

Muscadine (*Vitis rotundifolia*) – the underdog grape of America



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Become fascinated and inspired

- Low input cost
- Sustainable
- Adapted
- Here long before the industrial revolution



Climate Change leads the way

Muscadine could serve as one example how we should think about future horticulture systems:

Integrated, sustainable, adapted and economically feasible



The 'Mothervine' on Roanoke Island, NC

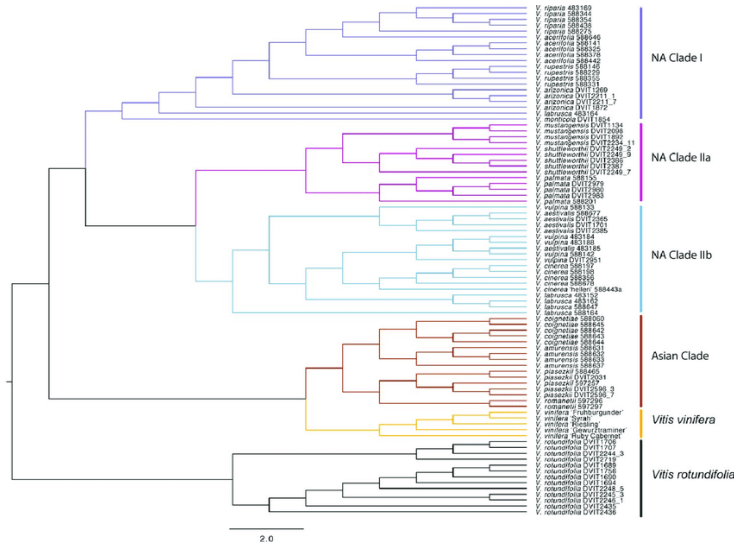
A blue speech bubble with a white question mark. The bubble has a pointed bottom and a small tail pointing downwards. The text "What is a muscadine?" is written in white inside the bubble.

What is a muscadine?

