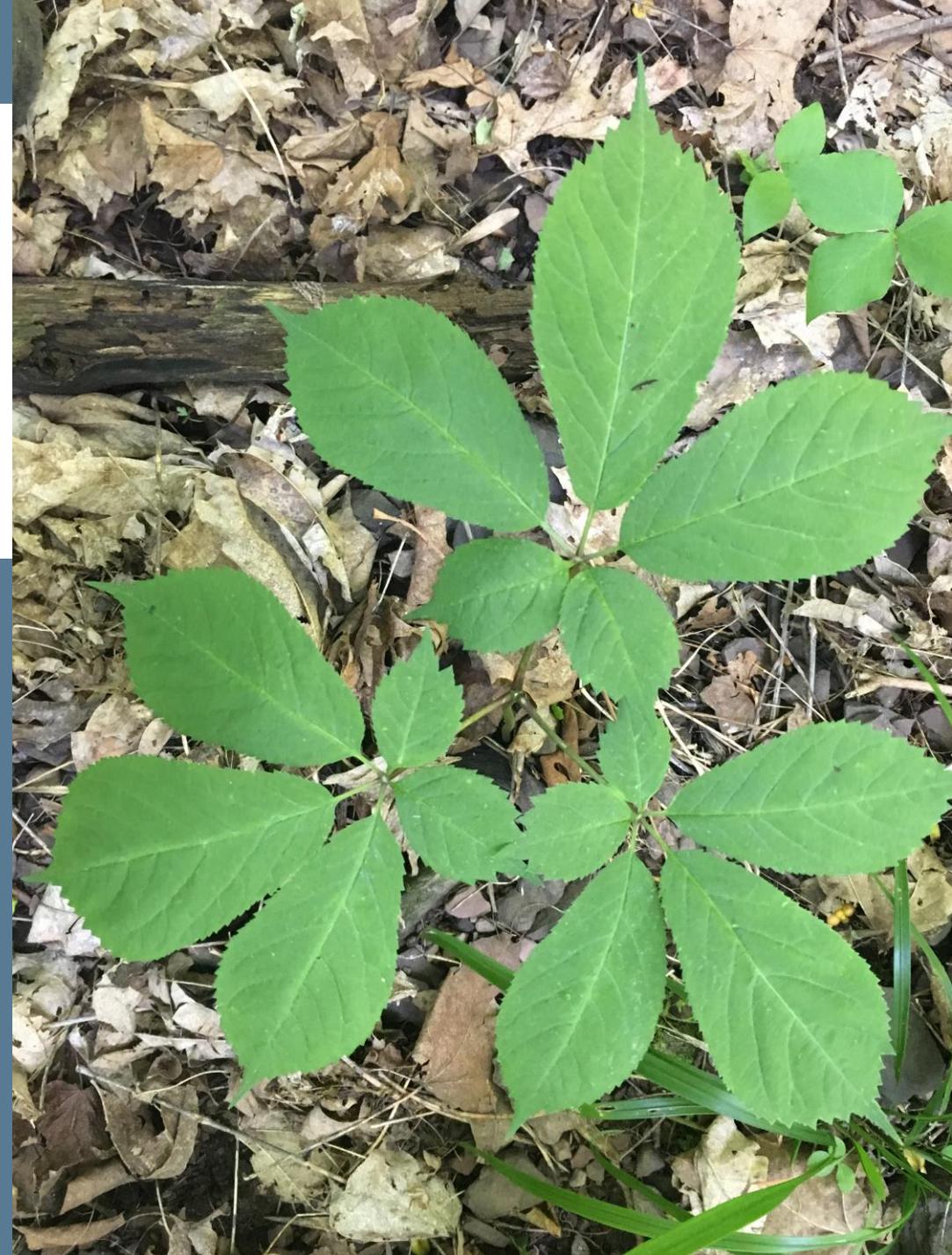


Forest Farming in the Northeast



INTRODUCTION

- Karam Sheban
- Ohio native
- Yale Forest School, School of the Environment
- Rural Action, Appalachian Ohio
- Forestry, forest ecology, agroforestry, forest farming



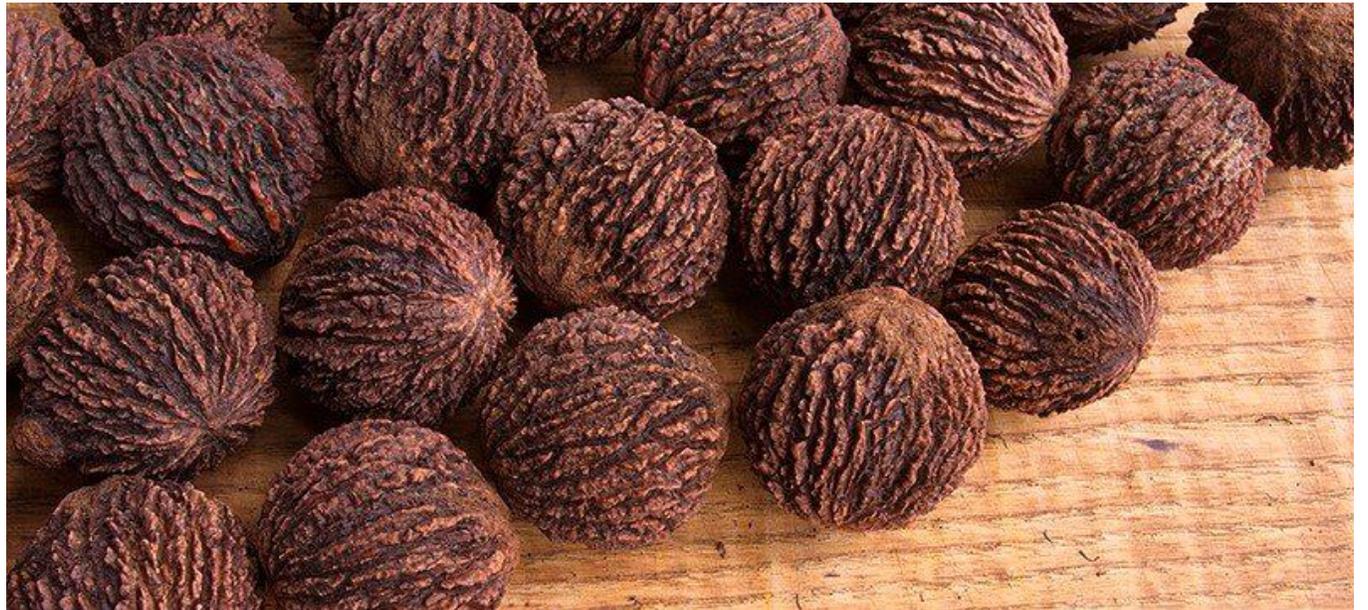
NON-TIMBER FOREST PRODUCTS (NTFPs)

