTION SUSTAINABLE FORESTRY PROGRAM

What are Non-Timber Forest Products

NTFP Markets Today

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

Morel buying stand

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

Forest Farming Production Methods

- 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

Mature forest with poplar, maple, spicebush & mixed hardwoods

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

NTFP Crops

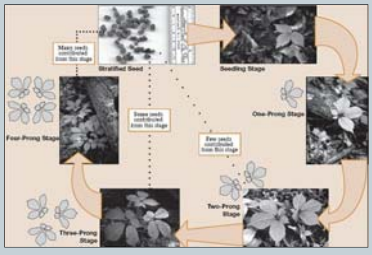
PRODUCTION AND MARKETING OVERVIEW FOR SELECT NTFP CROPS

American ginseng (*Panax quinquefolius*)

- 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

Source: Pennsylvania DCNR. Photo by Eric Burkhart

Ginseng Life Cycle



Source: Eric P. Burkart

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

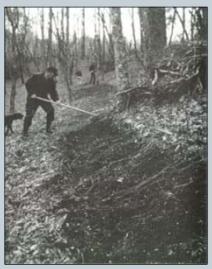
Population of young 2-prongs

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 candensis*)

- 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

Mature and juvenile goldenseal plants

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

Woods-Cultivated	Wild-Simulated
	

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

Pawpaw

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

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

Ramps at harvesting stage

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

Ramp bulbs ready to plant

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

Gourmet Mushrooms

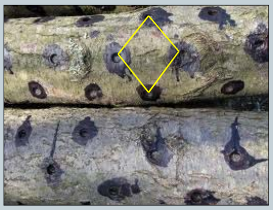
- Grown on inoculated hardwood logs or wood chips
  - Shiitake – Oaks & Sugar Maple
  - Oyster – Poplar
  - Lions Mane - Oak
- Mushrooms produced after 12-18 months
- 2-4 Lbs./per log/yr.
- Wholesale; $8-$10/Lb.
- Retail $10-$16/Lb.

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



Wax covering inoculated holes showing a "diamond" shaped drill pattern

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
  - You Tube 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