

# *Public-Private Partnerships in Developing Cooperative Marketing Opportunities*

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# What I will be covering:

- Introduction to chestnut species
- Chestnuts in the cultural landscape
- The American Chestnut Foundation
- DCNR's roles



# 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





Large, timber-form tree (at maturity)

# 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



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

Slide courtesy Kendra Collins TACF



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



# 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

Slide courtesy Kendra Collins TACF



Spreading, orchard-form tree





# Species Selection

## Blight Resistance:

- Chinese
- Japanese
- European
- American (Chinquapin)

## Other Considerations:

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





Gathering Chestnuts  
Fairmont Park



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





# 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.







# DCNR's ROLE

- Planting seed orchards
- Locating mother trees
- Growing trees for breeding program
- Distributing seedlings for research
- Representing DCNR on Chapter Board
- Application in agroforestry systems





# Chestnut Breeding Orchards Today

- 100 Planting locations PA/NJ
- 100,000 trees planted
- Estimated 50,000 trees in production

**BUT** these trees were planted for research and not commercial production

- Wide variation in size, flavor and resistance

Other considerations:

- Blossom end rot
- Weevils
- Phytophthora



# 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

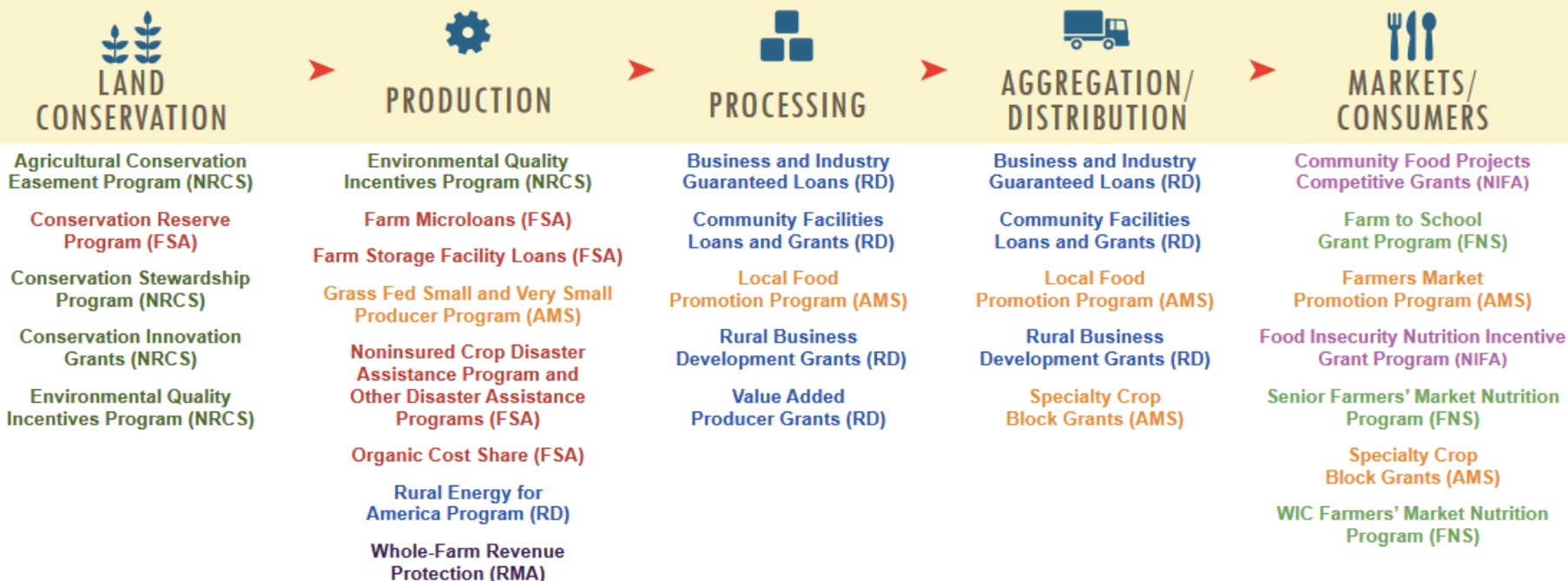






# USDA PROGRAMS IN THE LOCAL FOOD SUPPLY CHAIN

USDA is committed to supporting robust regional food economies across the food chain through the programs noted below.



## RESEARCH, EDUCATION, AND TECHNICAL ASSISTANCE PROGRAMS ALONG THE SUPPLY CHAIN:

- Agriculture and Food Research Initiative (NIFA)
- Beginning Farmer and Rancher Development Program (NIFA)
- Conservation Technical Assistance (NRCS)
- Enhancing Agricultural Opportunities for Military Veterans (AGVETS) (NIFA)
- Federal State Marketing Improvement Program (AMS)
- Outreach and Assistance for Socially Disadvantaged Farmers and Ranchers and Veteran Farmers and Ranchers Program (2501 Program) (OAO)
- Risk Management Education Program (RMA)
- Rural Cooperative Development Grants (RD)
- Small Business Innovation Research (NIFA)
- Specialty Crop Block Grants (AMS)
- Specialty Crop Research Initiative (NIFA)
- Sustainable Agriculture Research and Education Program (NIFA)

## COLOR KEY

- Agricultural Marketing Service (AMS)
- Farm Service Agency (FSA)
- Food and Nutrition Service (FNS)
- National Institute of Food and Agriculture (NIFA)
- Natural Resources Conservation Service (NRCS)
- Office of Advocacy and Outreach (OAO)
- Risk Management Agency (RMA)
- Rural Development (RD)



# Specialty Crop Block Grants

Administered by state departments of agriculture

The purpose of the SCBGP is to enhance the competitiveness of specialty crops.

