

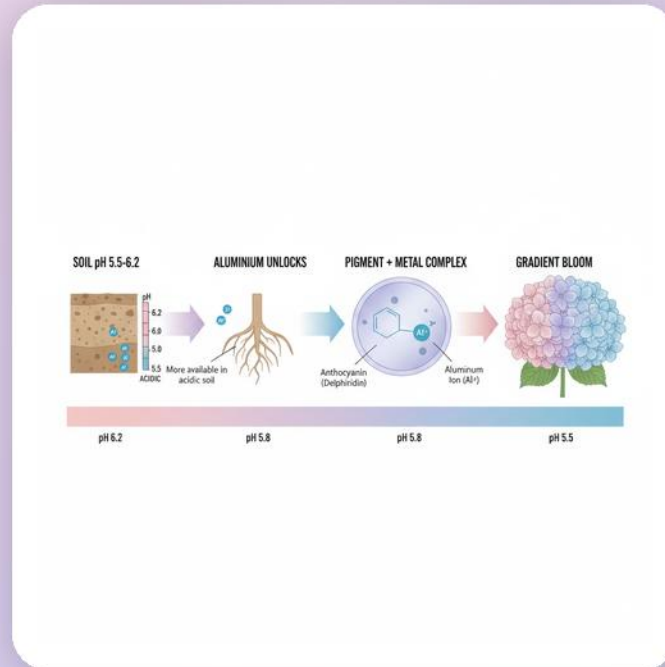
The Cotton Candy Hydrangea

Growing a natural pink-to-blue
gradient in a single shrub

A GARDEN CLUB TALK · THE CHEMISTRY OF COLOR



The Big Picture in One View



Soil pH sets the stage, aluminum dissolves and enters the plant, it locks onto the flower pigment to form a blue complex — where aluminum reaches you get blue, where it doesn't, pink.

The Dream

One flower head. Many hues.
Blending naturally — no florist
sprays, no dyes.

Just a plant reading its soil.



Meet the Star: Bigleaf Hydrangea

- Species: *Hydrangea macrophylla*, the bigleaf hydrangea
- Mopheads — round, full pom-poms
- Lacecaps — flat, lacy rings of florets
- These are the color-changers that respond to soil



The Secret: Chemistry, Not Dye



BLUE

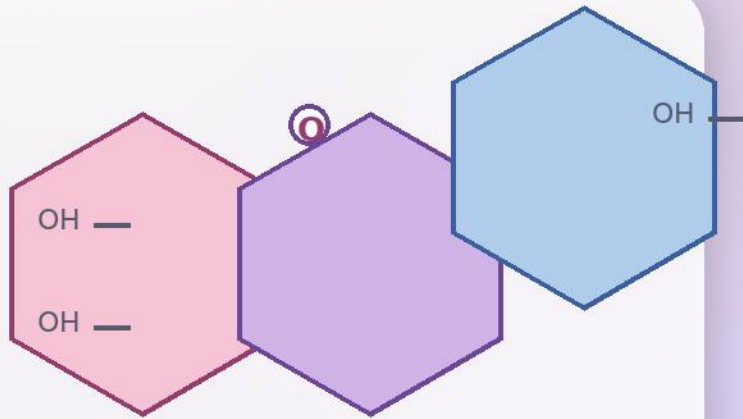
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PINK

- The same pigment makes both the pink flower and the blue flower.
- Color depends on the soil — not the plant's genetics for color.
- This was worked out as far back as the 1940s.

One Pigment, Every Color



anthocyanin
(delphinidin-3-glucoside)

- Every red, purple, and blue sepal starts from one pigment.
- That pigment is an anthocyanin called delphinidin-3-glucoside.
- On its own it looks reddish-pink.
- “Co-pigments” — helper molecules — fine-tune the final shade.

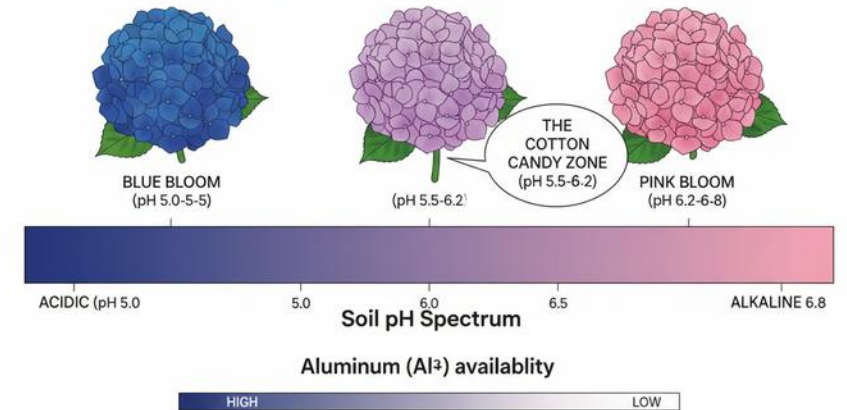
Aluminum: The Blue-Making Ingredient



- Aluminum ions travel from acidic soil into the flower.
- They bind the pigment and a co-pigment into a blue complex — roughly a 1:1:1 team.
- No aluminum in the flower, and it simply stays pink.