- “Non-[timber] forest products consist of goods of biological origin other than wood, derived from forests, other wooded land and trees outside forests.” FAO, 1999



NON-TIMBER FOREST PRODUCTS (NTFPs)

- “Over 50 medicinal plant species common to the market”
 - Chamberlain 2006
 - American ginseng (root)
 - Elderberry (fruit)
 - Slippery elm (bark)
 - Edible plants
 - Black walnuts
 - Pawpaws
 - American persimmon
 - Syrups
 - Maple
 - Birch
 - Beech
- Long history of indigenous use and management
 - Plants into Western management regimes, from monocropping to agroforestry

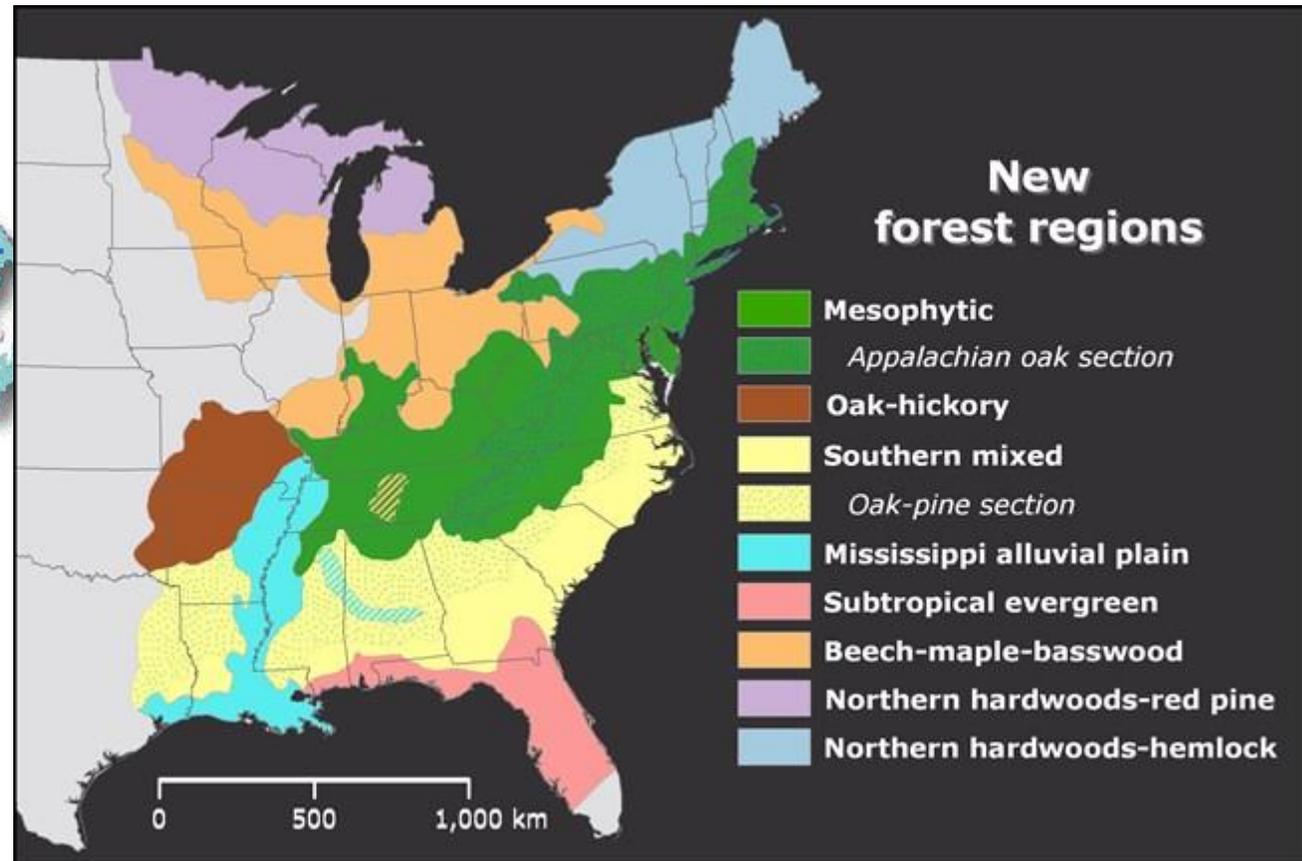
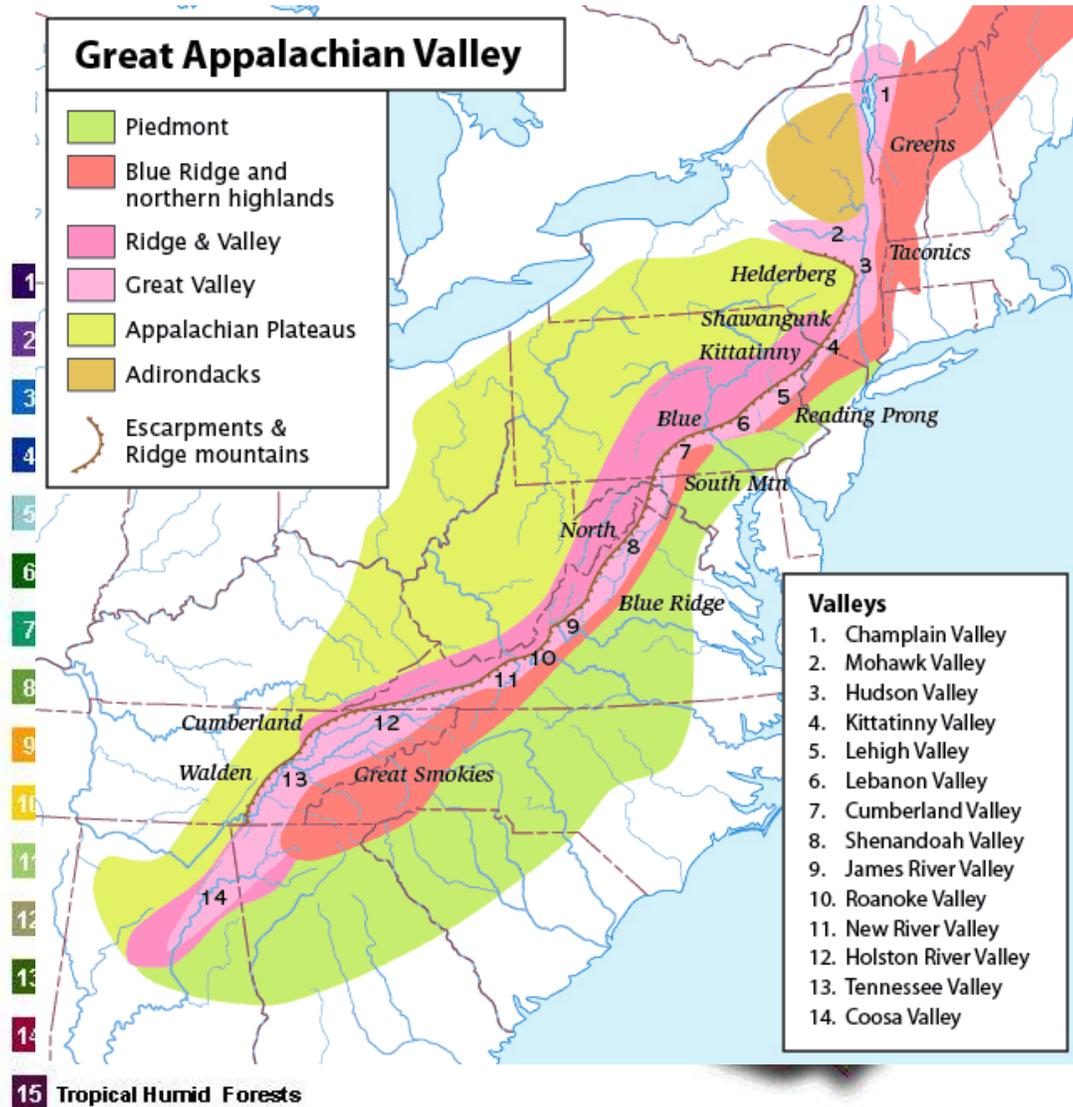


