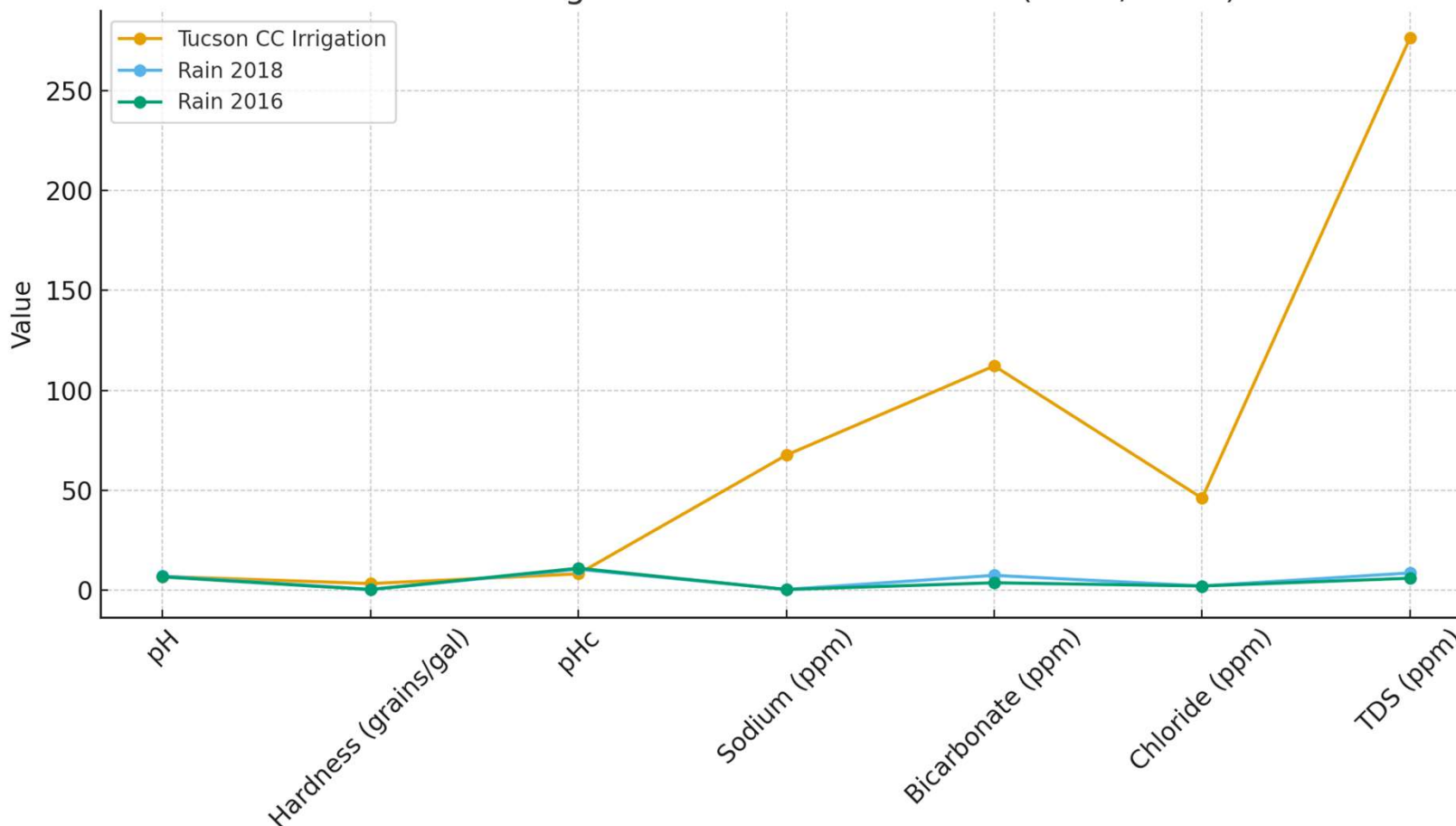




IRRIGATION WATER

Tucson CC Irrigation Water vs Rainwater (2016, 2018)