Specialty crops are defined as “fruits, vegetables, tree nuts, dried fruits, horticulture, and nursery crops (including floriculture).”



# Specialty Crop Block Grants

Selection of agroforestry-related projects from FY18

California: Developing Sustainable and Climate-Smart Vineyards Through Sheep Integration

Connecticut: Intercropping wine-cap mushrooms in Christmas trees

Illinois: Demonstration of apprentice farmer program viability and working model of farm diversification through organic permaculture

Iowa: Cultivating Opportunity for Iowa Farmers in the Woody Ornamental Industry

Maryland: GIS analysis of Maryland to identify regions suitable for the cultivation of truffles

Minnesota: Developing Goji Berry as a Viable New Perennial Fruit Crop for Minnesota Growers

Missouri: Establishing a Pawpaw Industry: Horticulture, Market Research, and Outreach

Nebraska: Thousand Cankers Disease of Walnut Survey

New Mexico: Jujube Cultivar Trials and Marketing in New Mexico

Oklahoma: Increasing Pecan Consumption Through Value-Added Product Development

Pennsylvania: Establishing Cooperative Marketing Opportunities for Chestnuts

Tennessee: Scientific Validation and Export Market Validation of Wild Growth

Characteristics of Commercial-Scale Ginseng Seedlings Production

US Virgin Islands: Establishment of an Indigenous Fruit Tree-planting Program

Utah: Demonstration of the Feasibility of production Service Berry in Cache Valley

West Virginia: Yew Mountain Center Forest Farming with Non-Timber Forest Products Research and Education Project



# The Value of the Chestnut

Some quick economic:

- *Global Market~ \$254 million in 2018 (\$316m in 2014)*
- *Roughly \$20 million US Imports annually*
- *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 entire logo is set against a dark green rectangular background.

Chestnut Growers, Inc.

Michigan

The logo for Route 9 Cooperative features five stylized brown chestnuts with white highlights, arranged in a horizontal row. Below the chestnuts, the text "ROUTE 9 COOPERATIVE" is written in a bold, yellow, sans-serif font with a black outline. The entire logo is set against a brown rectangular background.

ROUTE 9 COOPERATIVE

Ohio

The logo for USA Chestnut Inc. features the text "USA Chestnut Inc." in a stylized, orange-brown font with a 3D effect. The "USA" part is in a larger, more decorative font. The entire logo is set against a dark green rectangular background.

USA Chestnut Inc.

Florida

The logo for Prairie Grove Chestnut Growers features the text "PRAIRIE GROVE CHESTNUT GROWERS" in a white, serif font. The text is arranged in three lines: "PRAIRIE GROVE" on the first line, "CHESTNUT" on the second line, and "GROWERS" on the third line. The entire logo is set against a dark red rectangular background.

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

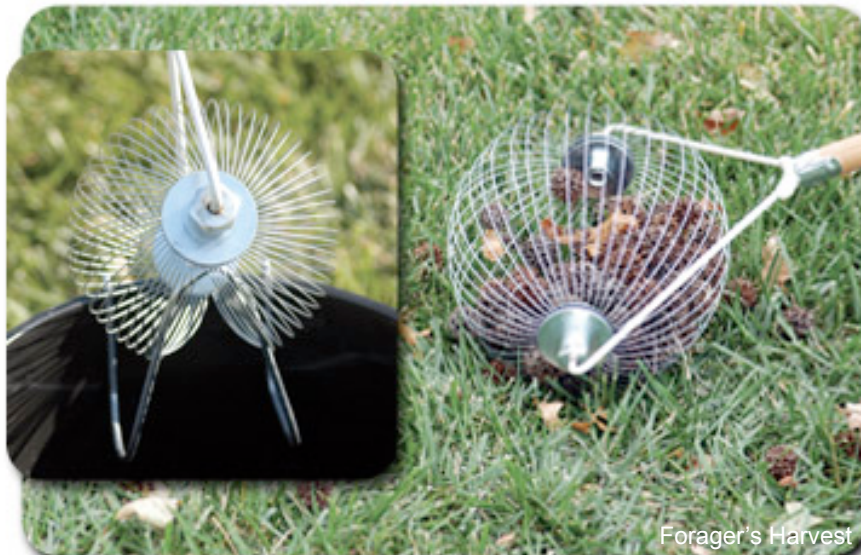




# Route 9 Cooperative Harvesting

## 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 Equipmment



### 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







# 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 share facility – 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: Stay 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



Chestnut Charlie's



# 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

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