FOREST FARMING

- “Forest farming is the cultivation of high-value specialty crops under the protection of a forest canopy that has been modified to provide correct shade levels” – National Agroforestry Center
- “The combination of crops (plants, animals, fungi) and trees in forest-inspired agricultural systems that benefit human communities through greater connection to landscape, improved stewardship of resources, and enhanced economic opportunities” – Mudge and Gabriel 2014



BIOMES OF NORTH AMERICA



AMERICAN GINSENG



GOLDENSEAL



BLACK COHOSH



BLOODROOT



RAMPS



MUSHROOMS, FRUIT, NUTS, & SYRUPS



AGROFORESTRY

Intentional

Intensive

Integrated

Interactive

PRODUCTION SYSTEMS

Wild-harvested

Wild-simulated

Woods-grown

Field-cultivated



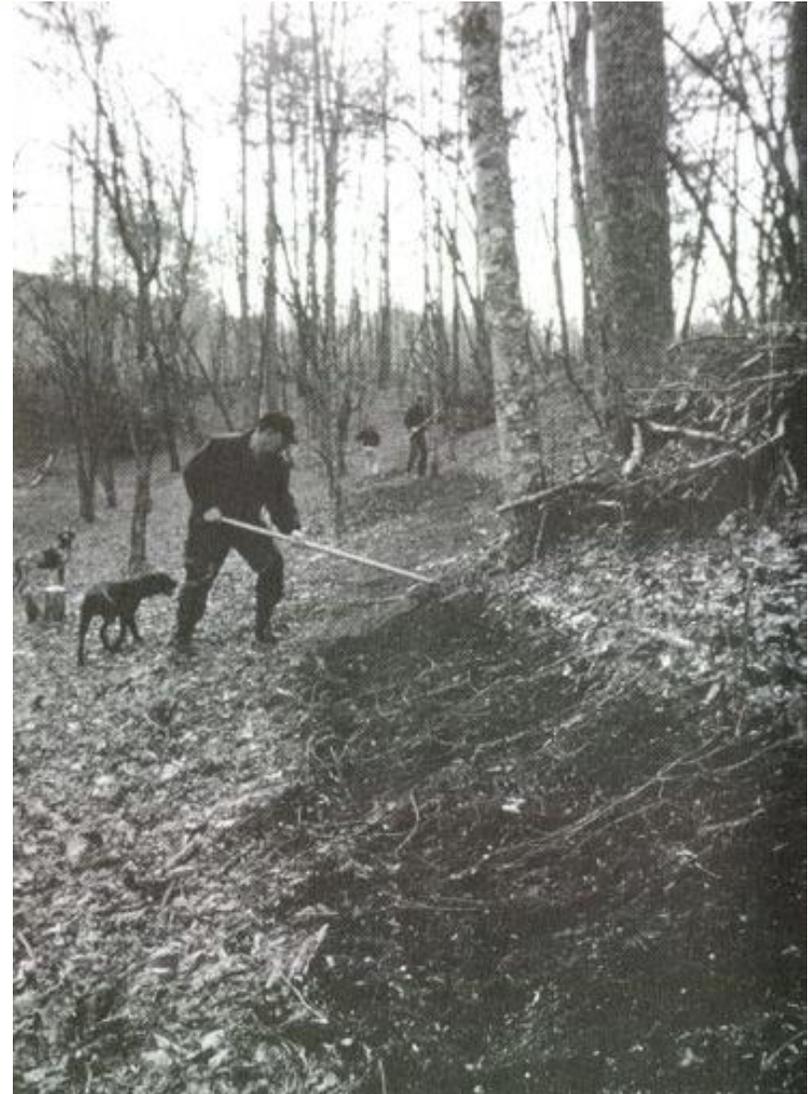
Intensiveness

CONSERVATION THROUGH CULTIVATION

- “Conservation Through Cultivation” – Eric Burkhardt, Penn State
- Transitioning the forest herbs supply chain from **wild-harvested** to **sustainably-cultivated** plants
- Creates working lands while adding to forest biodiversity
- Development of integrated systems
 - Herbs
 - Fruits/Nuts
 - Syrups
 - Mushrooms

