



Rooftop Garden Trial

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Morris





Mineral-based media

Current recommendation: mineral-based media.

Implications for

- depth (100 mm)/weight

How would organic mixes (2 types) compare?



Organic mixes

Possible advantages:

- lighter – greater depth possible??

Possible disadvantages:

- shrinkage??
- water quality?
- long-term viability?



Questions

Comparison of standard (mineral) mix vs. organic mixes (2 types) using commercially available plants for

- plant survival and growth
- water quality
- shrinking/slumping



Experimental layout



Three mixes

- standard
- organic 1
- organic 2

in 3 x 3 m bays at three depths

- 100mm
- 200mm
- 300mm



Experimental layout



Each mix x depth
treatment replicated
(two blocks of the
experiment)

Planted out with identical
array of commercially
available plants



Plant stock



Tanika

Isabella

Arandra

Shara

Sweet Mist

Little Jess

Gazania

Gold Velvet

Pennistripe

Mingo

Yareena

Mundi

Katie Bells

Sedum

new succulent



Data collected



Establishment period
(Dec – Jan)

Measurement period (Jan
– Mar)

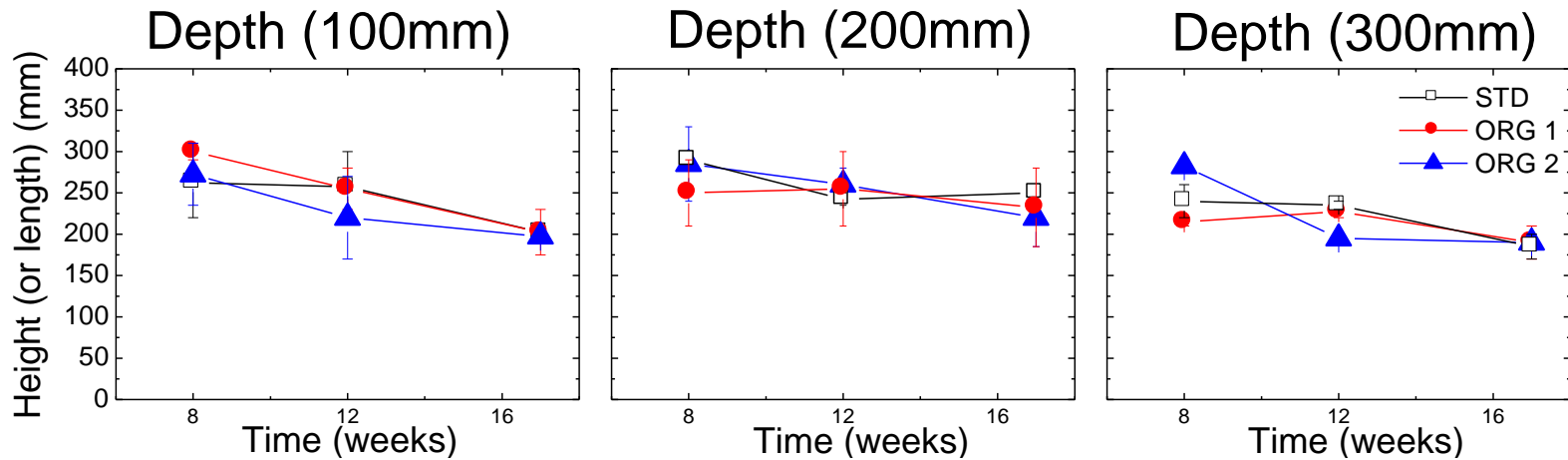
Measures of:

- plant survival/growth
- slumpage of media
- water quality (EC, pH, TDS, nitrate, ammonia, phosphate, sodium, chloride)



