

Progress Towards Determining Nitrogen Fertilizer BMPs for Commercial Blueberry Production in Florida

Hanna de Jesus, Gerardo H. Nunez and Jeff Williamson



Why does nitrogen management matter?

Nitrogen (N) is essential for canopy development, and fruit production, as well as the development of floral buds for the following year's crop.

Specific fertilization practices can vary due to differences in soil/media type, cultivar, irrigation practices, weed control, and more.

Pine bark can affect the availability of N fertilizer, depending on its age, level of decomposition, and amount used.



What is driving the cost of fertilizers?



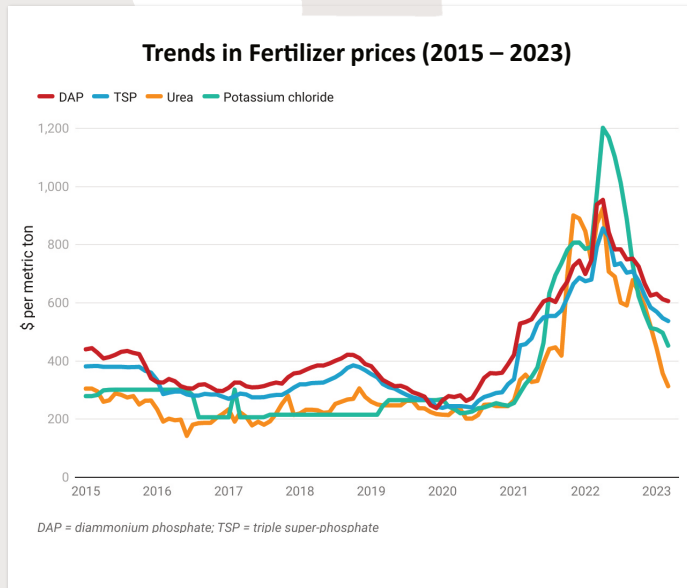
Supply and demand



Energy costs



Geopolitical events



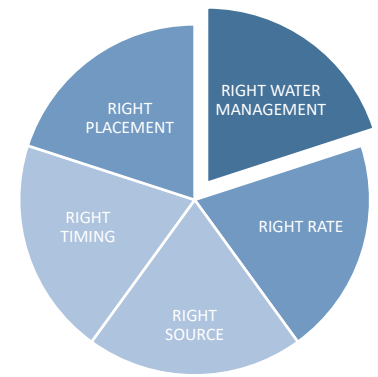
Source: International Food Policy Research Institute

UF/IFAS Nutrient management program

What are BMPs?

- Practices that improve water quality while maintaining agricultural productivity

"4Rs plus one" concept



UF
IFAS



Research on N fertilizer BMPs for blueberry

Goal

Determine N fertilizer requirement of SHB plants grown in pine bark production systems



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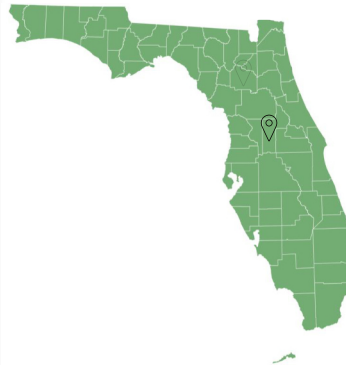
Help growers make decisions



Stay aligned with state regulations



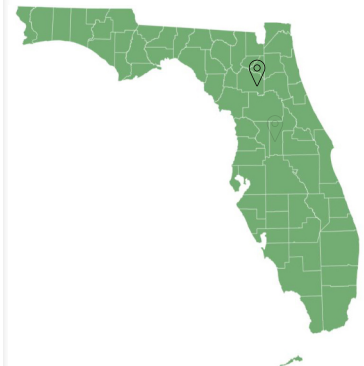
Research sites



- 📍 Wild Goose Farms, Umatilla, FL
- 🌱 Optimus



Research sites



- 📍 Straughn Farms, Archer, FL
- 🌱 Sentinel

Experimental design

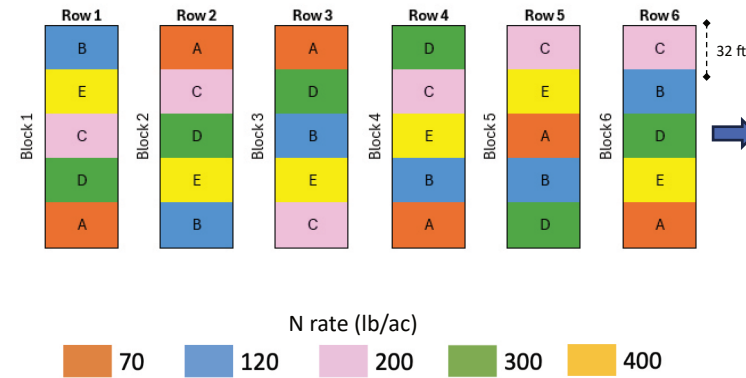
- Nutrients supplied with granular urea and K_2SO_4 + liquid fertilizer via fertigation

N rates (lb/acre)	P rate	K rate
<ul style="list-style-type: none"> 70 125 200 300 400 	<ul style="list-style-type: none"> 106 lb/ac 	<ul style="list-style-type: none"> 200 lb/ac



Experimental design

Field map



Timeline of data collection

Data	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
	Budbreak/bloom/fruit set			Harvest	Pruning	Vegetative growth		Flower bud initiation		Dormancy		
Pine bark			✓			✓		✓				✓
Yield + Fruit quality				✓								
Leaves			✓			✓		✓				✓
Canopy volume + LAI		✓				✓		✓				
Yield potential		✓										✓

Window for fertilizer treatment applications

✓ Data collection

Pine bark

- The **C:N ratio** is used to assess the balance of these two elements in soil
- When residues with high C concentrations relative to N are added to soil, microbes must acquire soil available N to metabolize the C

Why it matters?