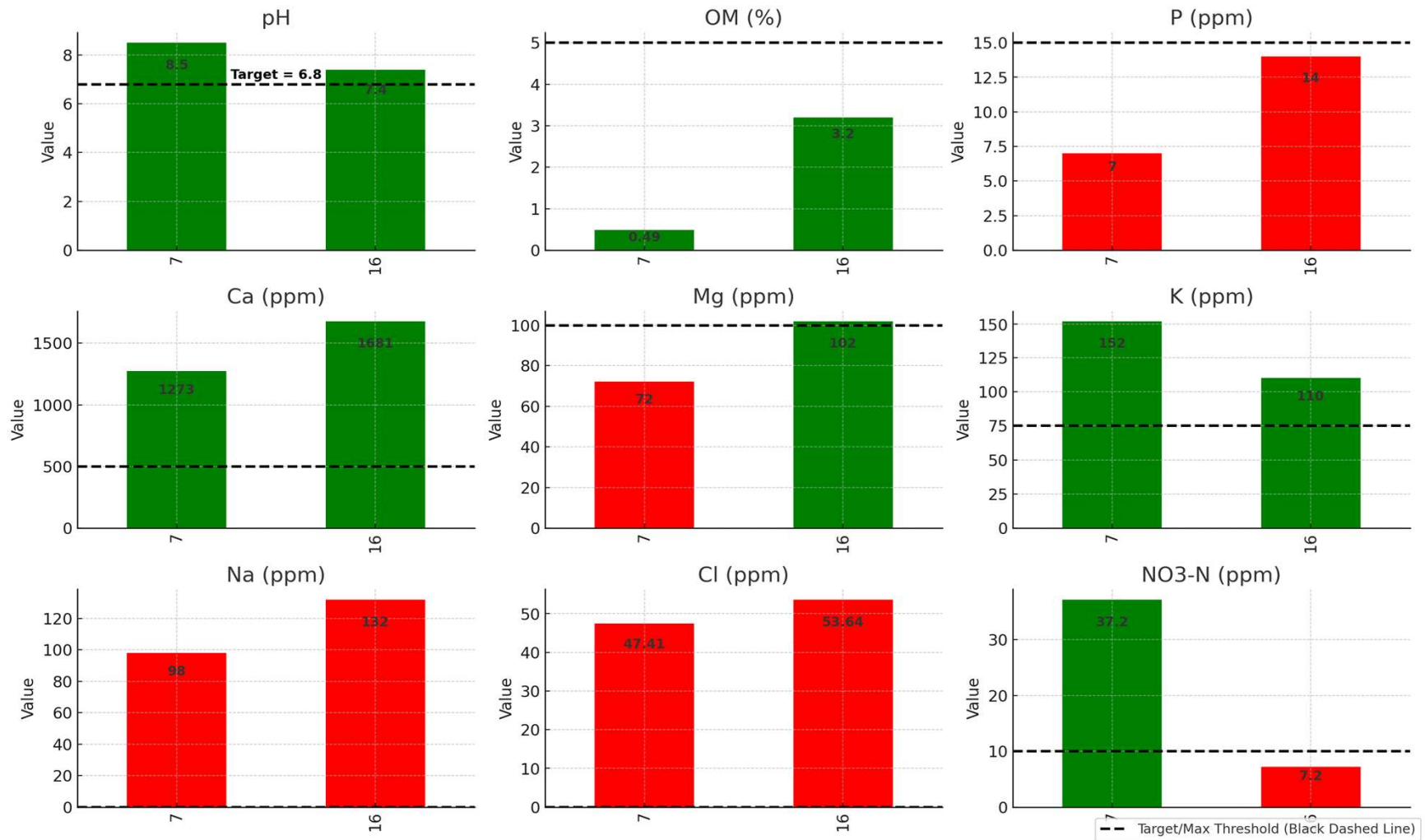
- The best irrigation water any golf course can receive is rain. I have never thought there was a perfect irrigation water and therefore setting acceptable ranges is not quite accurate enough. As this sample is average for your water source, I have compared your water sample to rain from 2016 and 2018.





