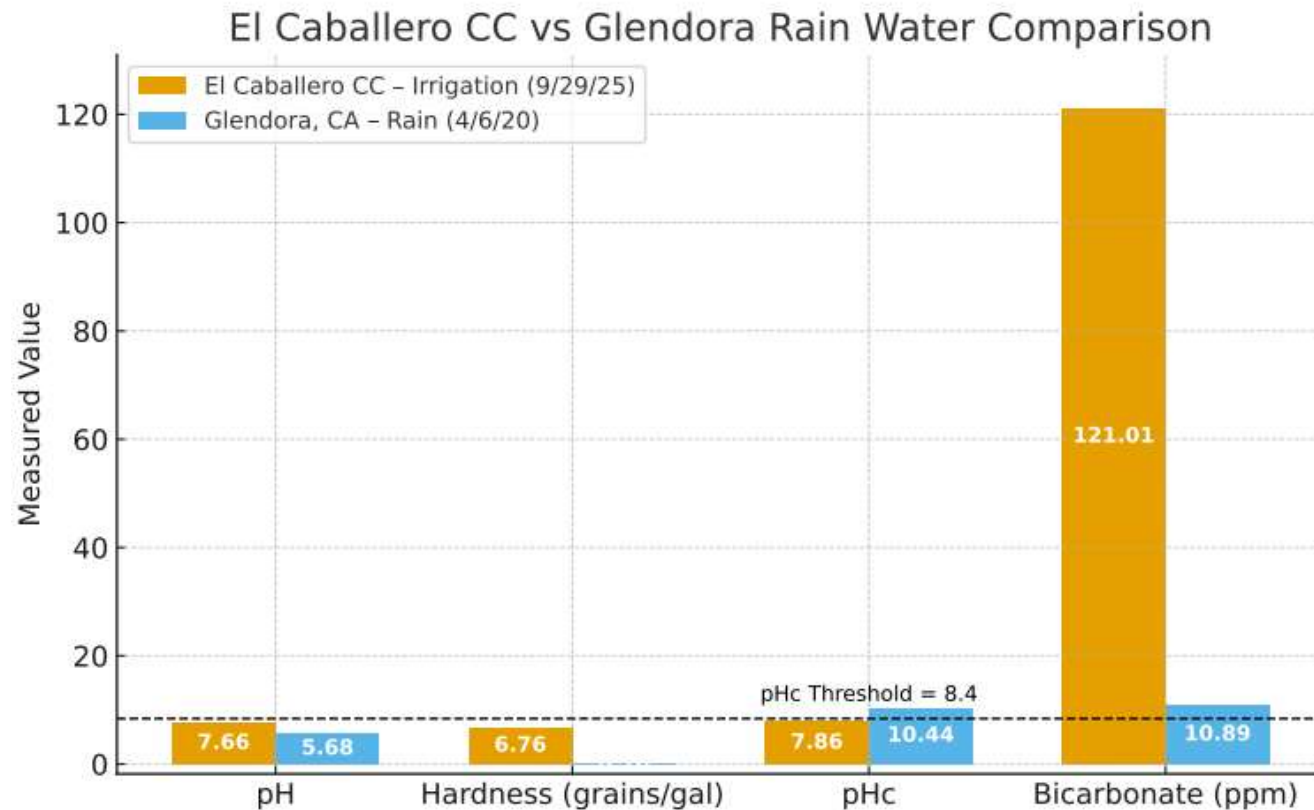




IRRIGATION WATER



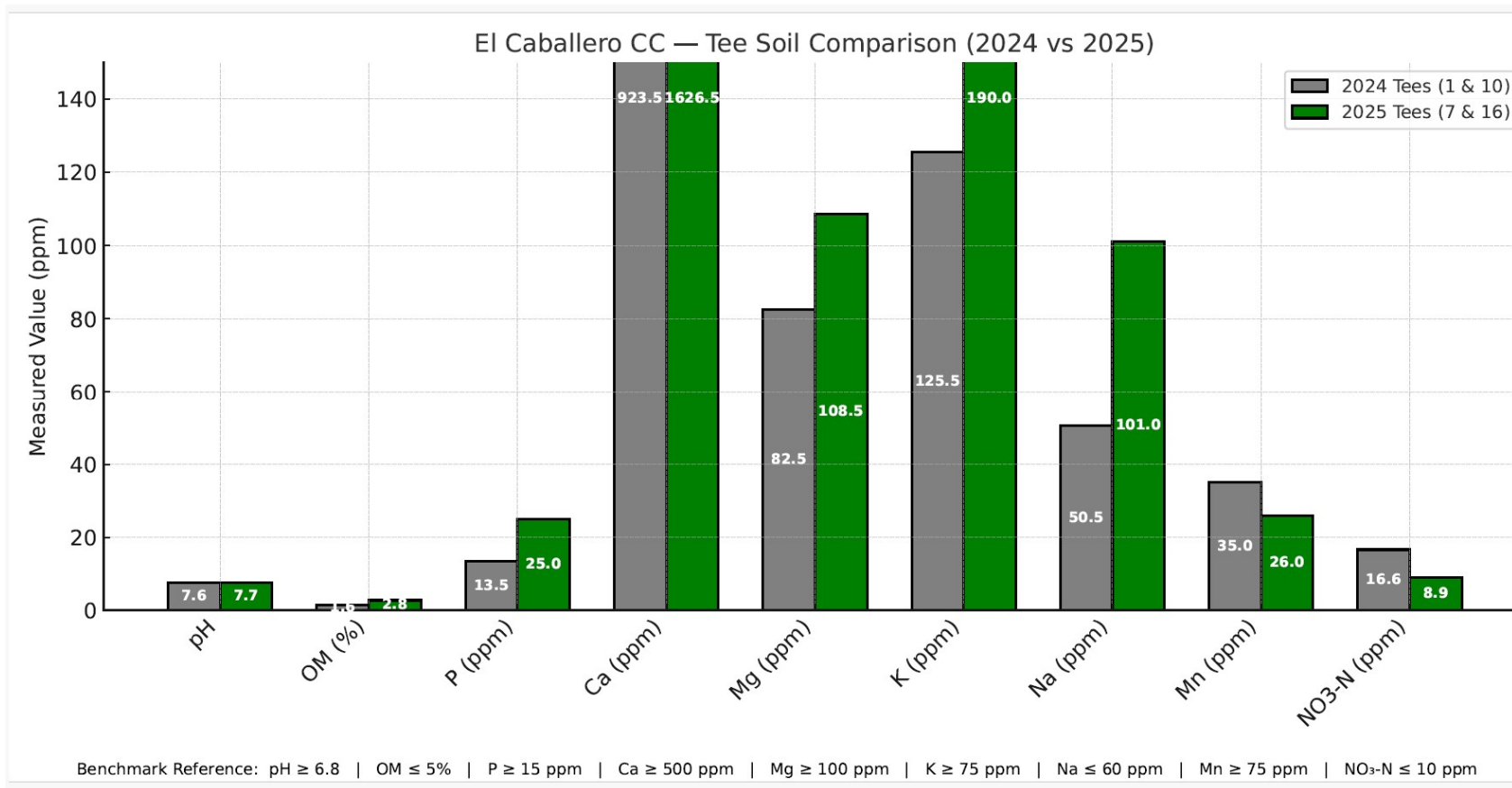
- The best irrigation water any golf course can receive is rain. I have never thought there was a perfect irrigation water and therefore setting acceptable ranges is not quite accurate enough. As this sample is average for your water source, I have compared your water sample to rain from 2020 in Glendora.



