

# *Exploring Cooperative Marketing Opportunities for Chestnuts*

Tracey Coulter  
Agroforestry Coordinator  
PA –DCNR Bureau of Forestry

Erik Hagan  
Windswept Farm

Northeast/Mid-Atlantic Agroforestry  
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# What I will be covering:

- Introduction to chestnut species
- Chestnuts in the cultural landscape
- The American Chestnut Foundation



# Chestnut Species

- Native:
  - **American chestnut (3 nuts/bur)**
  - **Allegheny chinquapin (1 nut/bur)**
  - **Ozark chinquapin (1 nut/bur)**
- Imported (with recorded dates):
  - **European chestnut (1773)**
  - **Japanese chestnut (1876)**
  - **Chinese chestnut (1912)**
- Hybrid chestnuts:
  - **Colossal –European x Japanese**
  - **Paragon – American x European**



American chestnut





## American chestnut

Leaf hairless, except for sparse hairs on veins

Leaf fairly thin and papery

Leaf canoe-shaped with deeply toothed margins

Twig hairless and red to chestnut-brown

Bud smooth, and brown, **pointed** and usually askew on the twig

Large, timber-form tree (at maturity)





Shrub or small tree



## Allegheny chinquapin

Leaf usually **hairy** on underside

Leaf margins slightly to deeply **toothed**

**One pointed nut per bur**, instead of three

Burs form in **clusters**

Burs open in **two parts**, instead of four



Spreading,  
orchard-form  
tree



## European chestnut

Leaf **most similar** to American, more triangular leaf margins

Leaf base often **rounded**, with a **long petiole**

Leaf underside may be **hairy**

Twig **very thick** and coarse, **dark brown** at maturity

Bud **very large**, may be reddish



# Chestnuts in the Cultural Landscape



## Landscape and Change in Early Medieval Italy

Chestnuts, Economy, and Culture

PAOLO SQUATRITI







Gathering Chestnuts  
Fairmont Park



# Sober Chestnut Grove Stock Farm - Irish Valley, PA 1895-1913





# Chinese chestnut

Leaf **glossy**, usually **hairy** on underside

Leaf **thick**, may be leathery in texture

Leaf **oval** to row-boat shaped with wedge-toothed margins

Twig **pea-green** to tan, new growth **hairy**

Bud **round**, pea-green to tan, **hairy** and in-line with stem



Spreading, orchard-form tree



# Species Selection

## Blight Resistance:

- Chinese
- Japanese
- European
- American (Chinquapin)

## Other Considerations:

- Cold hardiness
- Consistent production
- Nut quality
- Growth habit





# NUTS – Variability by species





# PA/NJ Chapter of the American Chestnut Foundation – Founded 1994



## **Mission Statement:**

The mission of The Pennsylvania and New Jersey Chapter of The American Chestnut Foundation is to restore the American chestnut tree to its native range within the woodlands of eastern North America through research and education.

Our goal is to develop blight-resistant American chestnut trees, via backcross method of breeding, for the restoration of locally adapted breeding populations of the species in the forests of the mid-Atlantic.



