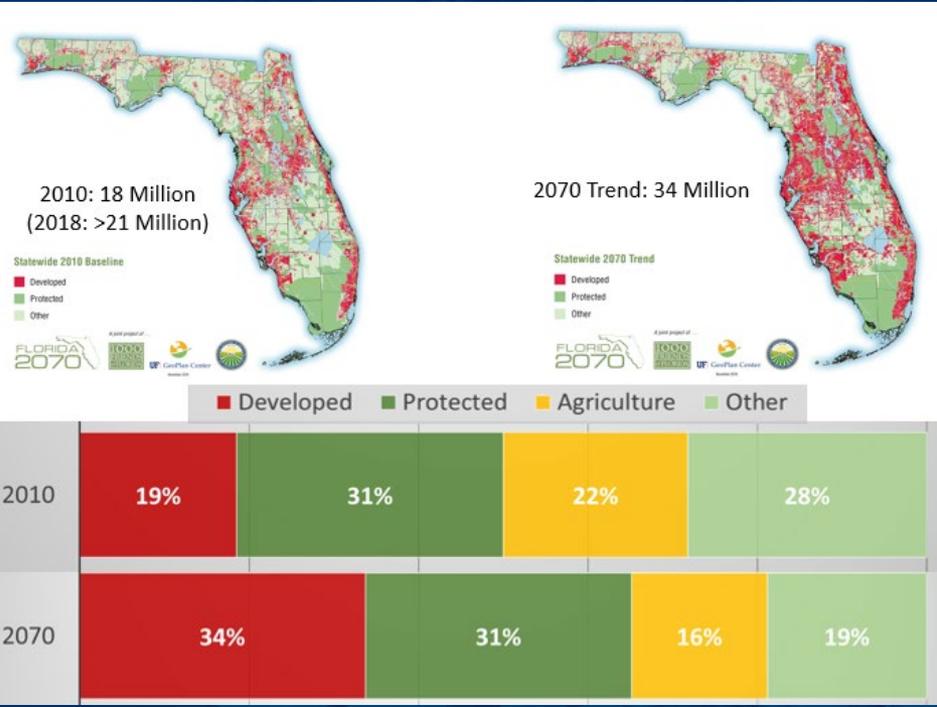


Compost Effects on Water Quality and Quantity in Residential Areas

FOR THE

#GATORGOOD

Jovana Radovanovic
February 25, 2020



- About 1,000 people move to Florida every day
 - Currently: 21.3 million
 - Growth rate: 1.66%

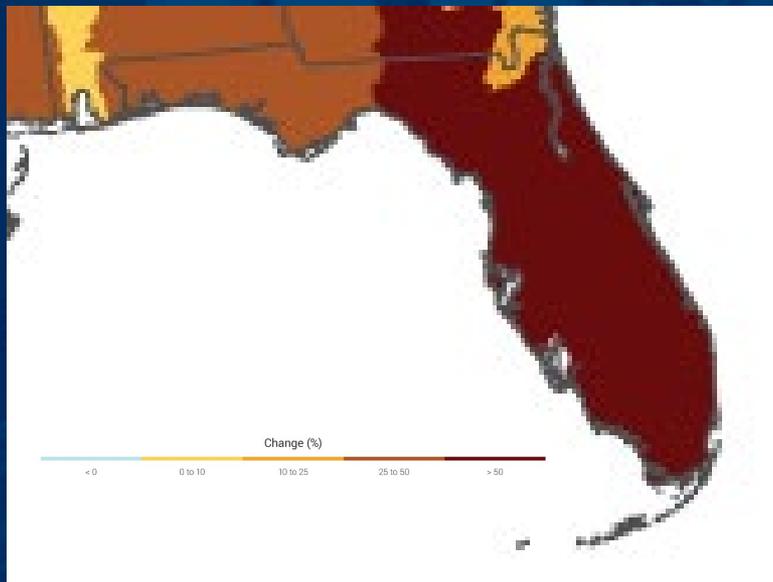
- It takes 65+ days to build a house from start to finish



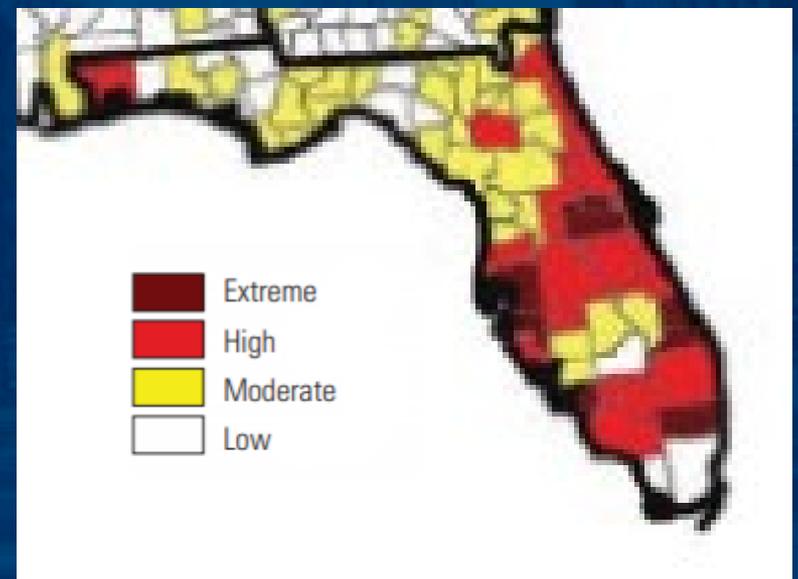
- Central Florida Water Initiative
 - 3 water management districts in FL are studying whether the Floridan aquifer system is reaching its sustainable limits of use
- 2035 demands: deficit is ~250 mgd
- Solutions to decrease demand?



