

A person wearing blue denim jeans is holding a white bucket filled with a large quantity of small, round hawthorn berries. The berries are mostly bright red, with some yellowish-green ones still present. The background shows green foliage, suggesting an outdoor setting like a farm or orchard.

Considering Fertilization

How should we be managing mayhaws?

Michael Polozola II, PhD

How much are you taking out of your orchard?



From Harvest ?

How much are you taking out of your orchard?



From Pruning?

Most Common Fertilization Recommendation for Established Mayhaws

- One pound of 5-10-10 slow-release fertilizer per inch of trunk diameter in February and March.
- Repeat this application again in August and September if the trees have not grown vigorously.
- Assuming about 6-inch diameter for an established tree, you would put out 6 pounds of 5-10-10. This would be 0.3 pounds of N per tree.



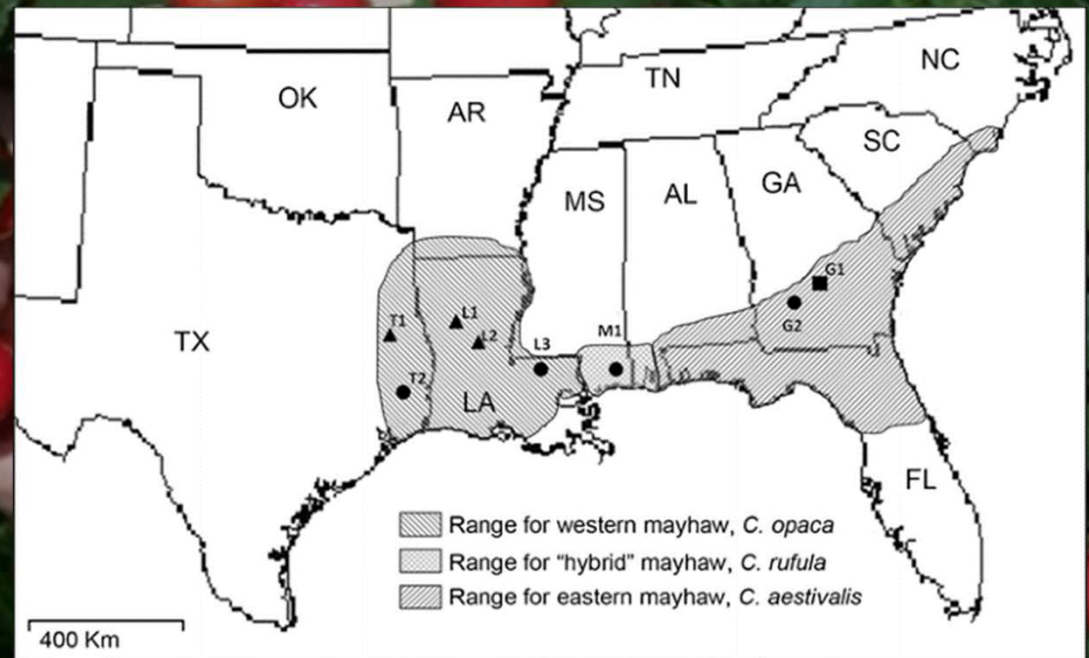
A person wearing blue denim jeans is holding a white bucket filled with a large quantity of small, round berries. The berries are mostly bright red, with a few yellowish-green ones mixed in. The background is a blurred green, suggesting an outdoor setting with foliage.