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TEES



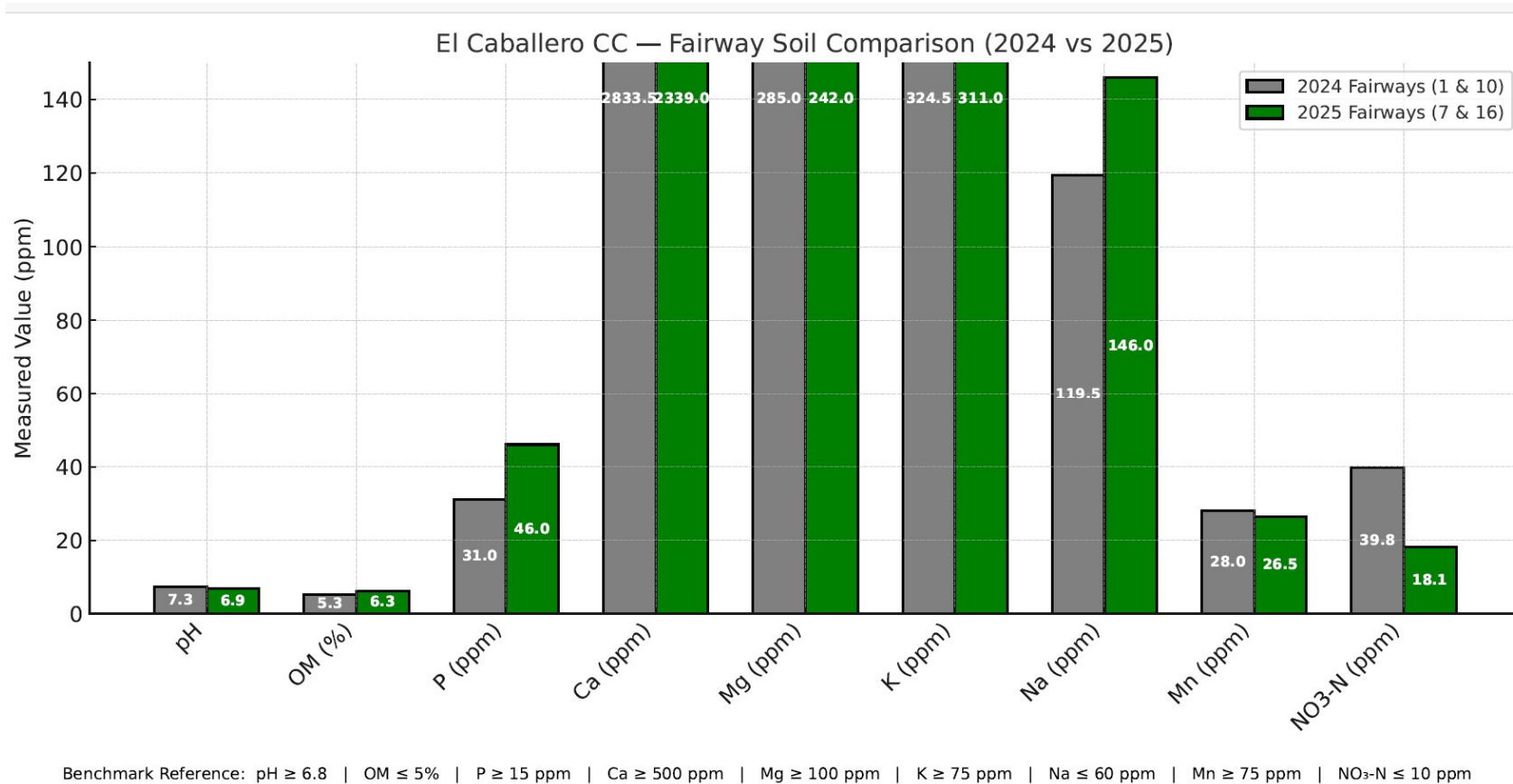
- Sodium levels should be half of the potassium levels, as a rule of thumb. Sodium levels can increase due to compaction as well. Winter rains will “clean up” the problem but keep an eye on the rising Na.