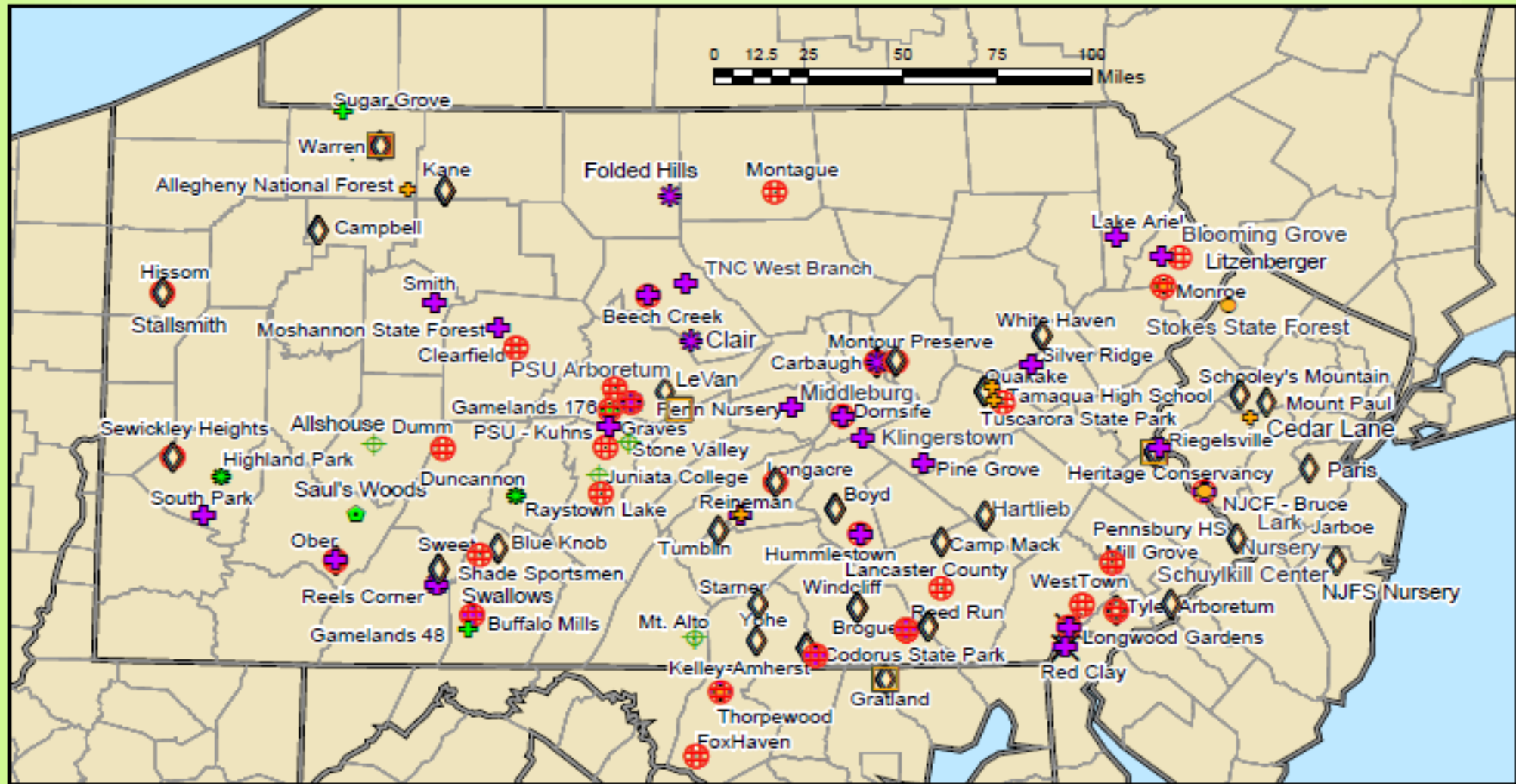
Volunteers play a critical role in this goal by assisting management and maintenance of research orchards and standing as spokespersons for our mission at educational and outreach events throughout the Chapter







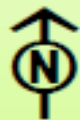
# PA-TACF Regional Chestnut Breeding Orchards



**Legend**

**PA-TACF Orchards**

BC2	BC4
BC2F2	CMS F1
BC2F3	CMS BC1
BC3	Various
BC3F2	COUNTIES
Chinese	
American	
BC1	



As part of a larger effort to restore the American chestnut tree, PA-TACF has been breeding chestnut trees since 1994. Since then, over 45,000 chestnuts have been planted in Pennsylvania, New Jersey, Maryland, and Delaware

For more information, please visit [www.patacf.org](http://www.patacf.org) or call our offices at 814-863-7192



# Planting American chestnuts









# *Exploring Cooperative Models: The Chestnut Model and Revival*

Erik Hagan  
Windswept Agroforestry Farm  
State College, PA  
erik.hagan@gmail.com





# Presentation Objectives

- Public Resources
- Chestnut Cooperatives
- Differences in Scale
- PA Model
- Where we are now
- What's to Come