*Is there anything close to Mayhaw
for us to compare to for Fertilizing?*

Michael Polozola II, PhD

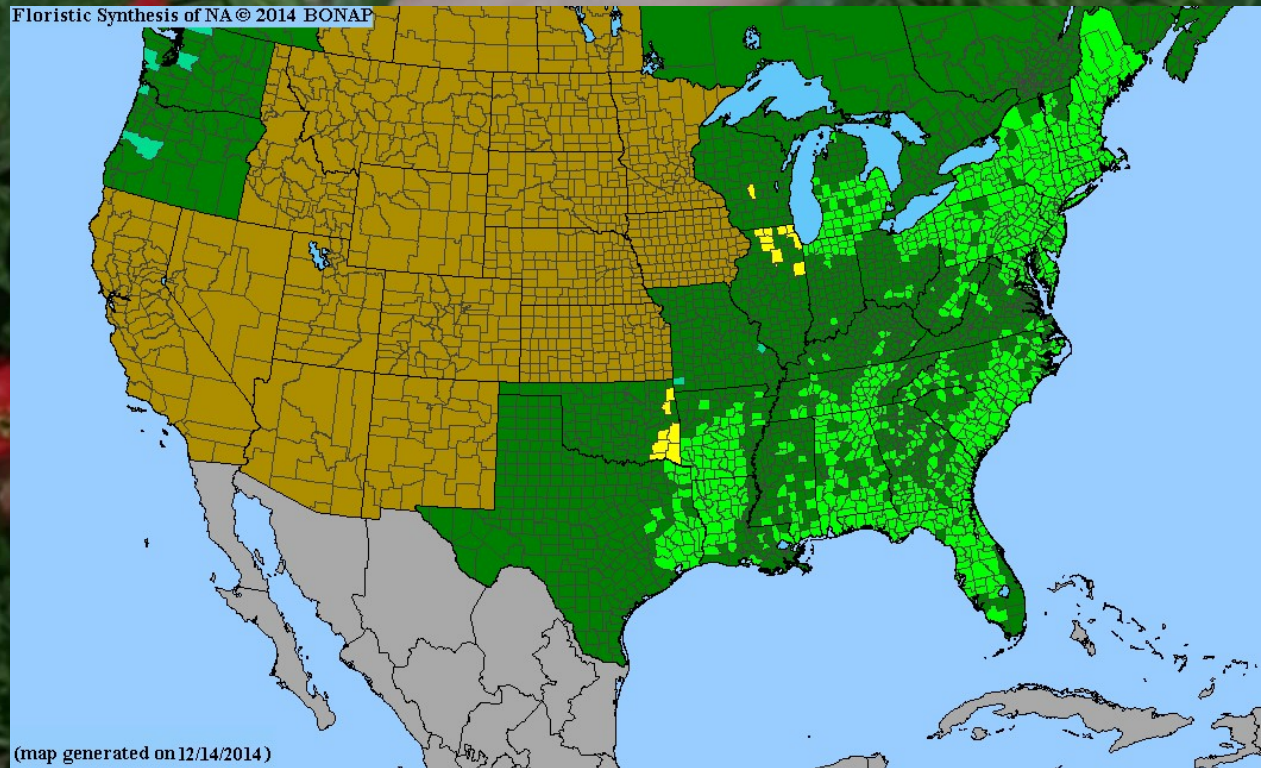
Mayhaw Native Range

- The native range for Mayhaws is the coastal south.
- What else has a similar distribution that is grown commercially?



Vaccinium corymbosum | Highbush Blueberries

- The closest comparison that I could come up with was Highbush Blueberries.
- There is a Northern and Southern subtype. The Southern one includes Mayhaw's native range.



Vaccinium corymbosum | Highbush Blueberries

- Why is it a good comparison?
 - Blueberries follow a very similar flowering and fruiting schedule to Mayhaws.
 - Blueberry fruit are similar in size to Mayhaws.
 - Blueberries can be a bit finicky on their fertilizer preferences too.



Vaccinium corymbosum | Highbush Blueberries

- How is it different?
 - Mature height is only 6 to 12 feet. Mayhaws can get 20 to 30 feet at maturity. This means that mature recommendations may need to be modified to be more applicable.
 - Blueberries are known to be very acid loving, more so than many other plants. Mayhaws may not have the same extreme preference



Highbush Blueberry : Fertilizer Sensitivity

- Blueberry species grow naturally under the canopy of coniferous forests in acidic soils (4.0-5.4 pH), where nutrient availability is very restricted compared to plants growing in soils at 5.5-6.8 pH. Because of this, blueberry plants can be sensitive to overfertilization, and excessive amounts can cause plant injury.
- Higher than recommended rates can cause brown, necrotic margins or pale-yellow chlorosis of leaves and low vigor, especially combined with not enough water.



Mayhaw : Fertilizer Sensitivity

- Mayhaw have been reported to have a similar sensitivity to overfertilization due to the higher incidence of Fireblight after fertilization.
- Part of that is unavoidable, as the more growth you have, the more opportunity you have for Fireblight. It can possibly be reduced with slower release forms of Nitrogen.