Plant survival

Only 3 plant deaths



Plant growth: significant effect only
of time
Mix used, or depth: no effect



KATIE BELLES *Lomandra hystrix*



Shrinkage of media

Minimal over period of observation



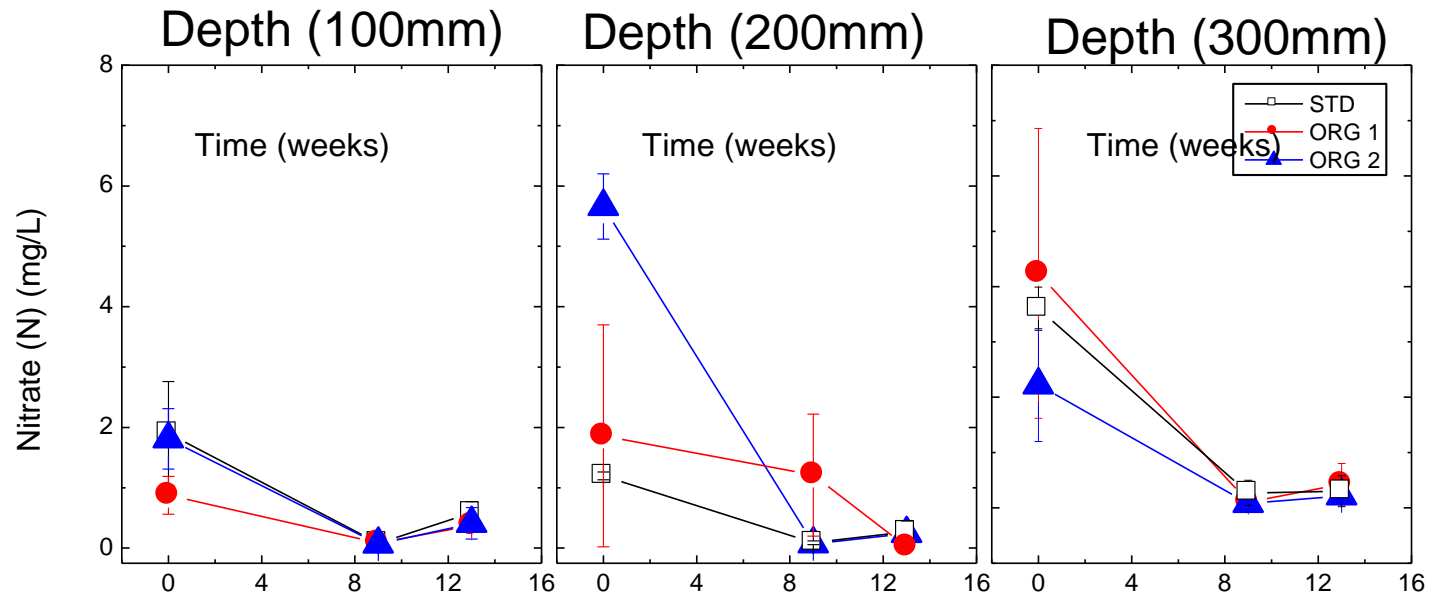
Water quality

Measured at

- watering-in (initial; December)
- rainfall event 1 (February; end of rainy week)
- rainfall event 2 (March; after 1 day of rain)