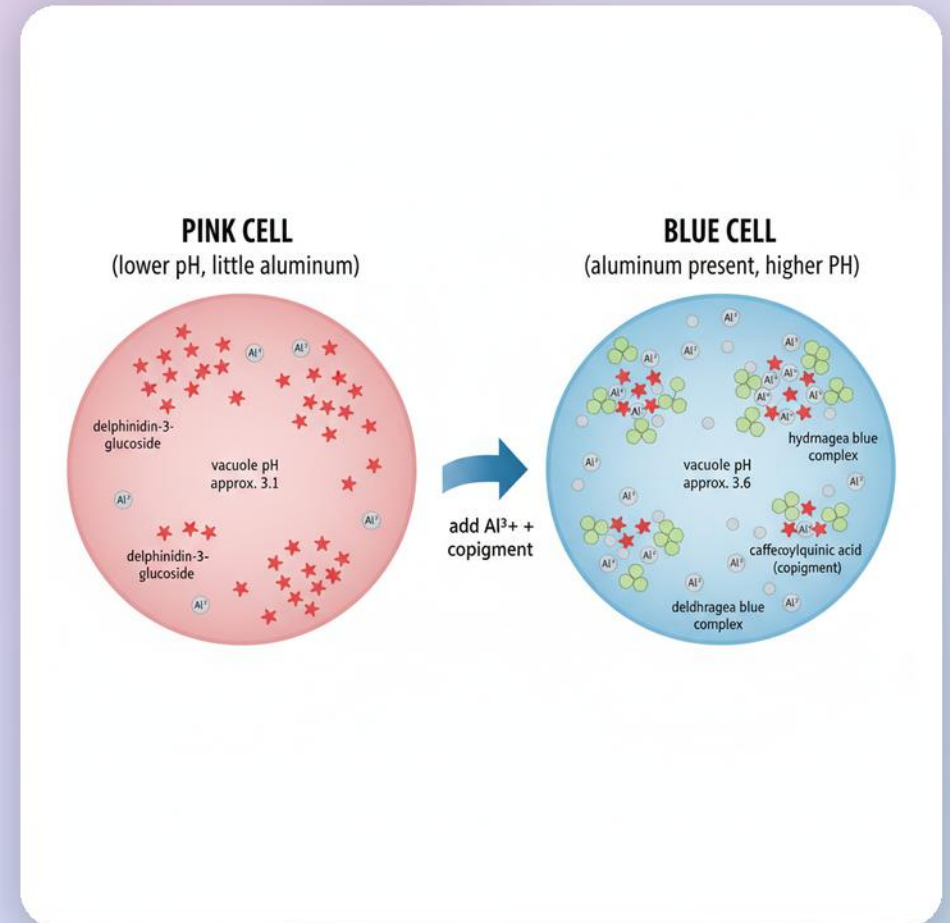
Soil pH is the Master Dial

- Aluminum only dissolves in acidic soil.
- Acidic (pH ~5.0-5.5) → blue.
- Neutral (pH 6.0+) → pink.
- In between → purples and gradients.
- pH is the dial you actually turn.

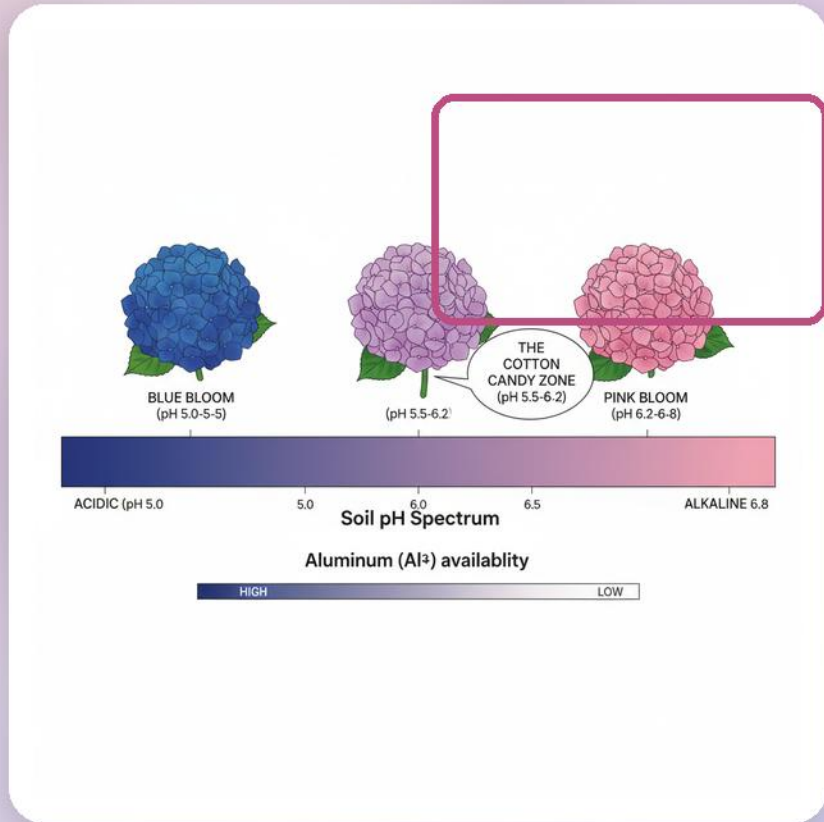


A Peek Inside a Petal Cell

- Blue cells are packed with more aluminum and co-pigment.
- Pink cells hold very little aluminum.
- Neighboring cells can differ — so one sepal can look like a watercolor mosaic.