# NE SARE PDP Grant - *NEMA*

NE SARE Professional Development Grant

Launched Northeast Mid-Atlantic  
Agroforestry network (NEMA) – 2014

Led to a multitude of trainings and a webinar  
series on Agroforestry Opportunities in the  
NE





# Agroforestry

- Intentional integration of tree and agricultural crops and/or livestock for creating a sustainable land use system
- Potential new model for U.S. Cultural Landscape





# Multifunctional Landscapes

Multiple functions in one system

- Food Production
- Environmental Stewardship
- Rural economic development
- Habitat Conservation





# Values the Margins

Alternative use of the sensitive portion of the landscape



Credit: Backyard Abundance



# Alley Cropping

*... the planting of trees or shrubs in two or more sets of single or multiple rows with agronomic, horticultural, or forage crops cultivated in the alleys between the rows of woody plants.*

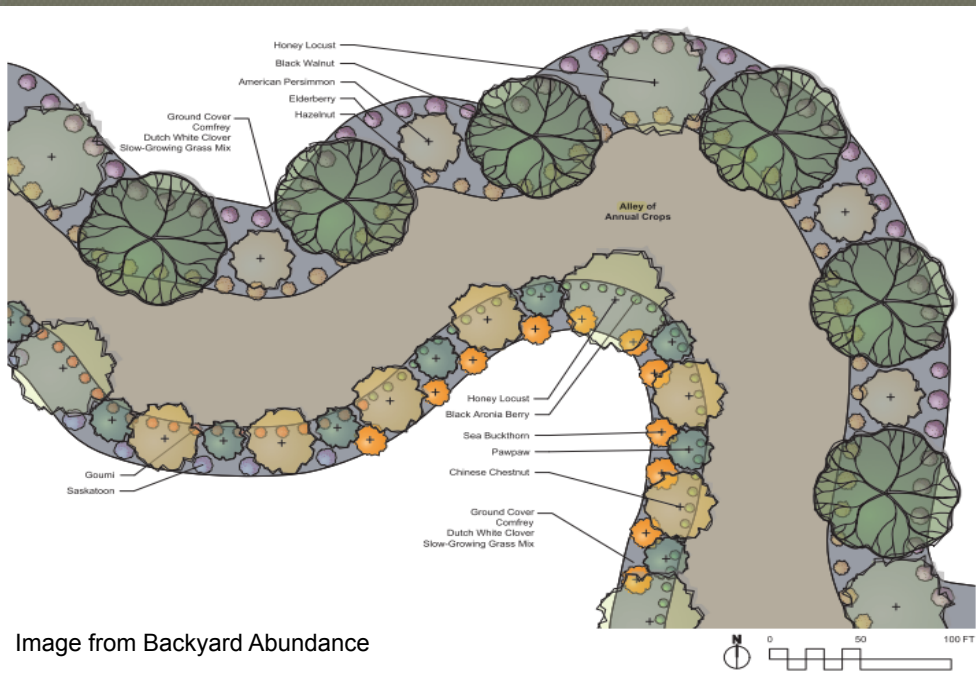


Image from Backyard Abundance



Photo: Paul Trieu



# Hedgerow Systems

Windbreaks

Shelterbelts

Multifunctional Hedgerows

- Upland Buffers
- Wildlife Habitat
- Parcel Boundaries





# Forest Farming

- Non-timber forest products grown under a mature canopy crop  
- ie. Chestnut canopy with mushroom production understory





# Silvopasture

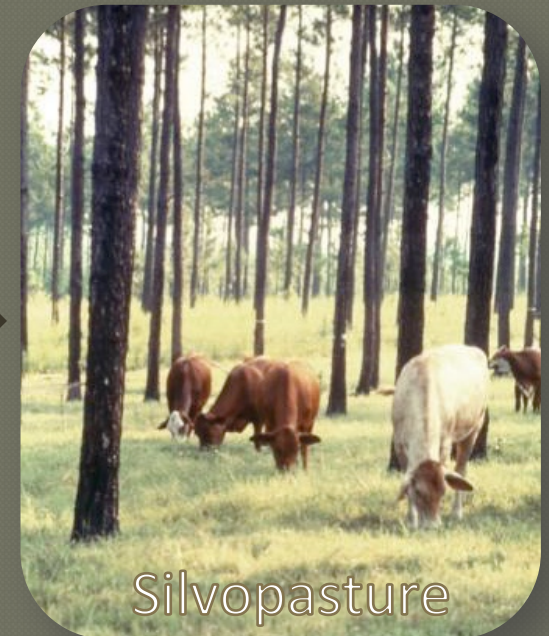
- Grazing under the canopy
- Cattle, Poultry, Sheep, Goats, Hogs