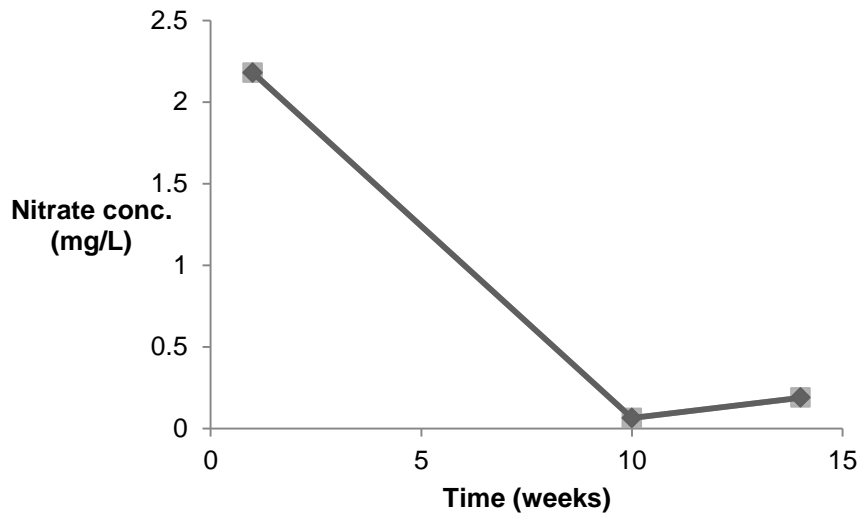


Nitrate





Nitrate: statistical analysis



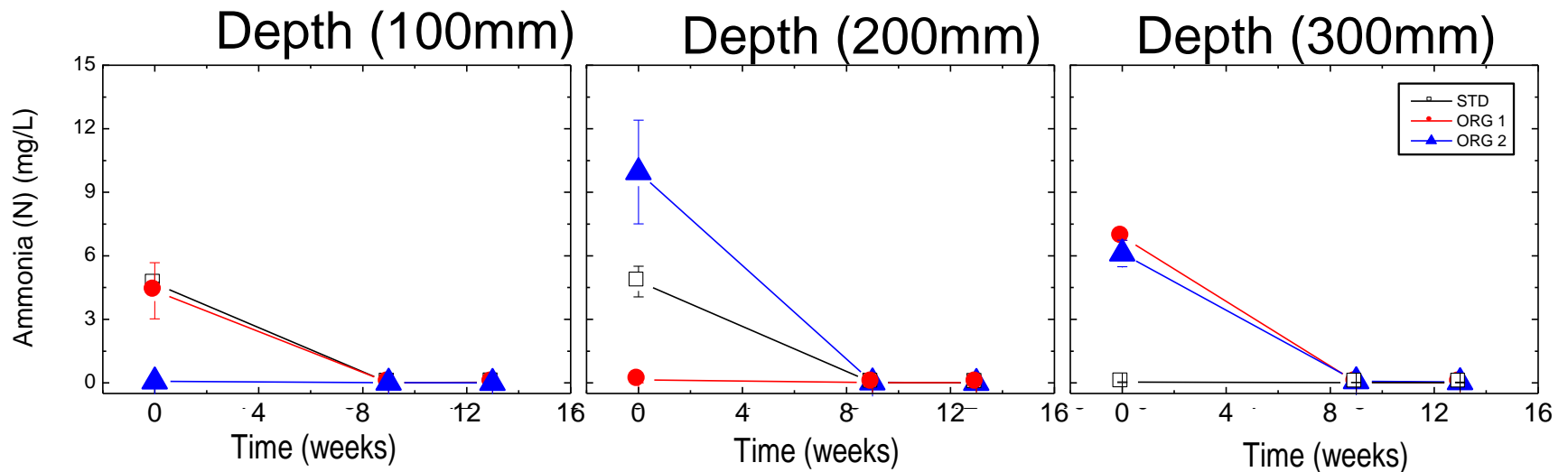
Significant effect of
time