Maple syrup: \$33.80/gallon

Ginseng: up to \$1,300/pound

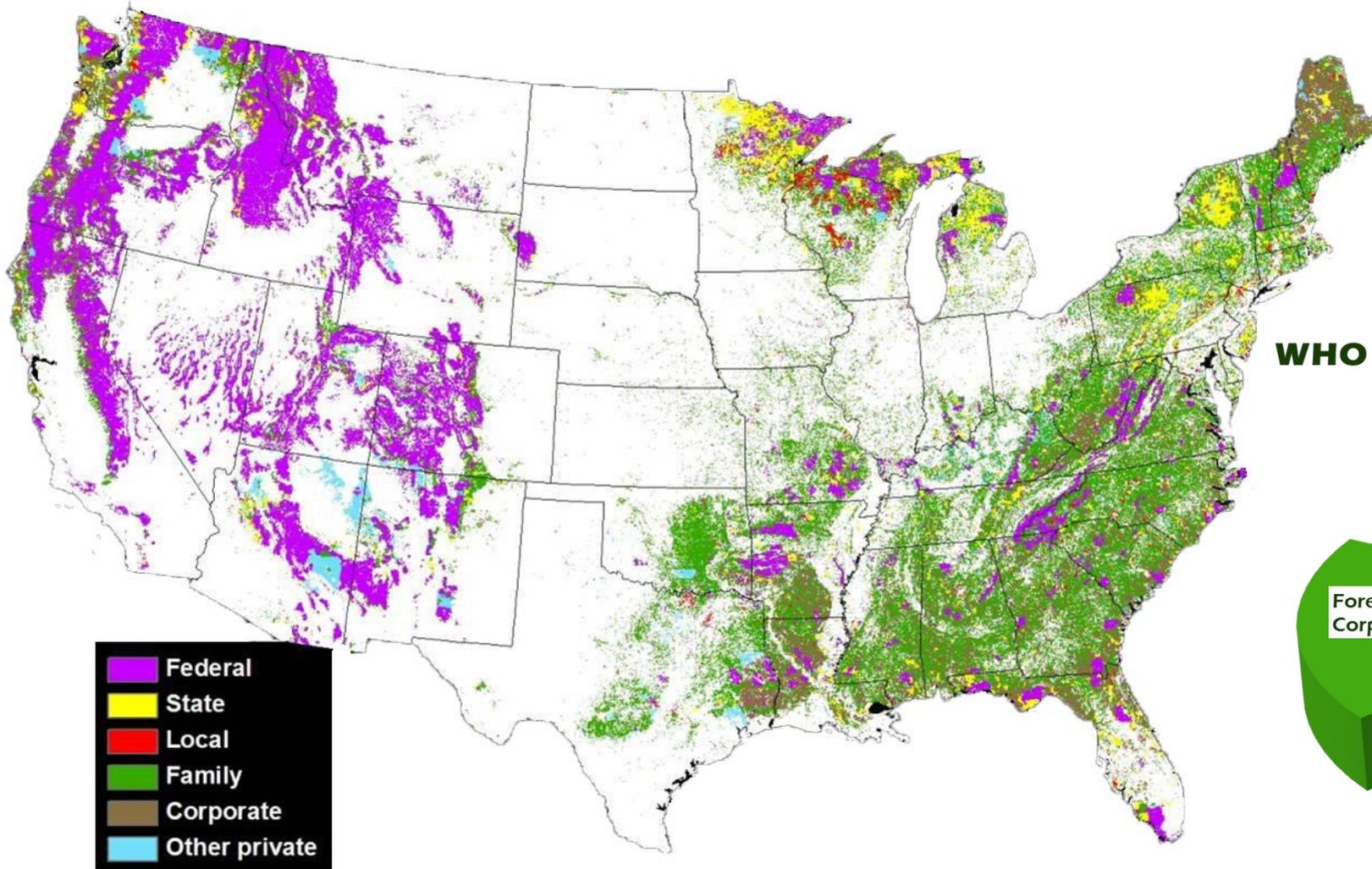


SUPPLY CHAINS

- NTFPs significant part of forest economies
 - Maple Syrup
 - \$142 million
 - Floral greens and craft products
 - \$81 million
 - Mushrooms
 - \$41.1 million
 - Ginseng ~60,000 lbs.
 - \$30 million
 - Goldenseal ~50,000 – 250,000 lbs.
 - \$2.4 million
 - Black Cohosh ~120,000 – 720,000 lbs.
 - \$1 million

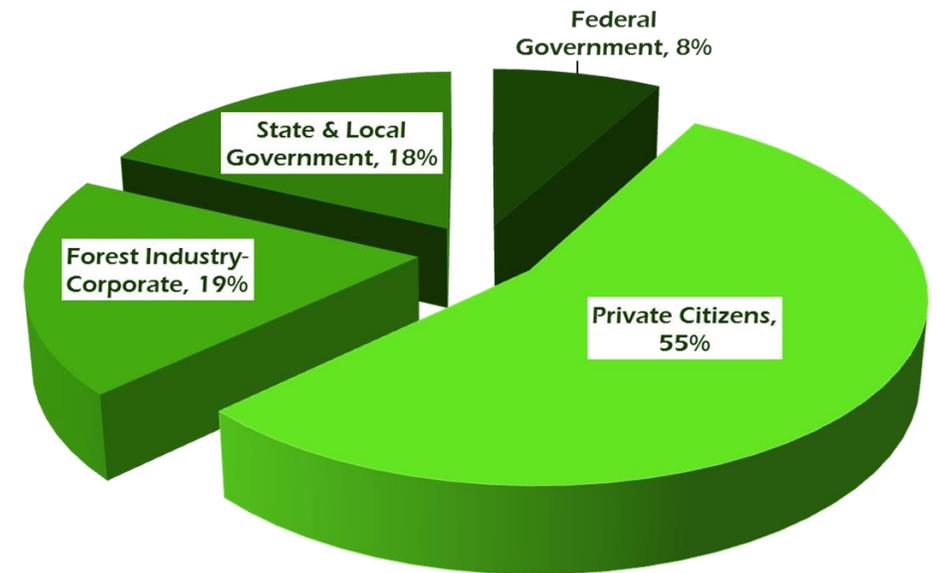


FOREST OWNERSHIP



- Northeast/Midwest forests
 - 40% of the region
 - 5 million landowners
 - Over 50% in parcels smaller than 10 acres