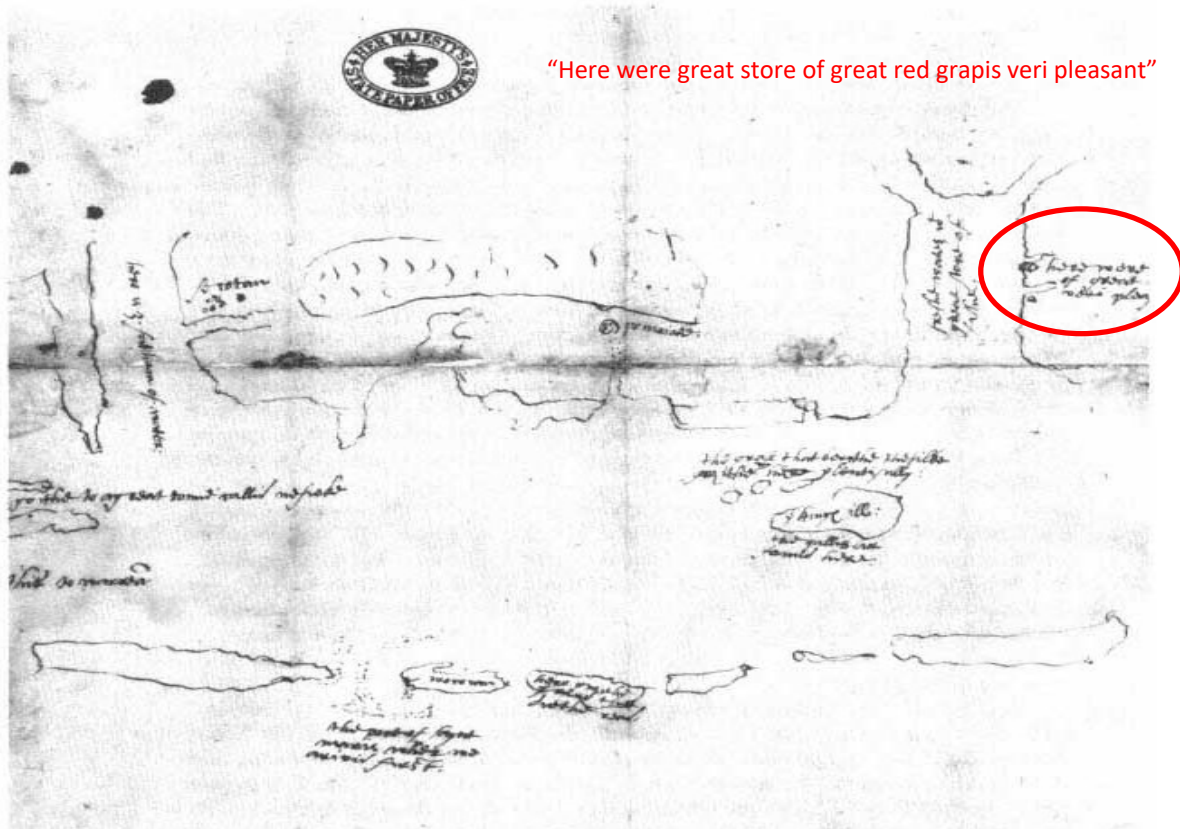
- ***Vitis rotundifolia* Michx.**

Subgenus *Muscadinia*

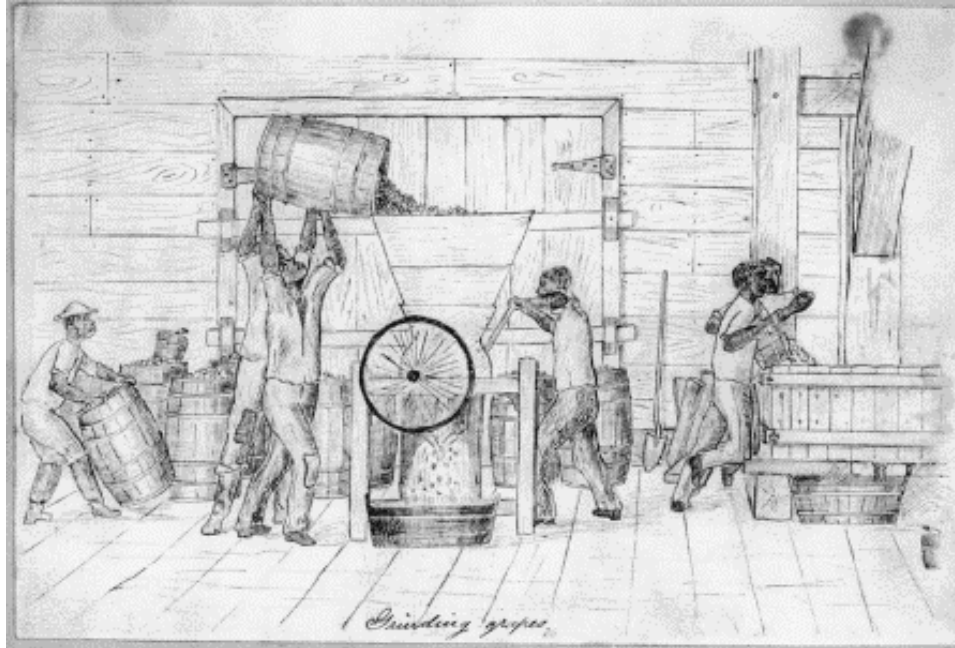
40 chromosomes vs. 38 in *Euvitis*



Vitis rotundifolia (Bailey 1898: Sketch of the evolution of our native fruit)



Sketch-map of NC coast by Sir Walter Raleigh (D.B. Quinn, The Roanoke Voyages, 1955)



Winegrapes being crushed in Halifax Co., 1870s (Sketch by Christopher Terrell)

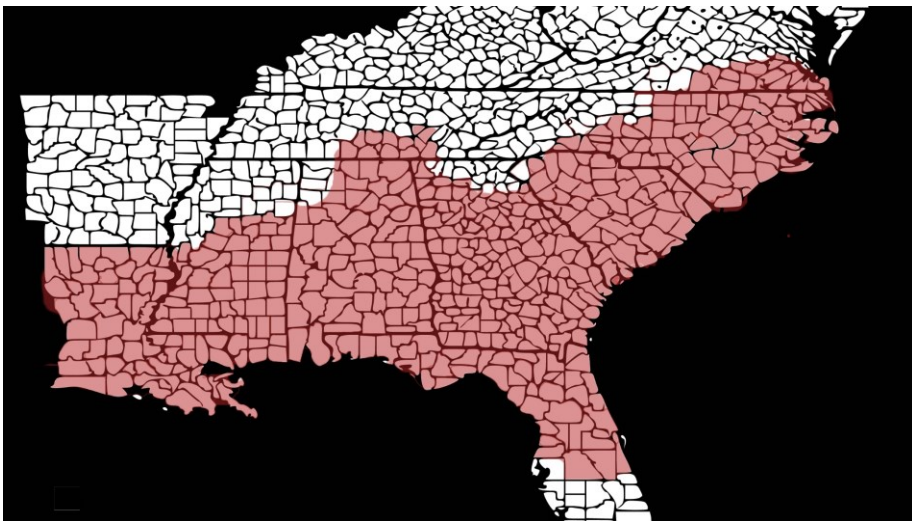
Production and Industry

Main production States:

- North Carolina (more than 1,200 acres)
- South Carolina
- Georgia
- Florida
- Arkansas
- Mississippi
- Alabama

Significant commercial plantings also in:

- Chile
- China



‘Muscadine Production Guide for the Southeast’

- Single high wire
- Bi lateral cordon
- Spur pruning system
- High yields
- Distinct processing and fresh-market cultivars
- Less pesticide and management input compared to vinifera/hybrid grape systems (or most other fruit systems in the Southeast)



Resistance to

- Pierce's Disease
- Grape Phylloxera
- Downey Mildew
- Most grapevine viruses



Wine and Juice Production:

