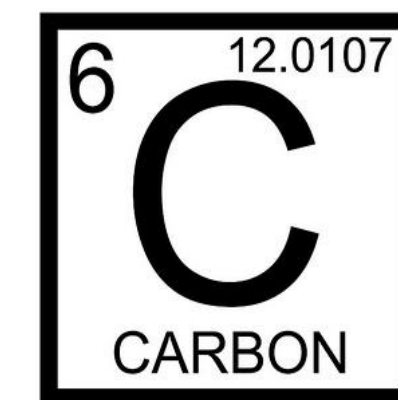


Background



Why does this happen and what does it have to do with C-sequestration?



- Wood varies in its strength
- Trees have different life history strategies (e.g. rapid growth versus production of strong wood)
- Specific gravity measures the density of structural tissues a tree allocates to anchorage, support, and strength
- Wood specific gravity indicates tree life history strategy¹

High Specific Gravity = Strong Wood
Low Specific Gravity = Soft Wood

- There is a general relationship between specific gravity and carbon sequestration²

High Specific Gravity = High Carbon Sequestration
Low Specific Gravity = Low Carbon Sequestration

Questions

- Does supplemental landscape irrigation result in a switch in the life history strategy of native desert trees by diverting energy from the production of strong, dense, wood to rapid growth?
- Are changes in life history strategies of desert trees induced by supplemental irrigation taxon specific?

¹Carlquist, S. 2001. *Comparative wood anatomy: Systematic, ecological, and evolutionary aspects of dicotyledon wood*, 2nd ed. Springer-Verlag, Berlin, Germany.

¹Gartner, B. L. 1995. *Plant stems: Physiology and functional morphology*. Academic Press, San Diego, California, USA.

¹Tyree, M. T., and M. H. Zimmermann. 2002. *Xylem structure and the ascent of sap*, 2nd ed. Springer-Verlag, Berlin, Germany.

²Williamson, G.B. and M.C Wiemann. 2010. Measuring wood specific gravity...correctly. *American Journal of Botany* 97(3): 519-524.

Study Sites

- 1) No Irrigation/Desert 2) Irrigated (Drip) 3) Irrigated (Sprinkler/Flood)



Methods

- Collect samples from healthy, mature, *Parkinsonia* and *Prosopis* trees using an incremental borer
- Measure green volume of samples via the water displacement method
- Oven dry samples to get dry mass
- Calculate specific gravity (oven dry mass/green volume)



Results

- Preliminary results indicate the specific gravity differs significantly between irrigated *Parkinsonia* and *Prosopis* and non-irrigated *Parkinsonia* and *Prosopis*