WHO OWNS NORTHEAST & MIDWEST FORESTS

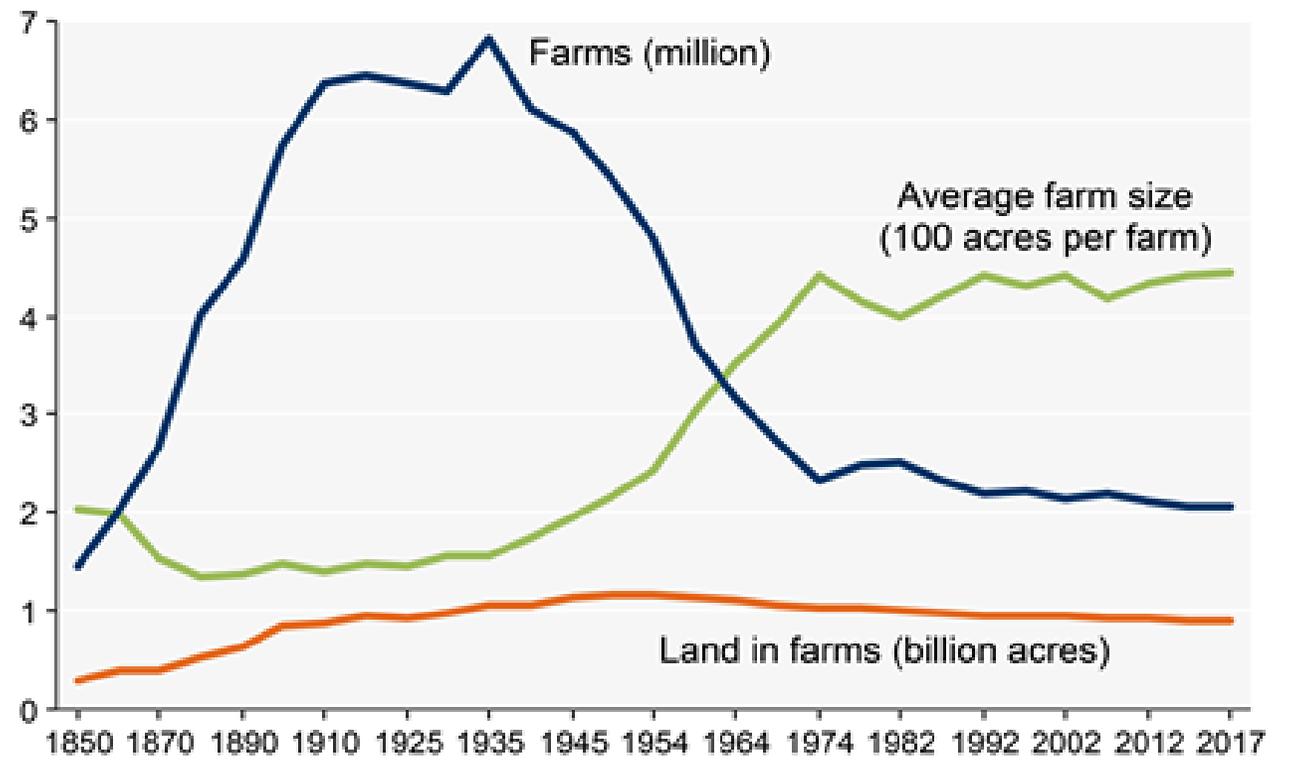


STATE OF AGRICULTURE



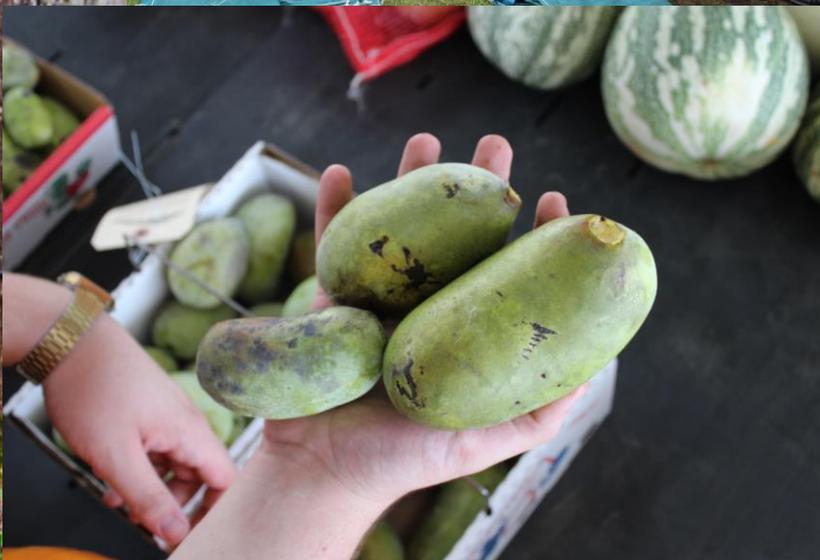
Farms, land in farms, and average acres per farm, 1850-2017

Million farms, billion acres, or 100 acres per farm



Source: USDA, Economic Research Service using data from USDA, National Agricultural Statistics Service, Census of Agriculture (through 2012) and *Farms and Land in Farms: 2017 Summary*.