# Design Considerations – Changes Over Time

- One system, can lead to another, to another, overtime, converting into a *cultural landscape*





# The Value of the Chestnut

Some quick economic:

- *USA alone Imports ~ \$254 million in 2018 (\$316m in 2014)*
- *88% of US Consumption is imported*
- *Produce less than 1% of total world production on approximately 3,700 Acres (2018)*
- *Italy, China, France and Thailand*

*\$.75/lb - \$4.50 wholesale up to \$12/lb Retail*

*Average yield at maturity ~ 1.5 tons (others claim 4+)*

*Far superior opportunity compared to most major tree crops currently in the US (price per lb.)*





# Small Scale Budgets

## The Bolts to the Nuts

### Orchard Set Up

- Land
- Vegetative Stock
- Installation
- Pest Control
- Management

Roughly \$2,275 - \$5,143 per acre installed \*

### Commercially Viable Yields

- 7-10 years on average – maybe earlier
- 20 years to mature yield (1.5 tons/acres est.)
- \$1,000 - \$5,000 profit per acre at maturity \*\*
- Retail can bring \$6k – \$36k / acres – Avg. \$21k
- Clearly depends on market ratio, site, etc. etc.
- Private – 3 acre minimum 2 people \*\*\*
- Coop – 50 Acre minimum \*\*\*

More Info:

Gold, Michael Alan, Mihaela M. Cernusca, and Larry D. Godsey. *Chestnut market analysis: Producers' perspective*. University of Missouri Center for Agroforestry, 2005.

\*Allen Creek Farm, 2004

\*\*Tom Wahl – Red Fern Farm

\*\*\*Greg Miller – Empire Chestnuts



# Chestnut Enterprise Basics

## Beyond the Nuts

### Equipment

- Numerous hoppers and bins to store nuts
- Nut Sizer
- Immersion Tank – Pest Control and Seed Viability
- Sorting table – Manual QA/QC Check
- Bagging and Weighing station
- Commercial cooler and Storage Facilities
- Facility Infrastructure
- Transport Infrastructure

### Marketing and Administration

- Web Presence/Outreach
- Distribution Networks
- Packaging

Insurance/FSMA/GAP Certification???

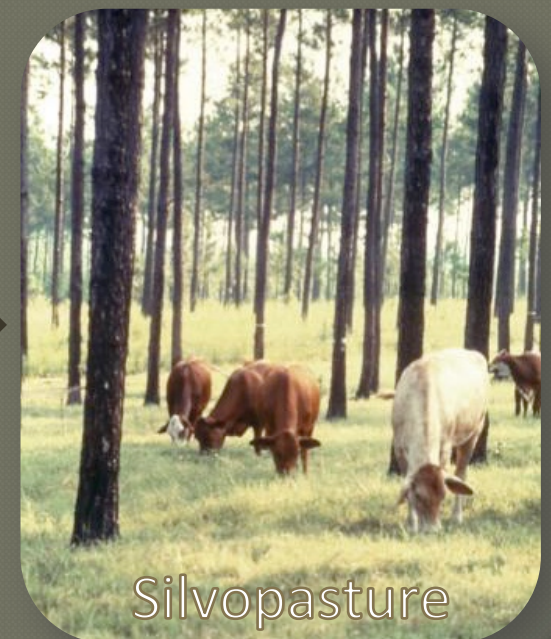
Small Scale startup costs range between \$5 – \$150k:  
not including orchard set up or value-added products





# How do we make this all work?

- Can cooperative resources and marketing sharing help to restore chestnuts and enhance cultural landscape?
- Can such a model resolve the economic barrier and be repeated with other species?