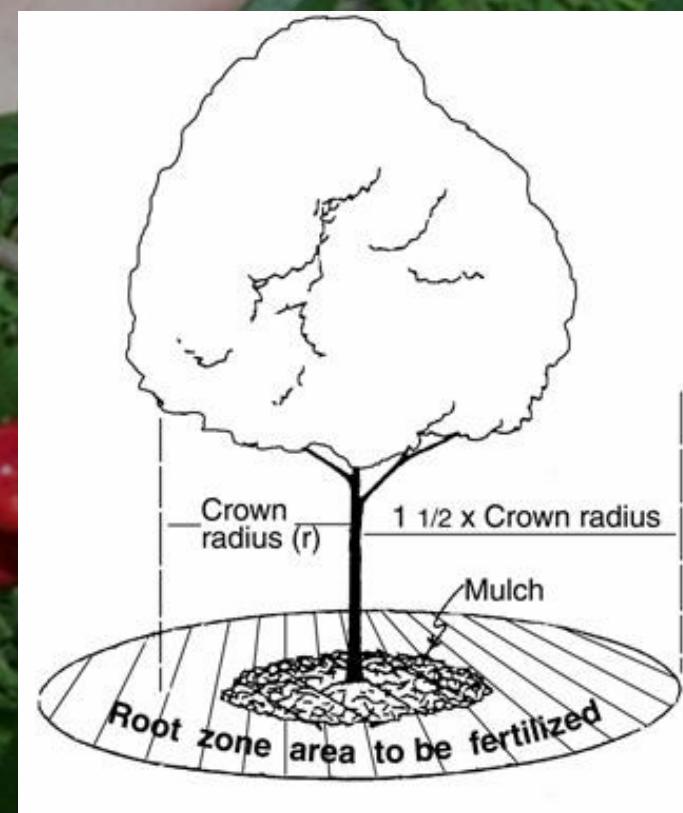
Highbush Blueberries : Fertilization Timing

- Fertilization is recommended for blueberries in the spring when growth begins and again after harvest.



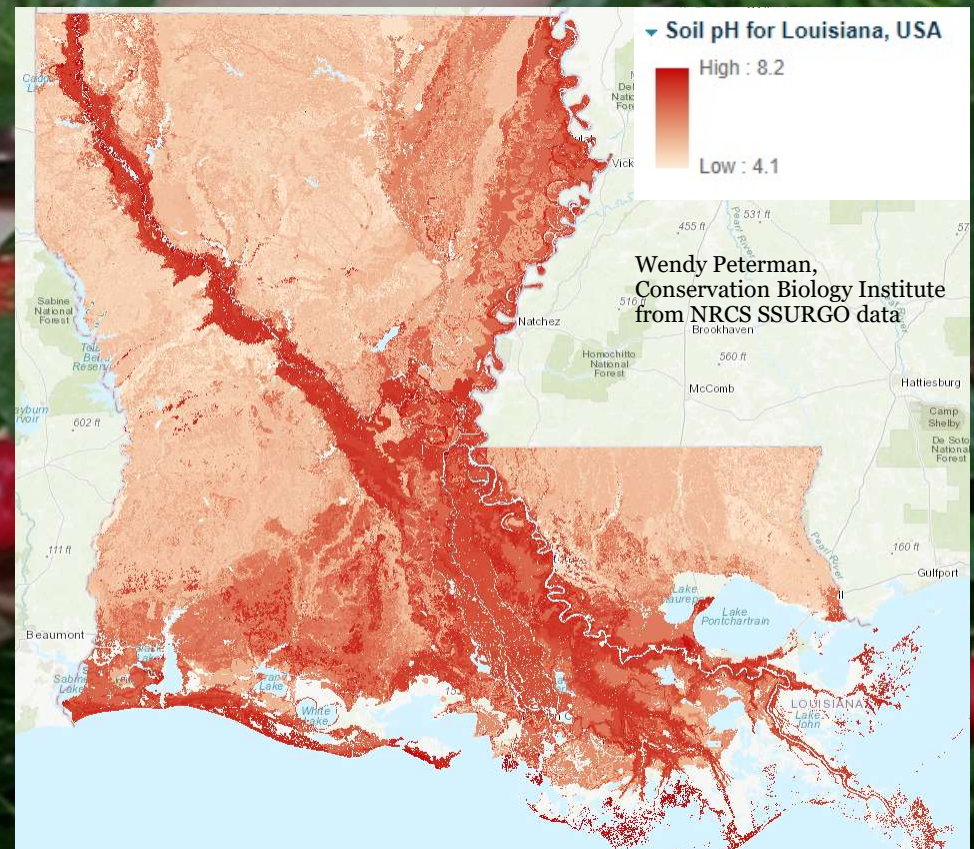
Highbush Blueberries : Fertilization Rate

- Spring Application: 30 pounds of nitrogen per acre as a complete fertilizer (e.g., 214 pounds of 14-8-8 per acre or 300 pounds of 10-10-10 per acre)
- After Harvest Application: 30 pounds of nitrogen per acre after harvest as urea (66 pounds per acre) or ammonium sulfate (142 pounds per acre).
- If growth is excessive (more than 12 to 14 inches of new growth per year reduce the amount of nitrogen to 30 pounds per acre per year.