NTFPs AND THE LOCAL FOOD MOVEMENT



FOREST FARMING: INTEGRATED LAND MANAGEMENT

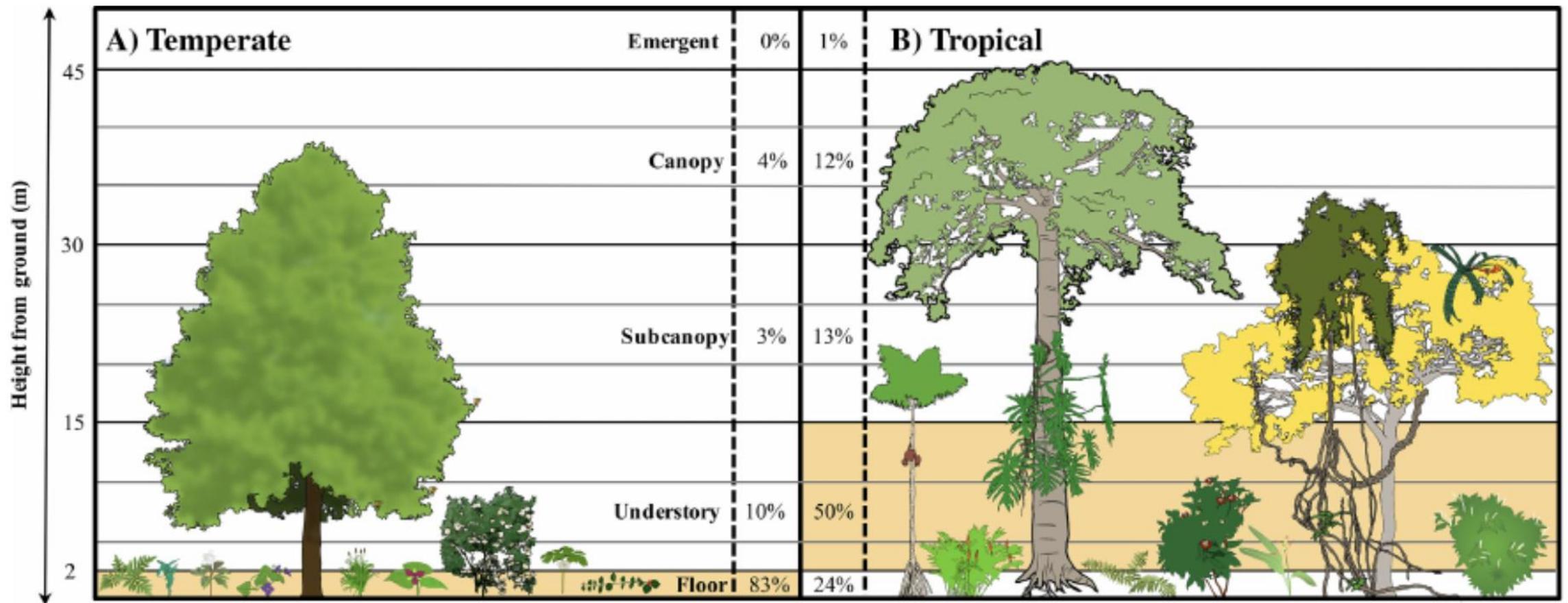
- FF is compatible with other goals/objectives
 - Low-impact
 - Diversity of crop species and habitat needs allow for mixed management
- Most landowners not managing for timber
 - Aesthetics/beauty
 - Recreation
 - Wildlife
 - Legacy/family land