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FAIRWAYS



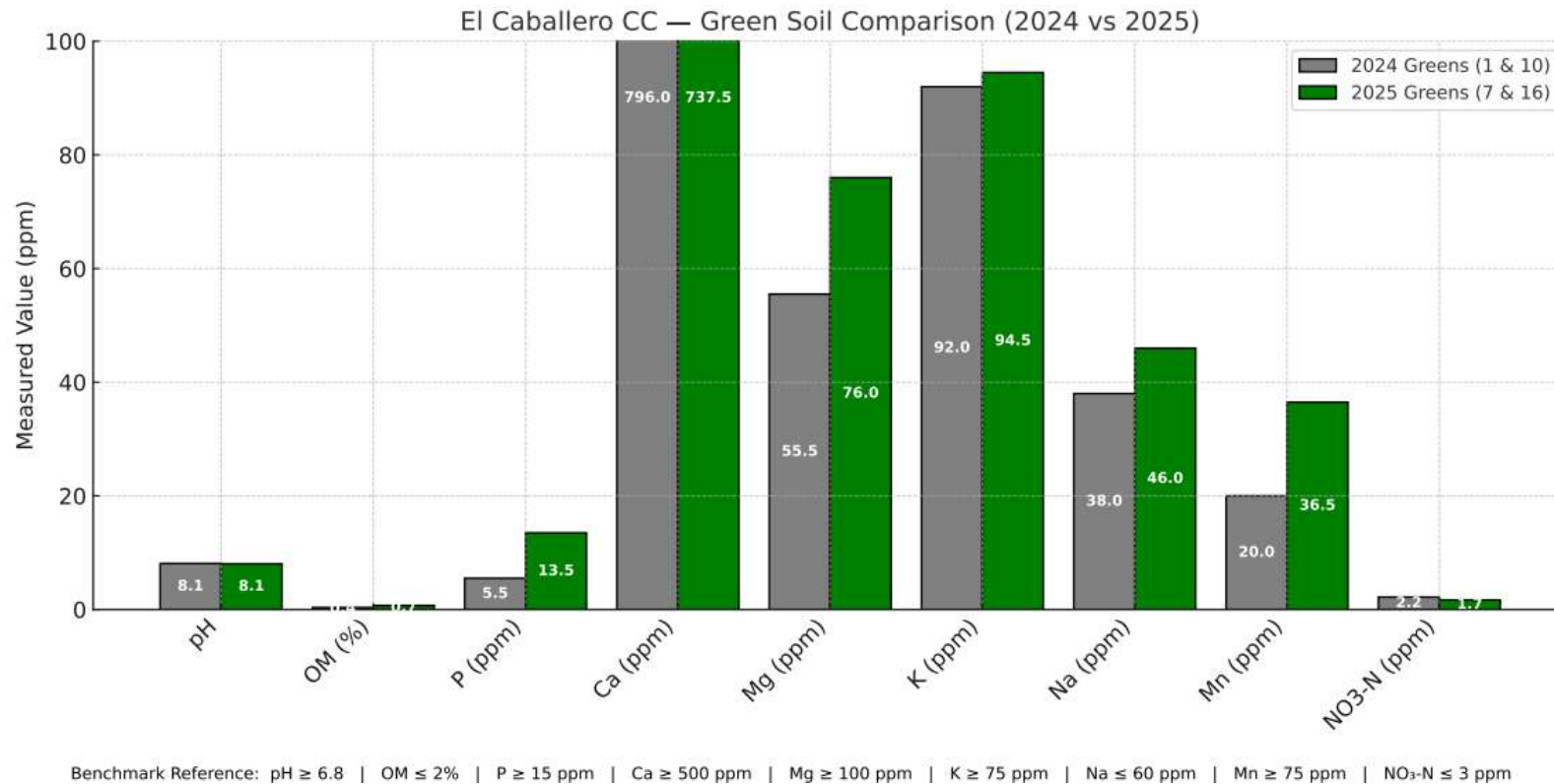
- The Fairways soils have always been fertile and at a reasonable pH. More core aerification will help with the *Bermudagrass Decline* concerns.



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GREENS



- The greens need a slightly higher level of magnesium and manganese. Products such as Epsom Salts and Manganese Sulfate can be tank-mixed and watered in. Granular products like Pro-Mag 36 and Manganese Sulfate will remedy the soil deficiencies faster.