Considering Soil pH

- Within Louisiana, we have variation in soil. Most of the mayhaw production region falls within the more acidic ranges.
- I would suspect that Mayhaws prefer a slightly acidic range but probably not as extreme as blueberries. (4.0-5.4 pH)



A photograph of a person wearing blue denim jeans, holding a white bucket filled with ripe red raspberries. The person is standing in a field of raspberry bushes with green leaves and some white flowers. The text is overlaid on a dark horizontal band across the middle of the image.

*Let's Take a Closer Look at Some
Blueberry Recommendations*

Michael Polozola II, PhD

Southern Small Fruit Consortium Blueberry Foliar Recommendations

- Foliar tests are useful for determining whether a plant has adequate mineral nutrition.
- Long-term, I would like to recreate this type of data with mayhaws, but I think we can use blueberries as a rough guide until then.

Suggested Critical Nutrient Levels in Highbush and Rabbiteye Blueberry Leaves

ELEMENT	DEFICIENCY BELOW	Standard Range for Highbush and (Rabbiteye)		EXCESS ABOVE
		Minimum	Maximum	
Nitrogen (N)	1.70%	1.80 (1.20)	2.10 (1.70)	2.50
Phosphorus (P)	0.10	0.12 (0.08)	0.40 (0.17)	0.80
Potassium (K)	0.30	0.35 (0.28)	0.65 (0.60)	0.95
Calcium (Ca)	0.12	0.40 (0.24)	0.80 (0.70)	1.00
Magnesium (Mg)	0.08	0.12 (0.14)	0.25 (0.20)	0.45
Sulfur (S)	0.10	0.12 (NA)	0.20 (NA)	NA
Manganese (Mn)	23 ppm	50 (25)	350 (100)	450
Iron (Fe)	60	60 (25)	200 (70)	400
Zinc (Zn)	8	8 (10)	30 (25)	80
Copper (Cu)	5	5 (2)	20 (10)	100
Boron (B)	20	30 (12)	70 (35)	200

Mississippi State Fertilizer Recommendations for Blueberries

- The calculations for mature trees (6th year and older) are based on putting out 30 pounds of N per acre.
- These recommendations are based on 5 by 12 spacing or 726 plants per acre!

Table 1. Blueberry fertilization with 10-10-10, 14-8-8, ammonium sulfate, or urea.

Age of plant in field	Amount of fertilizer per plant per application*			
	10-10-10 (spring)	14-8-8 (spring)	Ammonium sulfate (summer)	Urea (summer)
2nd year or 2 feet tall	2.0 oz	1.7 oz	1.2 oz	.56 oz
3rd year or 3 feet tall	3.0 oz	2.6 oz	1.8 oz	.85 oz
4th year or 4 feet tall	4.0 oz	3.4 oz	2.3 oz	1.1 oz
5th year or 5 feet tall	5.5 oz	4.3 oz	2.9 oz	1.5 oz
6th year and older	7.0 oz	5.7 oz	3.9 oz	2.0 oz

*Evenly placed in a circle 18 inches in diameter centered on the plant.

Mississippi State Fertilizer Recommendations for Blueberries

- Most of you should consider urea instead of ammonium sulfate unless you have a high pH you are trying to bring down.
- Also base your applications on soil tests, if you are high on P and K, use urea for the Spring application.

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*Evenly placed in a circle 18 inches in diameter centered on the plant.

30 pounds of N for Mayhaws Based on 20 by 20 Tree Spacing using 13-13-13

- 20 X 20 spacing is 108 trees per acre
- 30/108 is 0.278 pounds of N per tree
- 13-13-13 is 13% N per pound
- $0.278 / 0.13$ is ~ 2.13 . You would need to put 2.13 pounds of 13-13-13 to put 0.278 pounds of N per tree.
 - Less than the 0.3 pounds of N per tree, calculated based on the Mayhaw recommendation (That is with one application, and this might only be half of what you put out)

PLANTING GUIDE	
Planting Distance in Feet	Number Tree Per Acre
20x20	108
20x25	90
20x30	72
25x25	70
20x40	54
30x30	48
30x35	41
30x40	36
35x35	35
40x40	27
40x50	22
40x60	18
50x50	17
50x60	15

30 pounds of N for Mayhaws Based on 30 by 30 Tree Spacing using 13-13-13

- 30 X 30 spacing is 48 trees per acre
- 30/48 is 0.625 pounds of N per tree
- 13-13-13 is 13% N per pound
- $0.625/0.13$ is ~ 4.8 . You would need to put 4.8 pounds of 13-13-13 to put 0.625 pounds of N per tree.
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30 pounds of N for Mayhaws Based on 20 by 20 Tree Spacing using 46-0-0