Oyster mushrooms being cultivated on Tree of Heaven

SPICER ET AL. 2020

- Seeing Beyond the Trees (Spicer et al. 2020 in *Ecology*)



RURAL ACTION

- Rural Action
 - Asset-based community development
 - Multiple program areas
 - Sustainable Agriculture
 - Sustainable Forestry
 - Energy Solutions
 - Watersheds
 - Zero Waste
 - Environmental Education
- ~30 years of NTFP work
 - Site visits
 - NTFP management plans
 - Work on state/federal lands
 - Regional partnerships
 - Cultural revitalization



LANDOWNER EDUCATION



REGIONAL NETWORKS



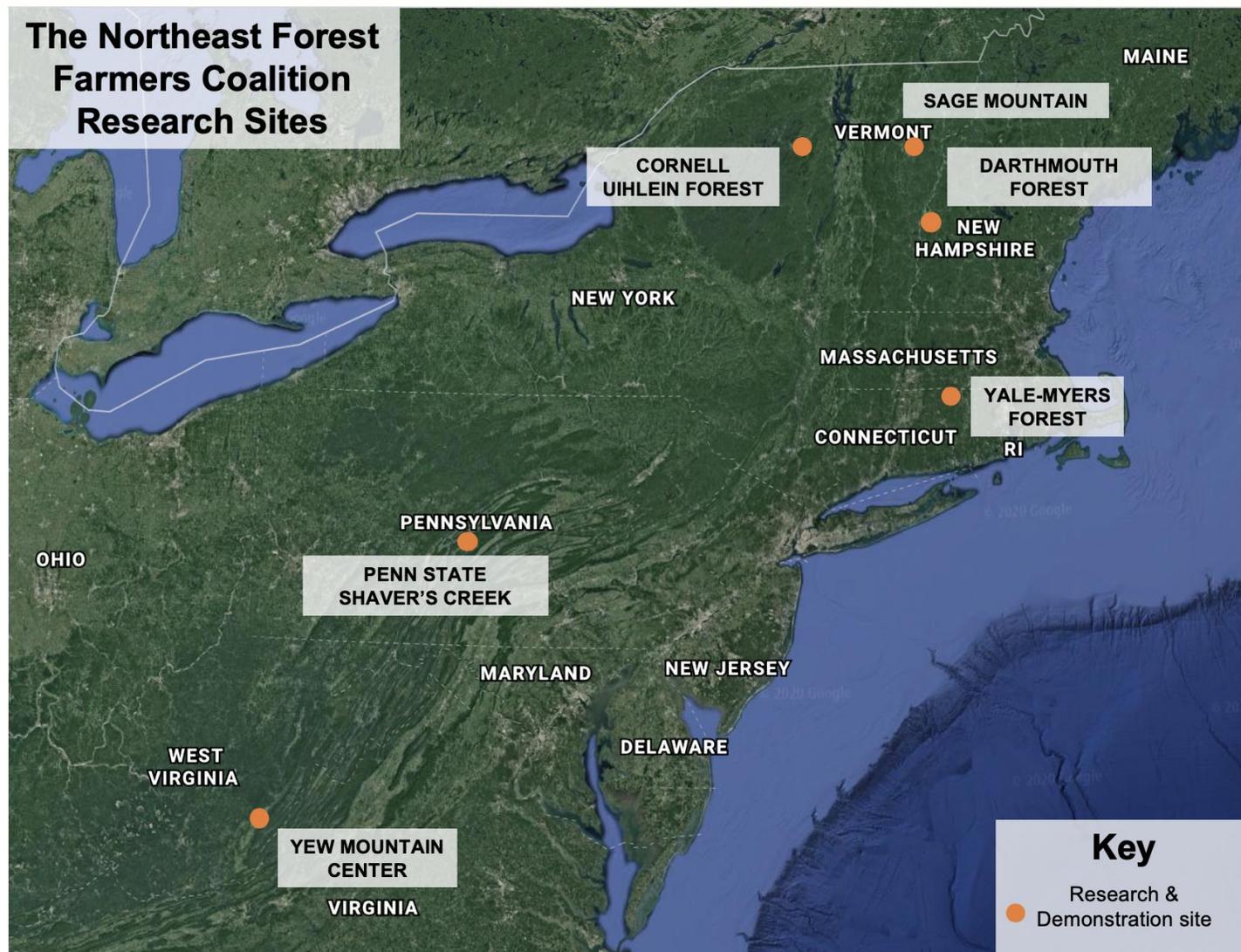
APPALACHIAN BEGINNING FOREST FARMER COALITION



- Build a coalition of new and beginning forest farmers across Appalachia and beyond.
- Educate and train new and beginning forest farmers on production, marketing, and sales.
- Train extension and state agency personnel on resource assessment and habitat management.
- Technical assistance and training for forest farmers throughout Appalachia.
- Forest farming training for natural resource professionals

NORTHEAST FOREST FARMERS COALITION

- USDA SARE project LNE21-423
- Two objectives
 1. Research
 2. Education
- Network of Research & Demonstration sites



NORTHEAST FOREST FARMERS COALITION



NORTHEAST FOREST FARMERS COALITION





Importance of environmental factors on plantings of wild-simulated American Ginseng