- In NC alone, ca. 600,000 -700,000 cases of muscadine wine are produced every year.
- Muscadine growing systems are **much more cost effective** than Bunch grape growing systems, allowing to produce a low-mid tier wines
- *Muscadine grapes are harvested at 15-20 Brix (depending on region)*
- *Main processing cultivars: Carlos, Noble, Magnolia, Doreen*



Fresh Market

- In NC, ca. 300 acres of commercial fresh-market vineyard is planted
- Fresh-market require more labor and management input
- USDA grading standards
- Newer cultivars & high consumer demand led the industry in NC grow by more than 50% in the past decade



Large range of fresh-market cultivars

- Dry stem skar
- Larger berry
- Crisper texture and firmness
- Thinner skin
- Slower softening during storage

Bronze/White: Fry, Hall, Triumph, Tara, Summit, Late Fry

Dark/Red: Supreme, Lane, Nesbitt, Ison, Paulk

New releases: 'Paulk', 'Ruby Crisp'



Seedless *V. vinifera* X *rotundifolia* hybrids

- Grow in larger clusters
- Show disease resistance
- Adapted to humid/warm climate
- Seedless berries
- Good eating characteristics

Released: 'OhMy' and 'Razzmatazz'



'OhMy!' (web: Gurney's Seed & Nursery Co.)



'Razzmatazz' (web: Southern Living Plants)

Pharmaceutical Research on Muscadine Grape Extract (MGE)

(read:

<https://smallfruits.org/2020/07/muscadine-health-benefits-an-interview-with-dr-patricia-gallagher-wake-forest-university-school-of-medicine/>)

- Reduced human breast and prostate cancer proliferation and improved hypertension induced heart and vessel damage in mouse models
- Currently in phase I and II clinical studies

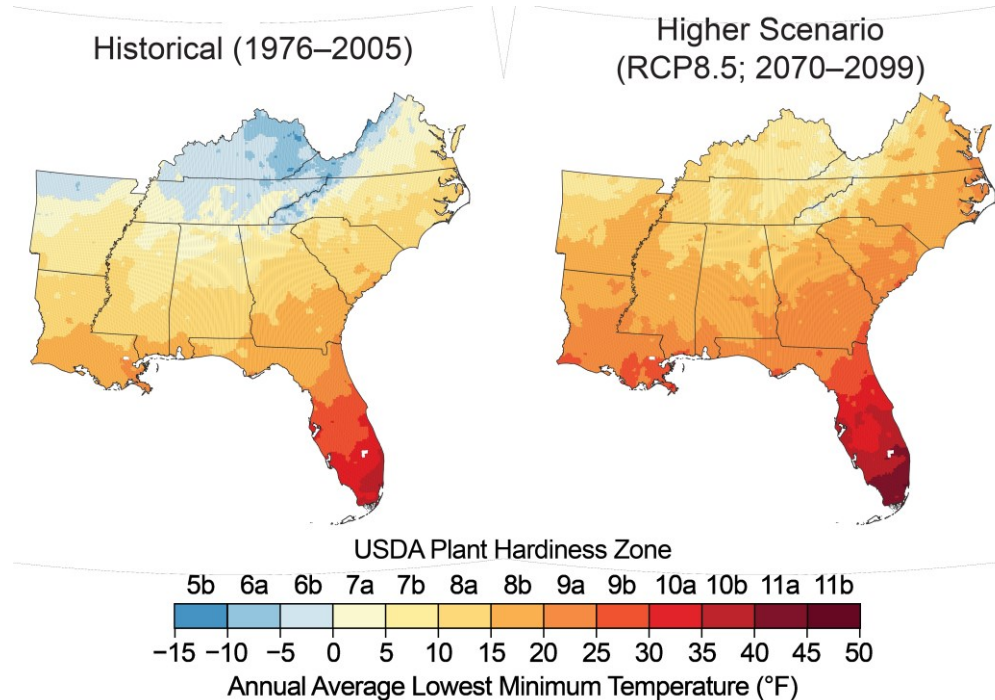
With permission of Dr. Patricia Gallagher, Co-Principal Investigator at Wake Forest University School of Medicine



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Climate Change



<https://nca2018.globalchange.gov/chapter/19/>

Higher temperatures and more rain is a challenge for most horticulture crops

- Leading potentially to higher insect pressure
- Leading to more disease
- Leading to more weed growth and other species
- Leading to more pesticide use





**Muscadines can be a model for research on integrated,
less intensive systems with economic potential**

- Adapted to humid and hot climate
- Cultivars are of high quality
- Profitable crop
- Market demand



Take-Homes

- Muscadine is a profitable crop in the Southeast
- Muscadines become more interesting to other regions
- Muscadines are believed to be better adapted to climate change in the South
- Muscadines could serve as a model for cropping systems with lower carbon footprint

In memoriam: Ervin Lineberger

January 27, 1940 – January 3, 2021





Thank You and Q+A

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