- As pine bark decomposes it competes with the crop for N



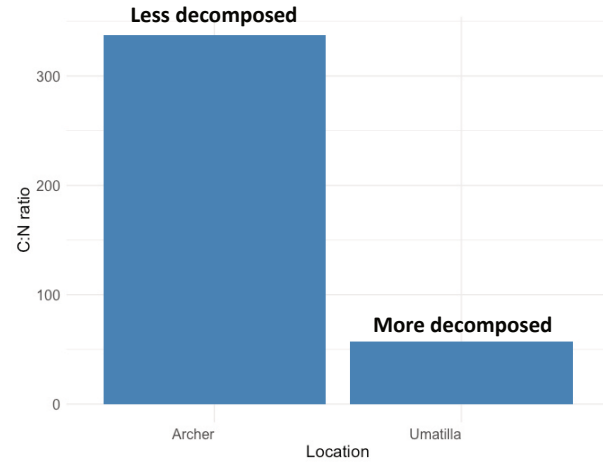
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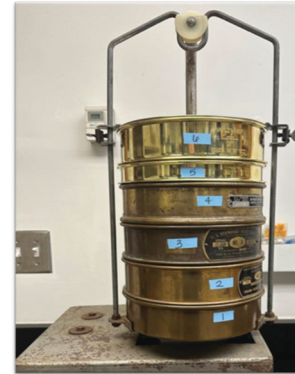
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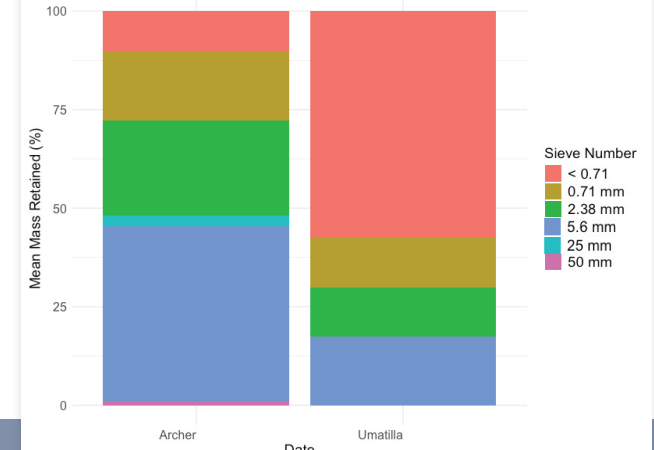
Initial C:N Ratio (Sept 2023)



Pine bark



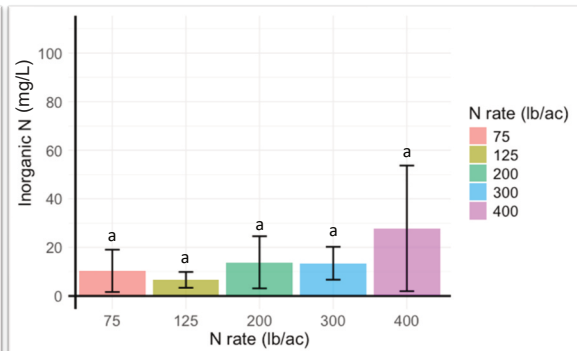
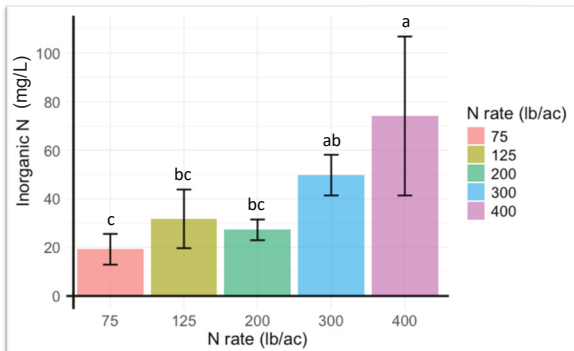
Initial Particle size distribution (Sept 2023)



Nitrogen levels on pine bark (Aug 2024)

Location: Umatilla

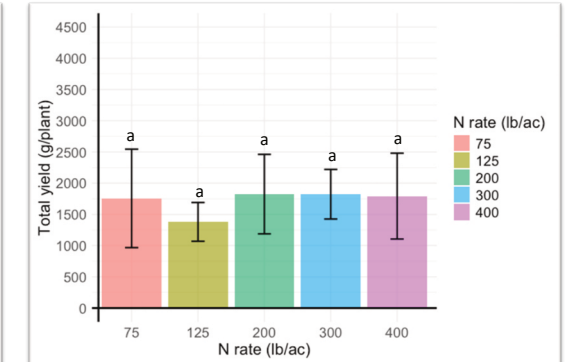
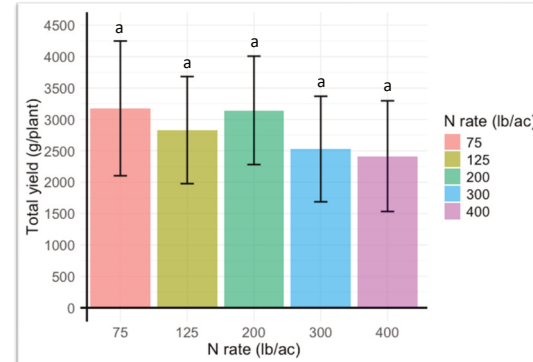
Location: Archer



Yield in 2024

Location: Umatilla

Location: Archer





Additional data collection

Acknowledgments



UF/IFAS Nutrient Management Program



Blueberry Extension Lab



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Thank you!



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