'first flush' vs. rest

Mix, depth – not
significant

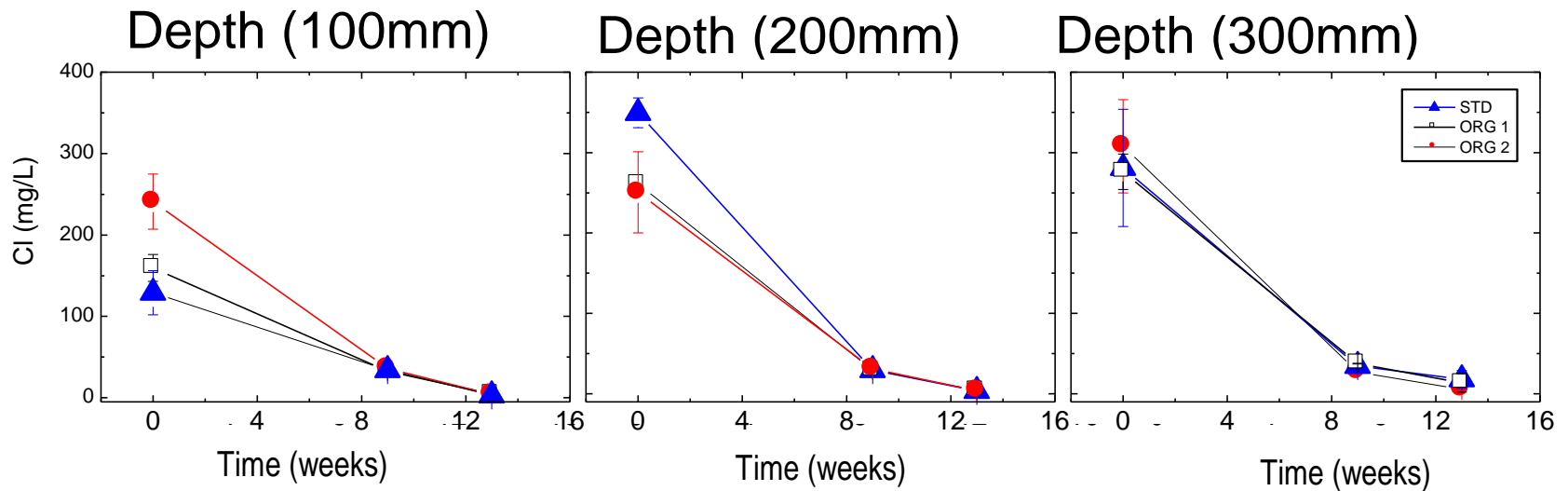


Ammonium



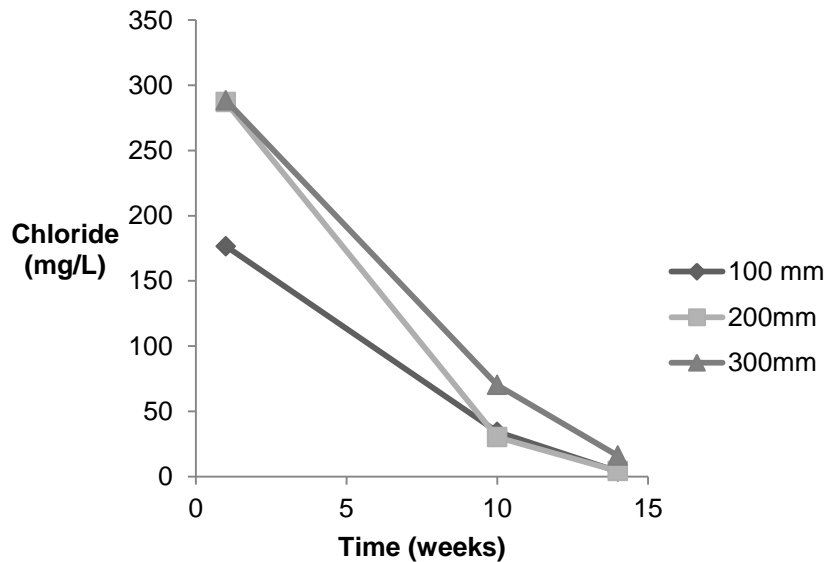


Chloride