TEES

Tucson CC Tee Soil Test vs Acceptable Ranges (Excessive Na/Cl in Red)



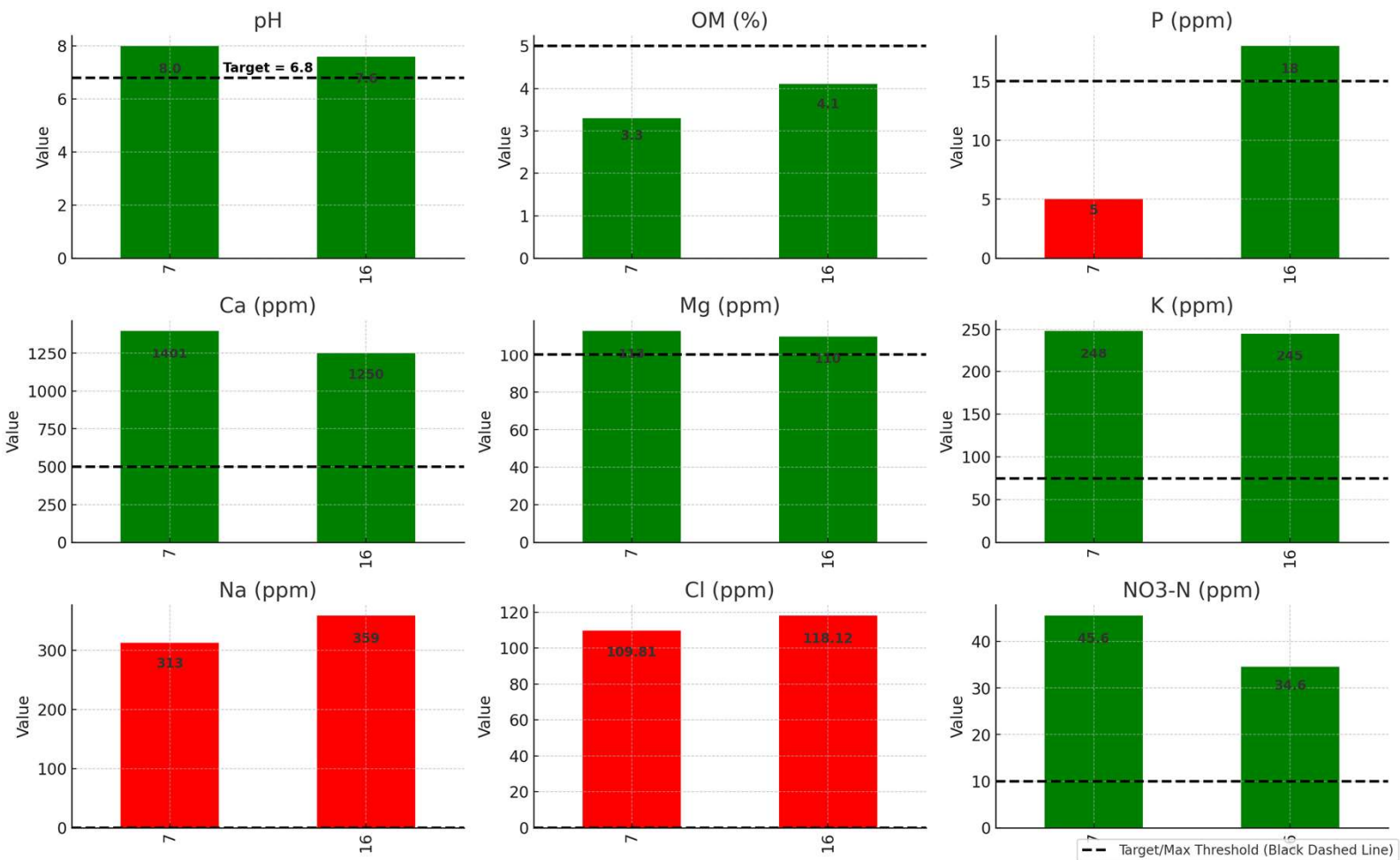
- These two tees are a little different. On #7 I sampled a sand-based tee and #16 would be an older tee.