Karam C. Sheban · David J. Woodbury · Marlyse C. Duguid

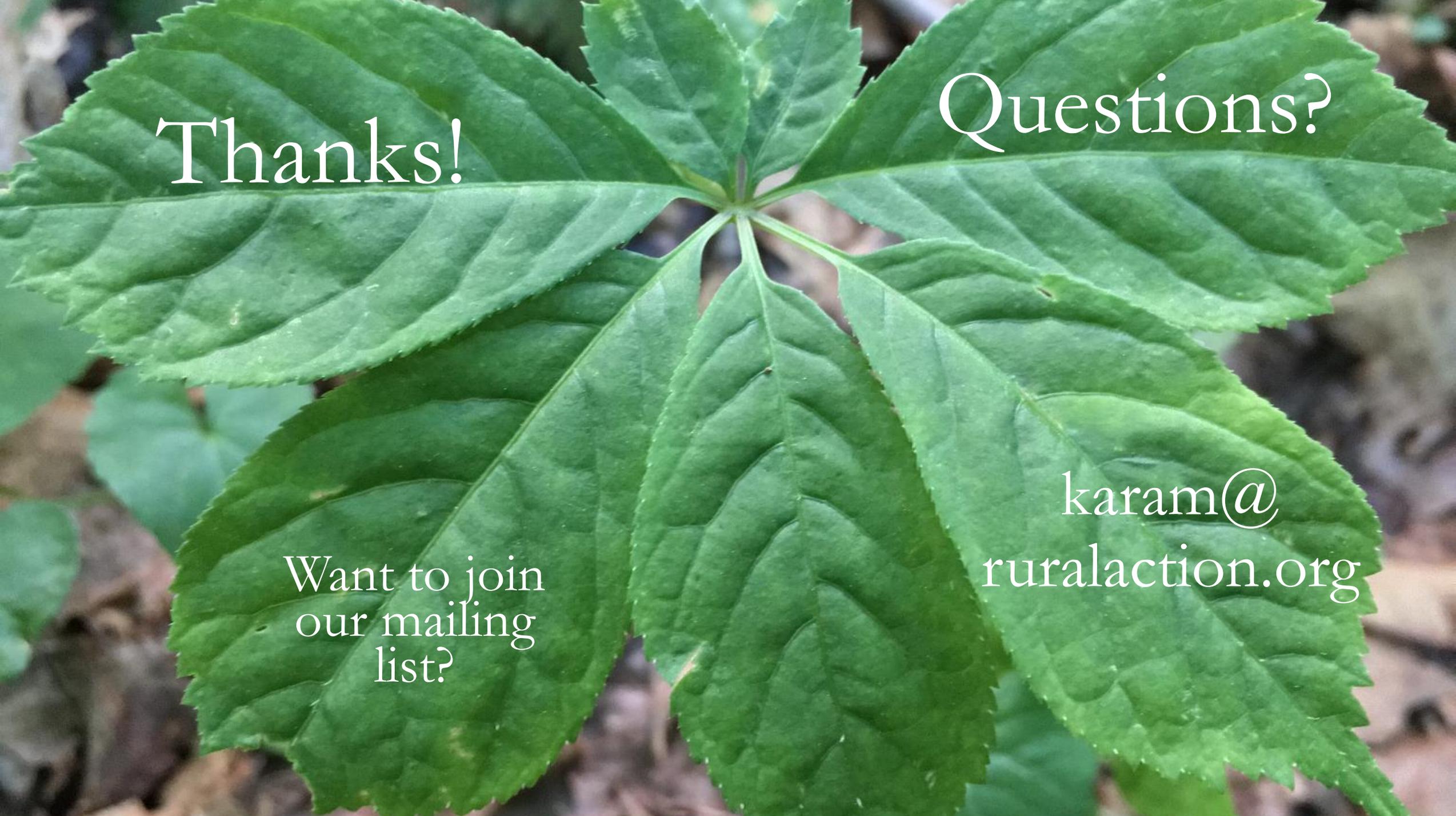
Received: 14 July 2021 / Accepted: 7 October 2021
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Abstract American ginseng (*Panax quinquefolius* L.) is an herbaceous perennial plant native to the forests of eastern North America with a long history of use and harvest, and with a significant international market. To supply international demand, the plant is grown in the USA and Canada under artificial shade cloth. However, wild and wild-appearing ginseng roots command prices up to 100 times greater than roots cultivated in a field: \$550–2200 (US\$ dry kg) vs. \$20–70 (US\$ dry kg). Growing ginseng in a forested environment using a “wild-simulated” forest farming approach, where growers introduce ginseng into a forested environment and then let it grow with little to no intervention, allows forest farmers to access these higher prices and meet international demand. As climate change shifts growing conditions globally, there will be increasing opportunities for the forest farming of American ginseng internationally. In this study, we examined the main drivers of ginseng

growth and development in a wild-simulated ginseng forest farm. We measured the range of environmental conditions and built statistical models to examine which factors were most important for ginseng vigor. We found that the amount of sunlight, even under highly shaded conditions, was the most important driver of ginseng establishment on the landscape, as well as ginseng plant size and development. Prior research indicates that additional factors including soil nutrient levels, moisture, and texture are important for the survival, growth, and development of wild and planted American ginseng, but our study did not show significant patterns of importance at this site. Our findings suggest that integrating silvicultural techniques such as forest thinning may enhance the productivity of wild-simulated ginseng operations while providing additional forest-based income with minimal impact on natural forest ecosystems.

Keywords Forest farming · Agroforestry · Crops ·





Thanks!

Questions?

Want to join
our mailing
list?

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