Chloride: statistical analysis

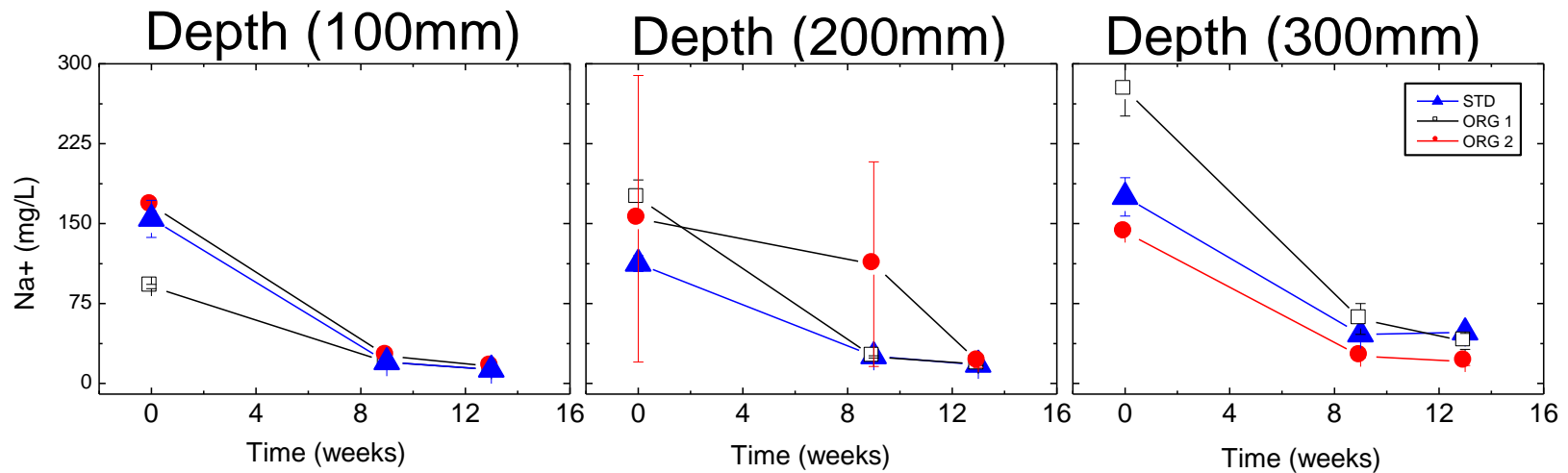


Time x depth interaction
significant

‘First flush’ effect;
difference between
depths