# Project Partners





# NE SARE Farmer Grant

**Title:** *Aggregation and Cooperative Marketing Opportunities for Enhancing Chestnut (*Castanea spp.*) Production and Conservation*

[https://projects.sare.org/sare\\_project/fne18-896/](https://projects.sare.org/sare_project/fne18-896/)

## **Project Goals: 2018 – 2020**

- Research *Chestnut Growers Inc.* and *Route 9 Chestnut Cooperative*
- Taste Testing for Varietal Differences and consumer preferences
- Develop Resources and Business Model Recommendations for PA Facility





# Specialty Crop Block Grant:

Pennsylvania Department of Agriculture

**Title:** *Establishing Cooperative Marketing Opportunities for Chestnut (Castanea spp.)*

## Project Goals: 2018 – 2021

- Research *Missouri State Program*
- Manage American chestnut sites for increased productivity and efficiency
- Develop small scale processing equipment
- Assess food system/sociological outcomes for chestnut cooperatives models throughout the state



Agricultural  
Marketing  
Service



**pennsylvania**  
DEPARTMENT OF AGRICULTURE



# Known Cooperatives in the US

The logo for Chestnut Growers, Inc. features the text "Chestnut Growers, Inc." in a yellow, sans-serif font. A stylized yellow tree icon is positioned between the words "Chestnut" and "Growers". The background is a dark green gradient.

Chestnut Growers, Inc.

Michigan

The logo for Route 9 Cooperative features five brown chestnut icons with white highlights, arranged in a horizontal row. Below the icons, the text "ROUTE 9 COOPERATIVE" is written in a bold, yellow, sans-serif font with a black outline. The background is a solid brown color.

ROUTE 9 COOPERATIVE

Ohio

The logo for USA Chestnut Inc. features the text "USA Chestnut Inc." in a stylized, 3D-effect font. "USA" is in blue and red, while "Chestnut Inc." is in a brown, metallic-looking font. The background is a dark green gradient.

USA Chestnut Inc.

Florida

The logo for Prairie Grove Chestnut Growers features the text "PRAIRIE GROVE CHESTNUT GROWERS" in a white, serif font. The background is a solid dark red color.

PRAIRIE GROVE  
CHESTNUT GROWERS

Iowa, Illinois and Missouri

IOWA, ILLINOIS & MISSOURI

## New York State?



# Why a Coop?

- Infrastructure Costs
- Public Private Resource Sharing
- Insurance/Food Safety
- Distributions
- Market Avenues
- Grower Support Structure
- Consumer Access/Reliable Supply







# Cooperative Challenges

- Genetic Diversity
- Management Diversity (Pests/Quality)
- Organic vs. Non-Organic Producers
- Decision Support Structure
- Infrastructure Focus and/or Multifunctionality
- Scale! – Big Question especially for getting started
- Limited national resources



# Researching Coops



**Chestnut Growers, Inc.**

Michigan



**ROUTE 9 COOPERATIVE**

Ohio





# Coop Considerations

- Justification
- Resources
- Invisible Infrastructure
- Memberships (Scale)
- Market Avenues
- Dividend Structure
- Equipment



# Chestnut Growers Inc.

## Development

### Justification:

- MSU Faculty and Extension efforts encouraged planting state-wide

### Resources

- Michigan State Resources and Facilities
- Extension Service
- Private Endowment (100 year funding)
- Michigan Rural Development Grant – Equipment Cost Share

### Invisible Infrastructure

- Board Run
- Consensus Decision Making process





# Chestnut Growers Inc.

## Development

### Membership

- 100 Lb Minimum
- \$25 Membership Fee
- State-wide membership
- Estimated 500 of acres – growing rapidly
- Average production – 200k lbs
- Growing rapidly

### Market Avenues

- Sell Through Larger Distributors (85%)
- Internet Sales (<6%)
- All sales in Michigan except large buyer in Chicago