FAIRWAYS

Tucson CC Fairway Soil Test vs Acceptable Ranges (Excessive Na/Cl in Red)



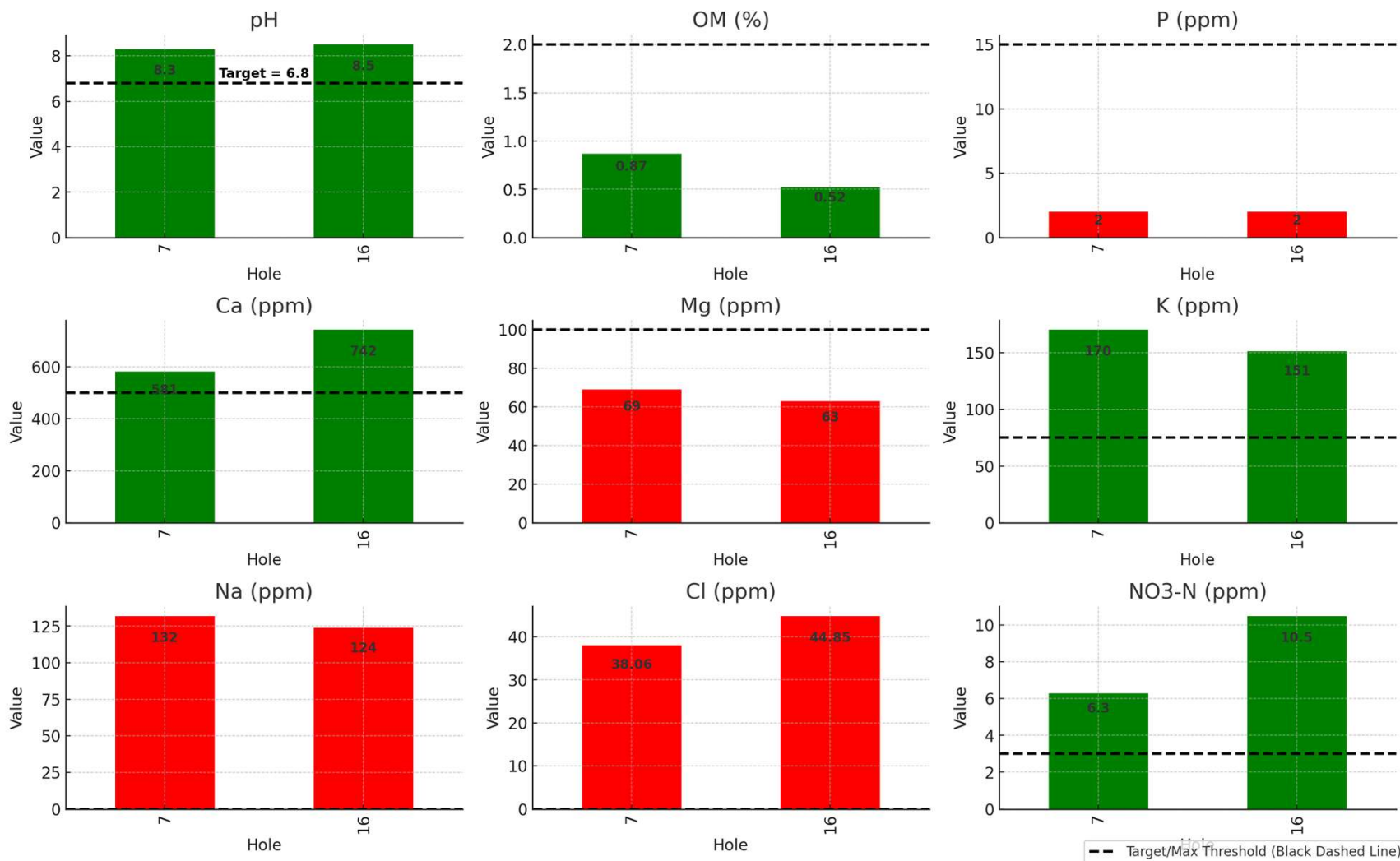
- These test results compared to the same fairways in 2022, show much higher sodium levels. I believe that is because you have had to ration water and not been able to “flush” sodium deeper. Of course this leads to quicker dehydration of the plant. After over-seeding is completed, I recommend a 0-0-50 application to all the fairways.