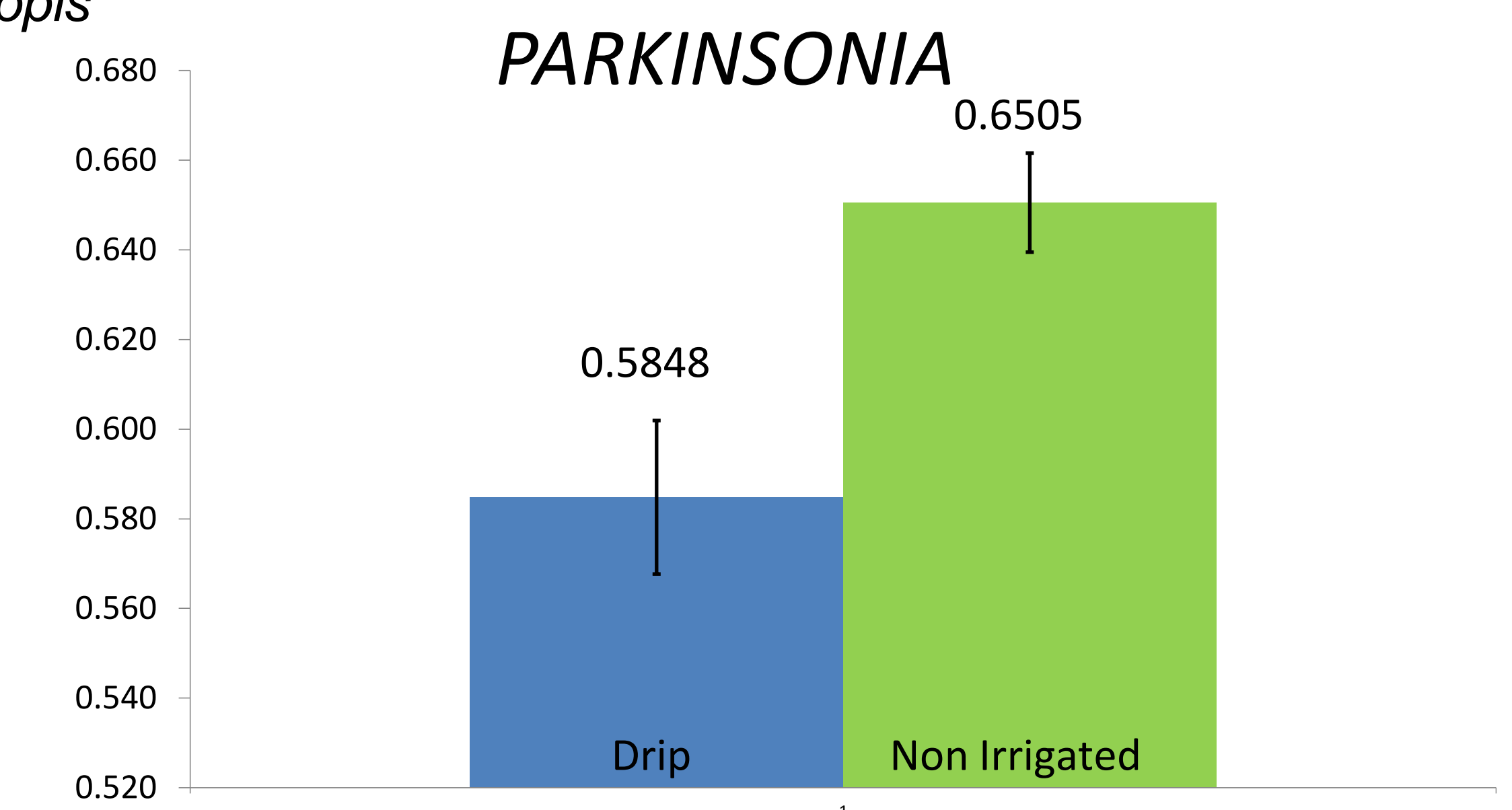


Figure 1. *Parkinsonia* specific gravity. Irrigated and non-irrigated

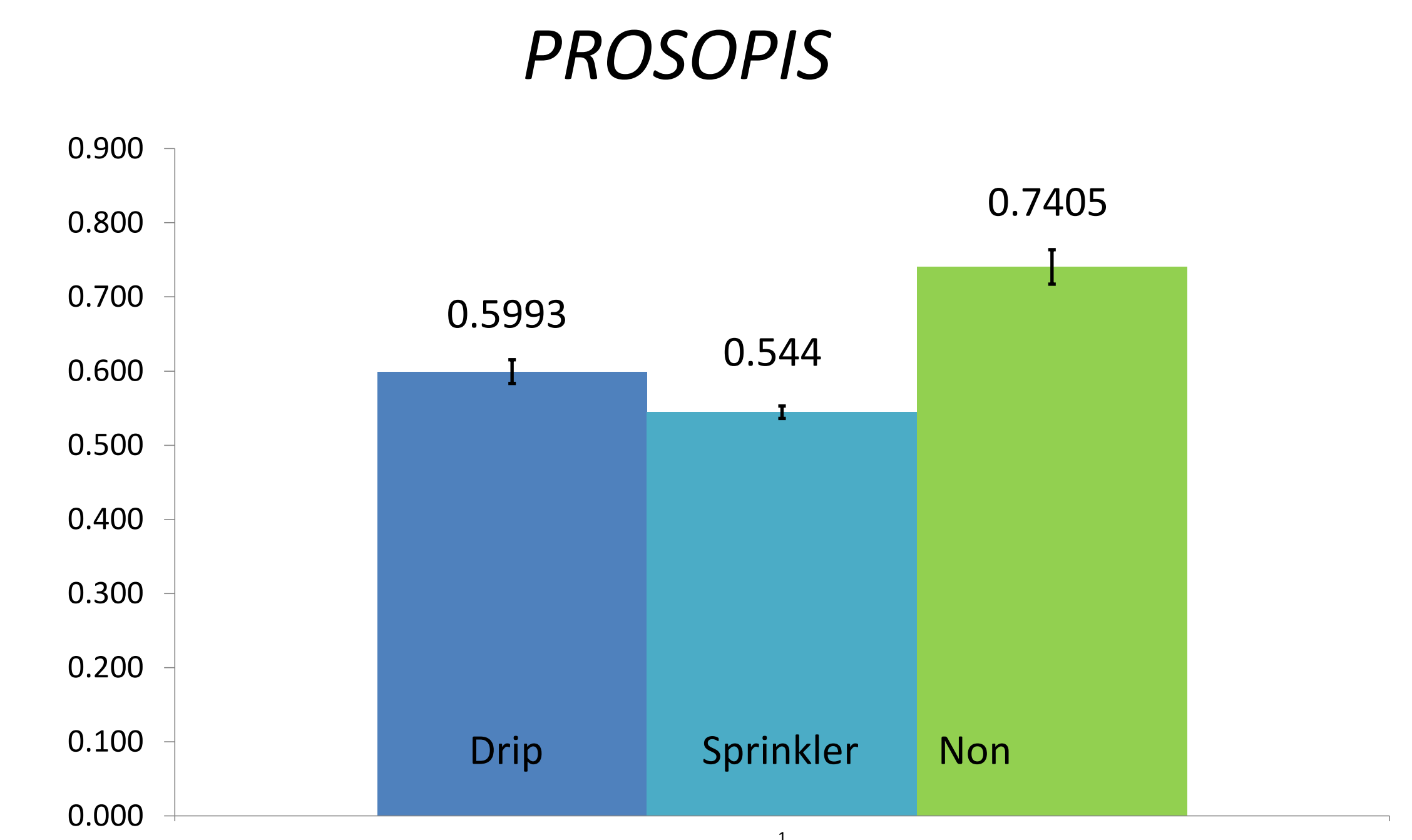


Figure 2. *Prosopis* specific gravity. Irrigated (drip and sprinkler) and non-irrigated