### Dividend/Payout Structure

- Non-profit Co-op
- 20% of dividends returned to grower after all bills
- 80% maintained for Capital Investments
- 2017 - ~ \$2/lb to grower
- Float Tank to determine harvest weight and payout (controls management practices) – premium for jumbo







# Route 9 Chestnut Cooperative

## Carrolton, Ohio

### Justification:

- Developed Based on encouraging neighbors to plant
- Absentee landowners interested in enhanced hunting

### Resources

- Original orchard planted in 1950's
- Strip Mine Land – Affordable access nearby
- Ohio Rural Economic Development Grants
- Ohio Rural Economic Development Loans
- \$250k for all infrastructure and property (3 Acres)
- Greg Miller put up half initially

### Invisible Infrastructure

- Shareholder structure
- Voting style decision making (seniority)





# Route 9 Chestnut Cooperative

## Carrolton, Ohio

### Membership

- 150 Lb Minimum
- \$25 Membership Fee
- 90 Acres on Site
- ~150 Acres in Eastern Ohio (1 farmer within 3 hours)
- Buy in small quantities from smaller producers (SE US)
- Average production 100,000 lbs annually

### Market Avenues

- Sell Entirely through Website (90%)
- Limited Wholesale (<10%)
- Nationwide
- USPS is distributor (cost passed on to customer)

### Dividend/Payout Structure

- 2018 - ~\$1.40/lb to grower – Loss 40% of crop due to weather
- 2017 – Similar due to Cicada hatch
- No pretreatment for payout weights – a lot of faith
- Looking to revamp payout weight protocols



# Chestnut Growers Inc.

## Harvesting

### Mechanical harvesting

- Modified equipment from Pecan industry
- Dedicated Chestnut harvester-sweeper type
- Funded, Operated and Maintained by MSU
- Rented to Coop @ \$.30/LB Rental Rate





# Route 9 Cooperative Harvesting

## Hand harvesting

- Nut Wizards/hand harvested
- \$11/bucket (\$.36/LB @ 30lbs/bucket)
- Local community members
- High school students for fundraiser
- Looking into mechanical due to real lack of labor
- Coop members required to harvest by own means

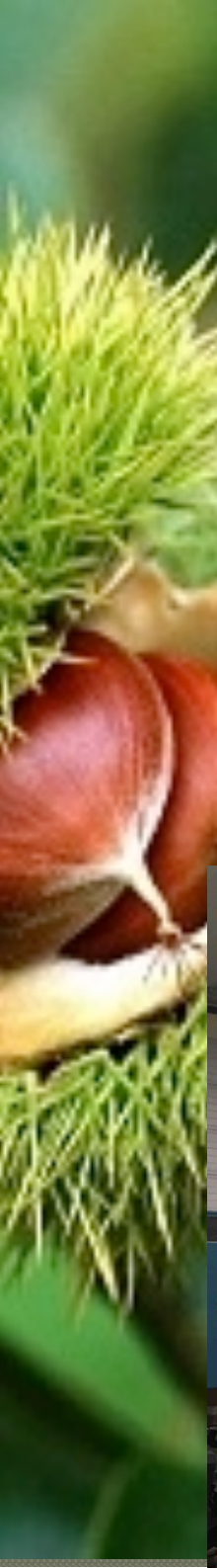




# Chestnut Growers Inc.

## Equipment

- Michigan State Resources and Facilities
- Michigan Rural Development Grant – Equipment Cost Share
- Adding Heat Treat to Float Tank
- Runs 4,000 lbs/hour





# Chestnut Growers Inc.

## Equipment





# Chestnut Growers Inc.





# Route 9 Cooperative Equipment

- Much Smaller Scale
- \$250k Loan including facility and property (3 Acres)
- A lot of hand sorting
- Grants for customized equipment – Ohio Rural Development
- 4,000 lbs / hour processing time