GREENS

Tucson CC Green Soil Test vs Acceptable Ranges (Excessive Na/Cl in Red)



- The soils were slightly high in Nitrate Nitrogen, but the tissue samples were in a good range. Focus amendments on Phosphorus and Magnesium.



SUMMARY- Fall 2025 Visit

Tees (Holes 7 & 16)

- 1 pH 7.4–8.5: alkaline, limiting nutrient uptake.
- 2 Organic Matter 0.5–3.2%: well under 5% max, good condition.
- 3 Phosphorus 7–14 ppm: marginal to deficient.
- 4 Calcium 1273–1681 ppm: abundant.
- 5 Magnesium 72–102 ppm: slightly low to adequate.
- 6 Potassium 110–152 ppm: solid.
- 7 Sodium 98–132 ppm: high.
- 8 NO₃-N 7–37 ppm: variable, mostly adequate.
- 9 Chloride 47–54 ppm: excessive.

Fairways (Holes 7 & 16)

- 1 pH 7.6–8.0: alkaline, tying up phosphorus and micronutrients.
- 2 Organic Matter 3.3–4.1%: within 5% max, healthy for fairways.
- 3 Phosphorus: one deficient (5 ppm), one adequate (18 ppm).
- 4 Calcium 1250–1400 ppm: abundant.
- 5 Magnesium 110–113 ppm: right at target.
- 6 Potassium 245–248 ppm: excellent.
- 7 Sodium 313–359 ppm: very high.
- 8 NO₃-N 34–46 ppm: plentiful nitrogen.
- 9 Chloride 110–118 ppm: excessive.

Greens (Holes 7 & 16)

- 1 pH 8.3–8.5: very alkaline, strong nutrient tie-up.
- 2 Organic Matter 0.5–0.9%: excellent, firm and well-managed.
- 3 Phosphorus <2 ppm: extremely deficient.
- 4 Calcium 581–742 ppm: adequate but on the low end.
- 5 Magnesium 63–69 ppm: well below target.
- 6 Potassium 151–170 ppm: strong.
- 7 Sodium 124–132 ppm: high.
- 8 NO₃-N 6–11 ppm: borderline to adequate.
- 9 Chloride 38–45 ppm: excessive.

Excessive Sodium in Soils and Turfgrass

1. What Sodium Does in Soil

- 1 Displaces calcium and magnesium on soil particles, ruining soil structure.
- 2 Causes clay dispersion → surface sealing, poor infiltration, weak drainage.
- 3 Leads to compaction-like conditions without traffic.

2. How Sodium Dehydrates Grass

- 1 Raises osmotic pressure in the soil solution, making it harder for roots to absorb water.
- 2 Even with moisture present, turf suffers *physiological drought*.
- 3 Symptoms: wilting, leaf burn, poor recovery under stress.

3. Turf Consequences

- 1 Root decline from poor water uptake.
- 2 Soil sealing → less infiltration, more standing water and anaerobic zones.
- 3 Thinner, weaker turf stands under summer stress.





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