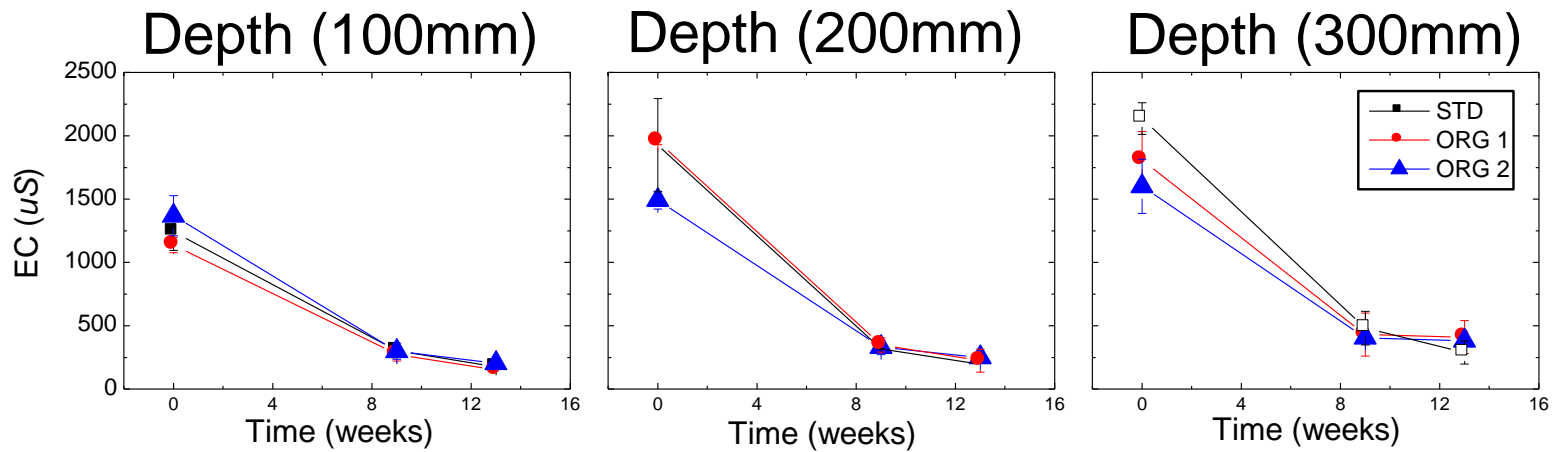


Sodium



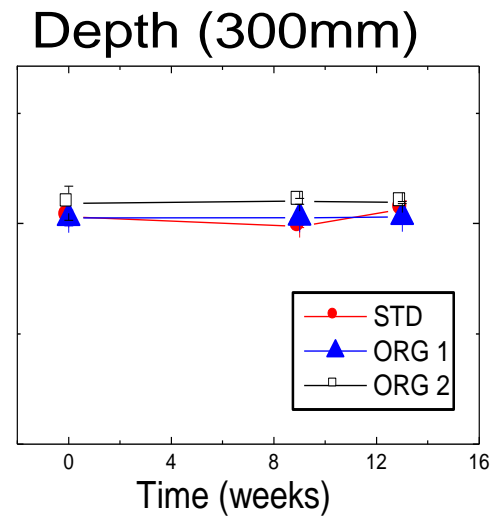
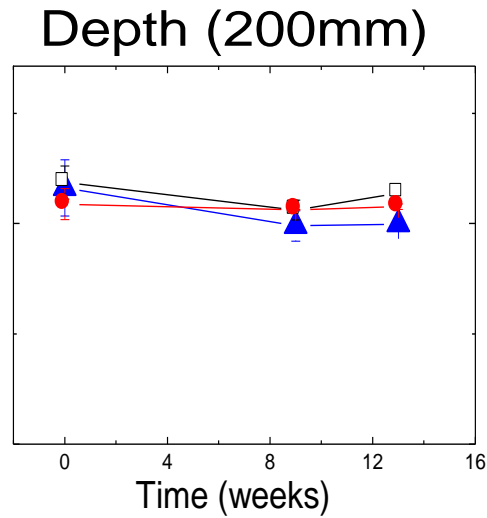
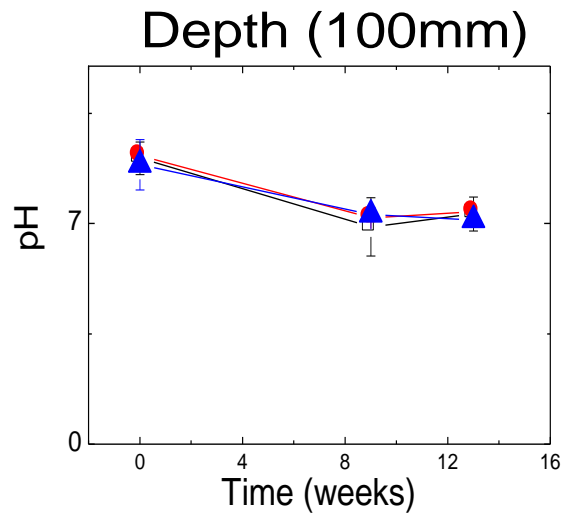