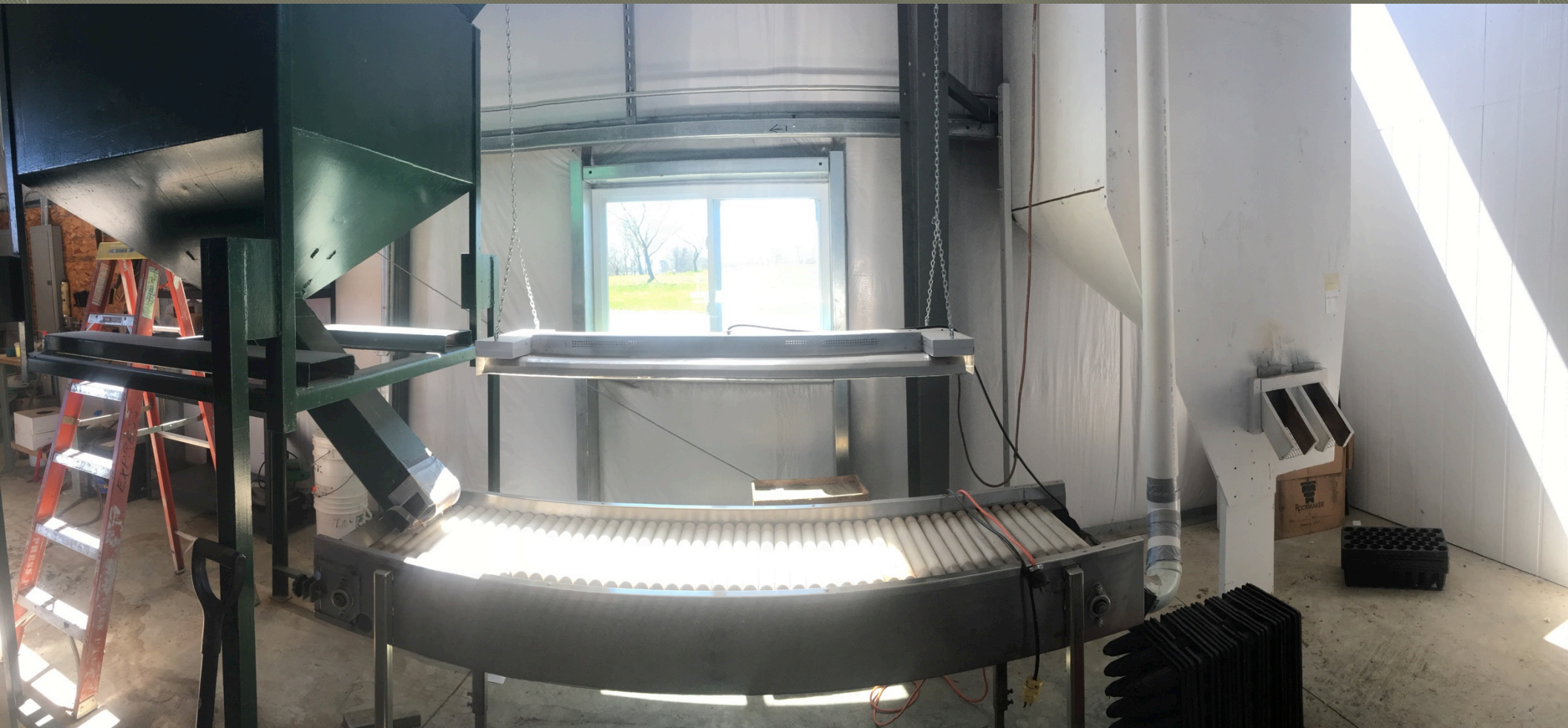


















# Chestnut Growers Inc.

## Genetics

- Primarily European (*C. sativa*) and Hybrids with Japanese (*C. crenata*)
- Encourages *only* grafting protocols for varietal purity
- Highly recommends Michael Dolan's Burnt Ridge genetics for planting stock
- Members starting own grafting, very little sold and mostly within

### Varietals:

- Bouche de Betizac
- Precoce Migoule
- Marron
- Maraval
- Colossal
- Nevada









# Route 9 Cooperative

## Genetics

### Varietals:

- Peach
- Qing
- Kohr
- Sleeping Giant
- Kintzel
- Luvall's Monster

- Mostly Chinese
- Original Orchard ~ 50 years old
- Phasing out European and Japanese Hybrids
- Greg Miller's Extensive Breeding Program
- 30 acre ~ 40 year breeding/monitoring orchard
- Sells seedlings and seeds from breeding
- Encouraging seedling plantings – grafted highly *NOT* recommended
- Developing Timber varietals
- Chinquapin Breeding program