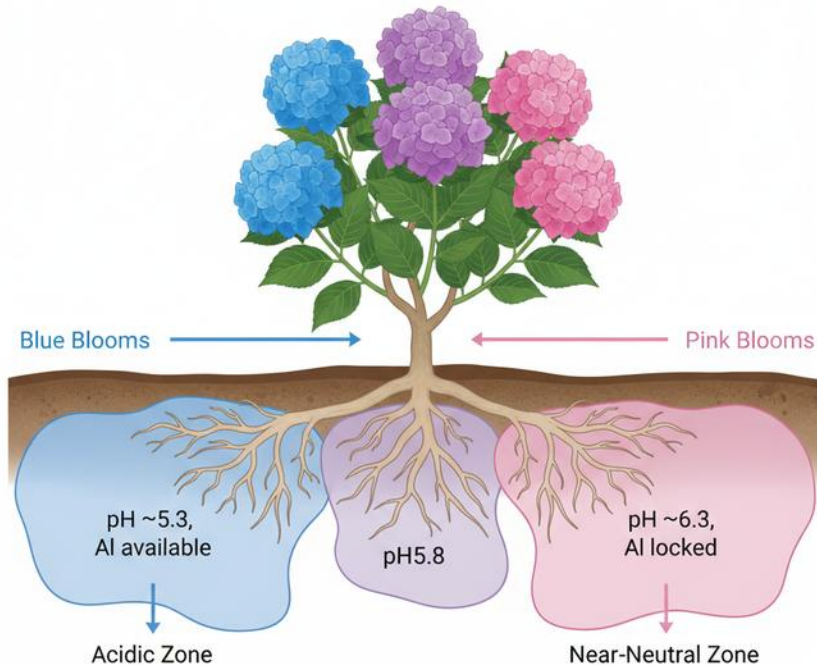


The Cotton Candy Zone: pH 5.5-6.2



- Don't aim for solid blue or solid pink.
- Target the in-between zone: about pH 5.5 to 6.2.
- There, aluminum is only partly available.
- Some florets go blue while others stay pink — the dreamy gradient.

Uneven Soil Makes Two-Tone Blooms



- Roots explore different pockets of soil.
- One side a touch more acidic, another slightly more neutral.
- The same shrub feeds blue blooms on one side, pink on the other.
- You can encourage this on purpose.

Patience: The Soil Fights Back

- Soil resists change — that's its “buffering capacity.”
- Sandy soils shift quickly with a little amendment.
- Heavy clay soils shift slowly and need more.
- Expect to work over a full growing season, not a weekend.



Buffering capacity = the soil's resistance to pH change

Your Color Toolkit

TO GO BLUER

- Aluminum sulfate drench (about 1 tablespoon per gallon of water)
- Elemental or wettable sulfur
- Acidic mulch such as pine needles

TO GO PINKER

- Dolomitic or garden lime
- Avoid adding aluminum
- A higher-phosphorus feed (phosphorus ties up aluminum)

Always soil-test first.

Recipe for the Gradient

- 1 Soil-test around the shrub.
- 2 Target pH 5.5–6.2.
- 3 Acidify ONE side with sulfur or aluminum sulfate.
- 4 Leave, or lightly lime, the other side for pink.
- 5 Water in, wait, and re-test each spring.

Small, repeated doses beat one big dump.

A Year of Cotton Candy Care



Amend in spring and fall, enjoy the show in summer, and let the plant rest in winter while protecting flower buds. Re-test and nudge each year.

Know Your Cultivar

MOPHEADS

The boldest color shifts
— big round heads that
swing blue to pink.

LACECAPS

Subtler and elegant —
flat lacy rings with gentle
color.

REBLOOMERS

e.g. Endless Summer®
— flower spring through
fall, still pH-driven.

One caveat: white hydrangeas stay white — pH won't change them.

Grow It Safely



Don't overdose aluminum — it can injure roots.



Keep solutions off the leaves.



Avoid sudden, big pH swings.



Watch out for nearby plants that dislike acidic soil.

Key Takeaways

- ✓ Color = pigment + aluminum + pH.
- ✓ The gradient lives in the pH 5.5–6.2 zone.
- ✓ Uneven soil + partial aluminum = cotton candy.
- ✓ Test, adjust gently, and be patient.

Happy gardening!

Sources & Further Reading

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