Electrical conductivity



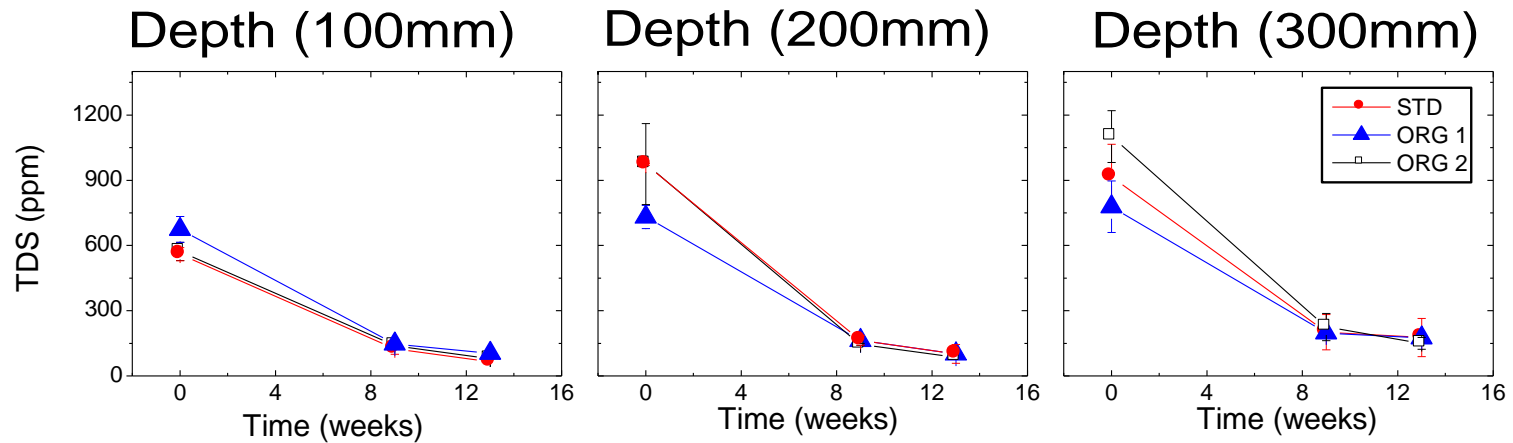


pH



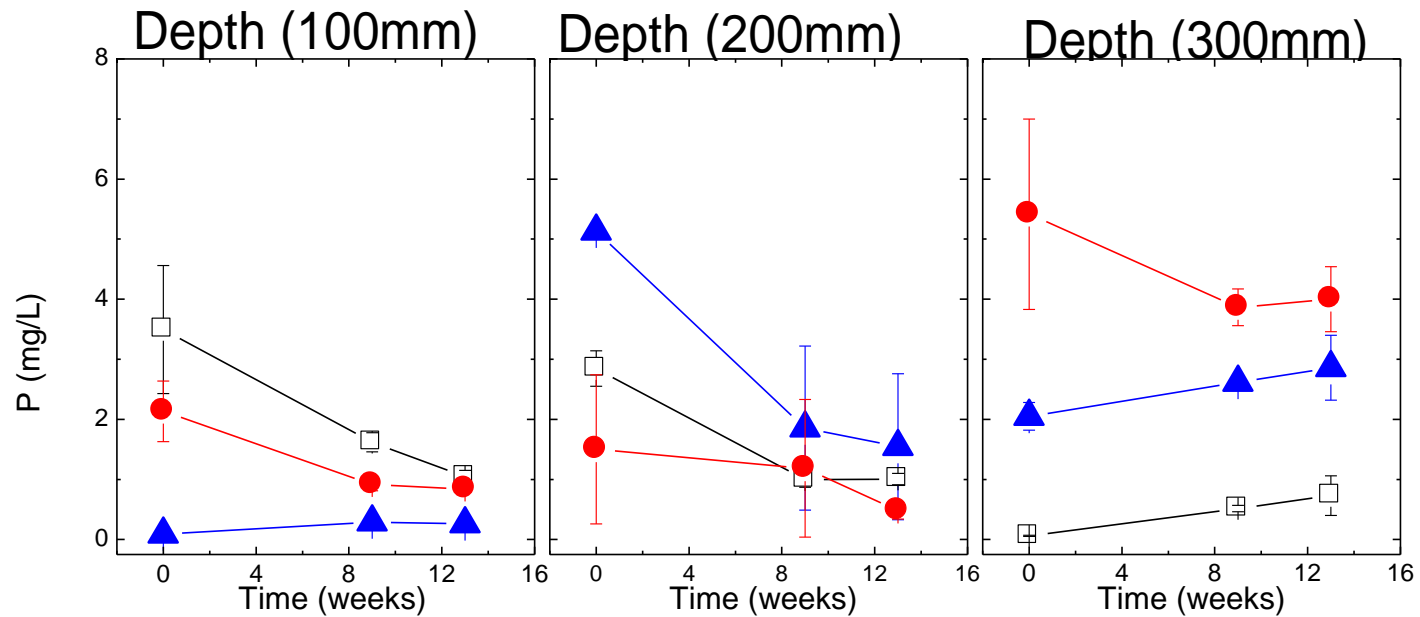


Total dissolved solutes



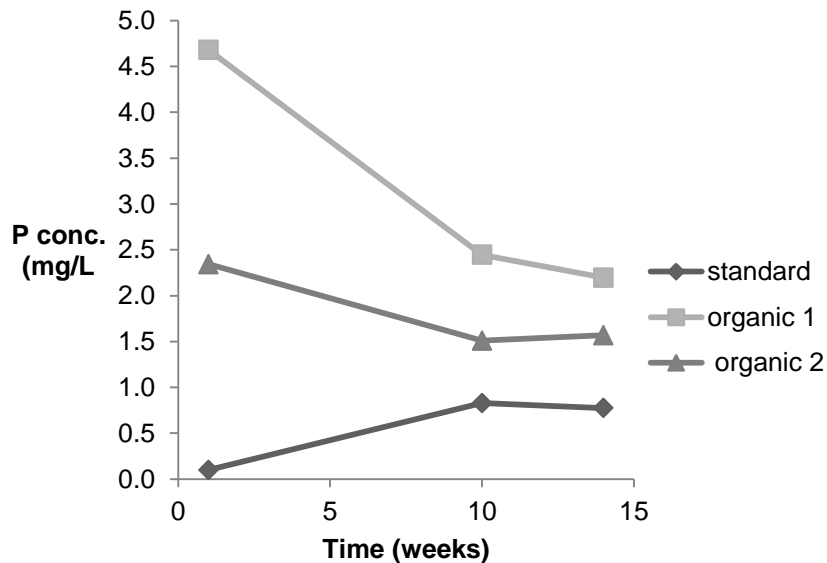


Phosphate





Phosphate: statistical analysis



Mix x time interaction
significant

Only water variable
showing difference
between mixes



Conclusions

Plants: no real differences to date

Water quality: 'first flush' effect with values falling at subsequent rain events

Organic mixes show higher values for phosphate