# Route 9 Cooperative Genetics





# Route 9 Cooperative Seedling Sales





# Route 9 Cooperative Chinquapins and Others





# Treeborn Chestnuts

## Value Added

- Privately and Independently Owned
- Utilizes Michigan State Univ. Facilities
- Private Endowment to MSU
- Purchases from Coop - 25% of business
- Purchases Internationally (South America)

### Products

- Flour
- Frozen
- Dehydrated Chips (Brewing)



[www.treebornproducts.com](http://www.treebornproducts.com)





# Treeborn Chestnuts

## Value Added Equipment



### Peeler

- Italian Made
- Flash Heat
- Auger
- Vibrating rollers
- \$1million processing
- Requires Larger Facility
- No damage to nuts

### Chipper

- Specialty Chestnut Slicer
- Flash Dehydrates
- Bags by weight

### Flour Mill

- Specialty Chestnut Product
- Larger Scale
- Finer Grind











# Route 9 Cooperative Value Added

## Products

- Dehydrated Nuts
  - Flour
  - Wildlife/Livestock Feed
- \*\*All seconds from Co-op





# Route 9 Cooperative Value Added Equipment



## Sheller

- Grant Funded
- Small scale custom design
- Light dehydrator
- Velocity Barrel system

## Dehydrator

- Small Scale
- Oven Style

## Flour Mill

- Standard Mechanical Mill
- Very Small Scale





CAUTION  
Do not touch the hot surface.  
The surface is hot.



# Consistent Recommendations

- Find Funding Support
- Membership Programs and Requirements
- Focus on Raw Products – Sell out annually
- *Value Added is secondary* – Do not sell out
- Willing to combine – efforts unrealistic?
- Legal Council





# Central PA Orchards

## Windswept Farm

- 200 trees 2018
- Leasing ~ 200 more trees
- Chinese (Greg Millers)
- Chinese (Jim Walizer Local breeder)

## American Chestnut Foundation

- 22 acres potential
- Mixed Genetics





# PA Coop Consideration

## Genetics

- Support American Chestnut Foundation efforts prioritized?
- Markets for American as a niche?
- Chinese genetics for production?

## Infrastructure Model

- Hub Model?
- Centralized Aggregation/Processing?
- Scale Requirements?
- Management Requirements?

## Competition

- PA Growers concerned about competition

## Recommendations:

- Business Model - Coming in 2020
- State-Wide approach - 2021



Photo Cred: M. Weidenhof



# More Developments 2019: Stayed Tuned!

## Harvest

- Expecting more harvest
- Enhanced management of Am. Chestnut Orchards

## Equipment – Small small scale

- Larger Immersion Tank
- Sizer?
- Other Processing Equipment
- Management Requirements?

## Processed Goods

- ReFarm Café
- Race St. Brewing – Phillipsburg
- Barrel 21 Distillery
- Local menu options





# Value Added Products Sampling!

## Chestnut Cookies – ReFarm Café

- Route 9 Chestnut Flour
- Windswept Maple Syrup
- Windswept Fresh Eggs
- Cinnamon Sugar
- Butter
- Baking Powder
- Vanilla

## Canned Chestnuts – ReFarm Café

- Walizer Chinese Chestnuts
- Honey
- Water

## Chestnut Butter – ReFarm Café

- Walizer Chinese Chestnuts
- Honey
- Water





# Blind Taste Testing Survey

## *Taste Testing Procedure:*

1. Take a box of Raw Chestnuts
2. 4 Varieties (European, Chinese, American, American Hybrid)
3. Peel *Shell* and *Pellicule* (brown interior skin – 'tis bitter)
4. Choose Favorite in order, by color, 1- 4
5. Fill out Survey
6. Compost shells
7. Recycle Box

Erik Hagan  
Windswept Agroforestry Farm  
State College, PA  
erik.hagan@gmail.com