- 20 X 20 spacing is 108 trees per acre
- 30/108 is 0.278 pounds of N per tree
- 46-0-0 is 46% N per pound
- 0.278/0.46 is ~0.60. You would need to put 0.6 pounds of 46-0-0 to put 0.278 pounds of N per tree.
 - Less than the 0.3 pounds of N per tree, calculated based on the Mayhaw recommendation (That is with one application, and this might only be half of what you put out)

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30 pounds of N for Mayhaws Based on 20 by 20 Tree Spacing using 46-0-0

- 30 X 30 spacing is 48 trees per acre
- 30/48 is 0.625 pounds of N per tree
- 46-0-0 is 46% N per pound
- 0.625/0.46 is ~1.36. You would need to put 1.36 pounds of 46-0-0 to put 0.625 pounds of N per tree.
 - More than the 0.3 pounds of N per tree, calculated based on the Mayhaw recommendation (That is with one application, and this might only be half of what you put out)

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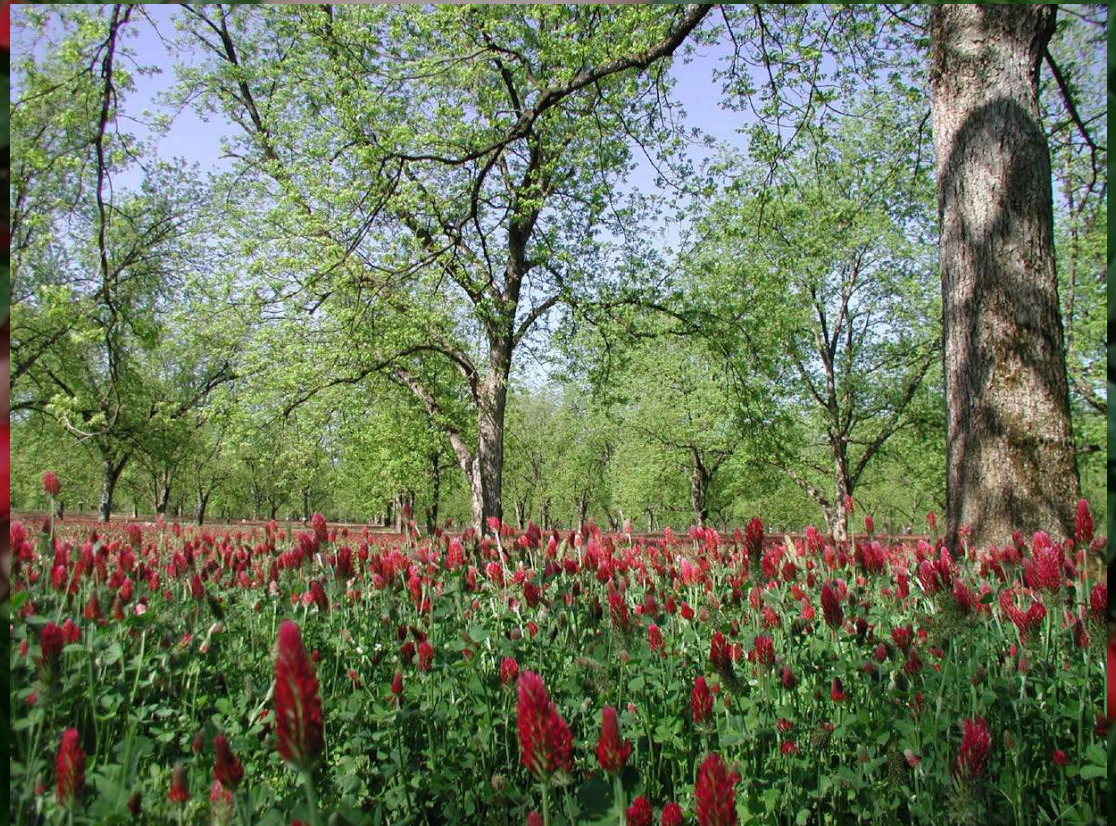
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*Evenly placed in a circle 18 inches in diameter centered on the plant.

What else can I do?

- Choosing the right cover crop can add organic matter and N to your system.
- N added through organic matter is going to be slow release so it should reduce Fireblight.



Other Fertilizers?

- We may want to consider slow-release fertilizers for Mayhaws.
- They cost more, but the staggered release may reduce Fireblight in new growth.





Questions

Considering Fertilization

Michael Polozola II, PhD