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SUMMARY

El Caballero CC — Fall 2025 Turf Health Summary

Testing across tees, fairways, and greens at El Caballero CC in 2025 indicates steady nutrient alignment under slightly alkaline, calcium-rich conditions. Soil pH and base saturation continue to stabilize following the renovation years, with strong K–Mg balance and good root zone uniformity heading into fall.

Tees:

- 1 pH stable below 8.0, consistent with improved root environment.
- 2 Calcium (1,400–1,800 ppm) provides solid cation exchange and moisture regulation.
- 3 Potassium (~190 ppm) and Magnesium (~110 ppm) balanced for traffic recovery and color retention.
- 4 Structure and canopy density improved under steady irrigation control.
- 5 Action Focus: Maintain light acid feed and consistent K–Mg support through fall.

Fairways:

- 1 pH averages 6.8–7.1, slightly improved toward neutral since 2024.
- 2 Calcium (~2,400 ppm) declined modestly, maintaining balanced base saturation.
- 3 Potassium remained strong, supporting vigor through late-summer heat.
- 4 Manganese (25–30 ppm) below target but not restrictive.
- 5 Action Focus: Continue gypsum and Mn inputs to improve cation ratio and visual uniformity.

Greens:

- 1 pH remains near 8.0, limiting P and Mn uptake under high-calcium influence.
- 2 Ca and Mg show gradual reduction, indicating effective leaching and flushing.
- 3 K and Mn sufficient for bentgrass performance under summer pressure.
- 4 Action Focus: Light acidification or organic topdressing to deepen roots and enhance micronutrient efficiency.

Overall Summary:

El Caballero's 2025 profile shows steady progress in nutrient stability and surface consistency. Light acidification, Mn reinforcement, and balanced K–Mg inputs will sustain turf density, color, and performance through the post-LPGA recovery window.

Bermudagrass Decline — Causes & Management (2025 Research Summary)

Overview:

- 1 Bermudagrass decline is a multi-factor stress syndrome — not a single pathogen — marked by thinning, root loss, and poor density.
- 2 Research from Auburn, Tennessee, Texas A&M, and Arizona identifies decline as an overlap of soil, water, and biological imbalances.
- 3 It develops slowly, often beginning below ground with root dysfunction before visible dieback occurs.

Primary Drivers:

- 1 Root-zone oxygen decline — compaction and anaerobic layers reduce air porosity below 10%, triggering sulfide toxicity.
- 2 Microbial imbalance — excessive fungicide use and poor biological diversity weaken root-zone defense systems.
- 3 Nematodes — sting and root-knot species common in sand profiles; threshold >10 sting nematodes/100 cc soil increases risk.
- 4 Heat stress — prolonged nighttime temps >80°F deplete root carbohydrates and reduce regrowth capacity.

Soil & Water Influence:

- 1 High pH or bicarbonate water (>120 ppm HCO₃⁻) ties up Fe, Mn, and P; chronic alkalinity drives nutrient lockout.
- 2 High sodium adsorption ratio (SAR >6) reduces infiltration, creating sealed soil surfaces and black layer.
- 3 Excessive phosphorus in high-pH sands suppresses micronutrient uptake and amplifies visual decline.
- 4 Irrigation EC above 3.0 dS/m begins measurable root suppression under warm-season turf conditions.

Nutritional & Biological Balance:

- 1 Low potassium and magnesium reduce drought and traffic tolerance.
- 2 Maintain Ca:Mg near 5–6:1 and K base saturation 2–3% minimum for optimal cation stability.
- 3 Reintroducing carbon-based amendments or microbial inoculants post-fungicide helps rebuild rhizosphere strength.

Core Management Focus:

- 1 Aerify and vent to maintain >10% air porosity in rootzone.
- 2 Acidify irrigation or apply sulfur to keep soil pH below 7.2 and SAR <6.
- 3 Feed Mn and K consistently — avoid N-heavy growth surges.
- 4 Include biological recovery (carbon, compost, inoculants) after major fungicide programs.
- 5 Test nematode populations annually and adjust control thresholds regionally.



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