Milesi, Cristina, et al. 2012



Projected Changes in Water Withdrawals (2005-2060)
2014 National Climate Assessment



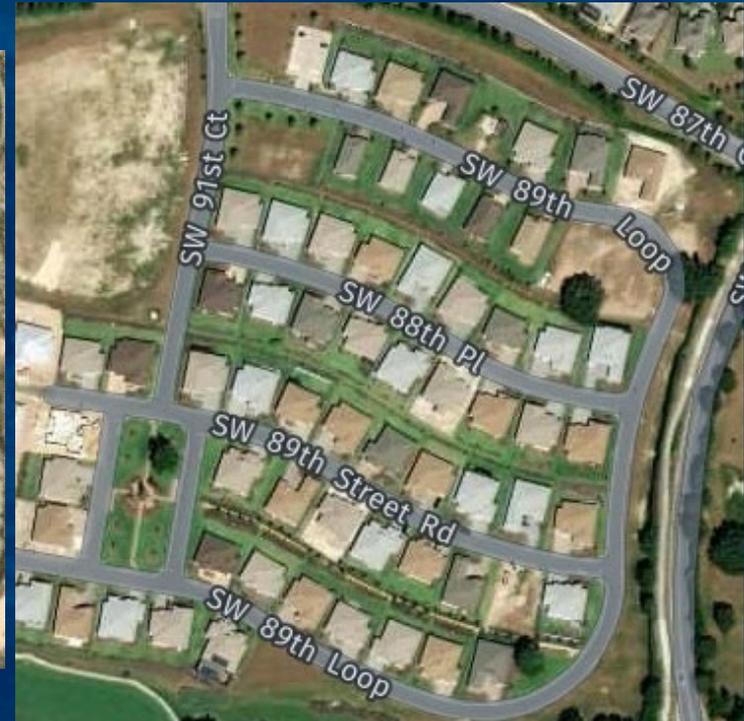
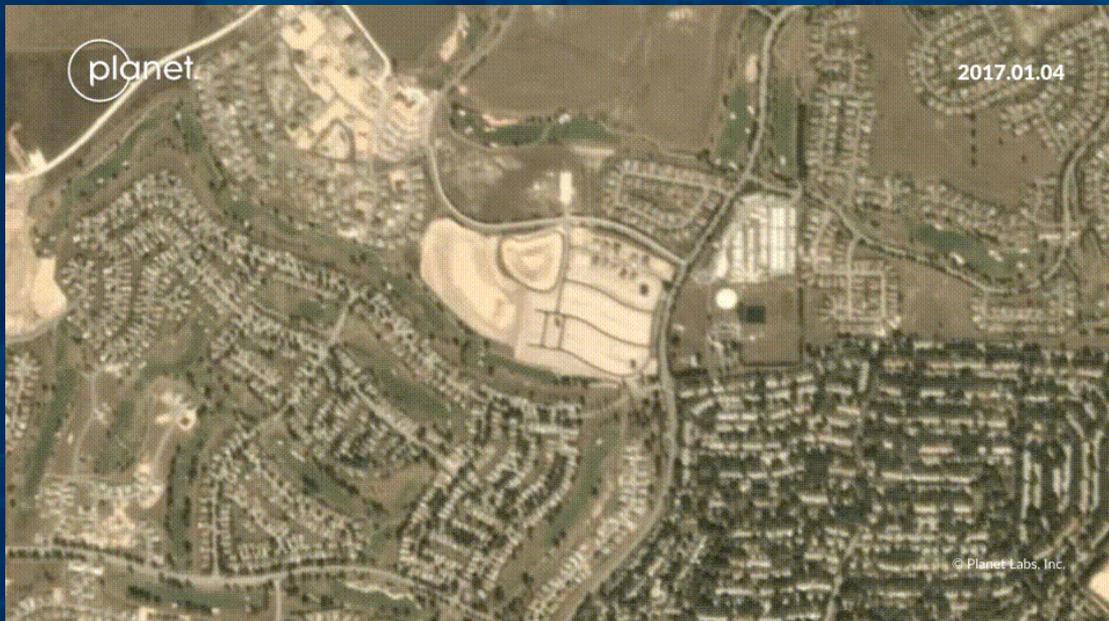
Water Supply Sustainability Index (2050)
2014 National Climate Assessment

On Top of the World Communities

Ocala, Florida

SWFWMD Average: 250 gal/home/day
OTOW permit: 150 gal/home/day
OTOW currently: 190 gal/home/day

Currently there are
6,000 homes
Buildout of 30,000 homes



Treatments



• 24 homes

- 7 compost, 8 till, 9 control

• Treatments were applied before landscaping

• Compost is incorporated into the top 6 inches at 4 yd³ / 1000 ft²

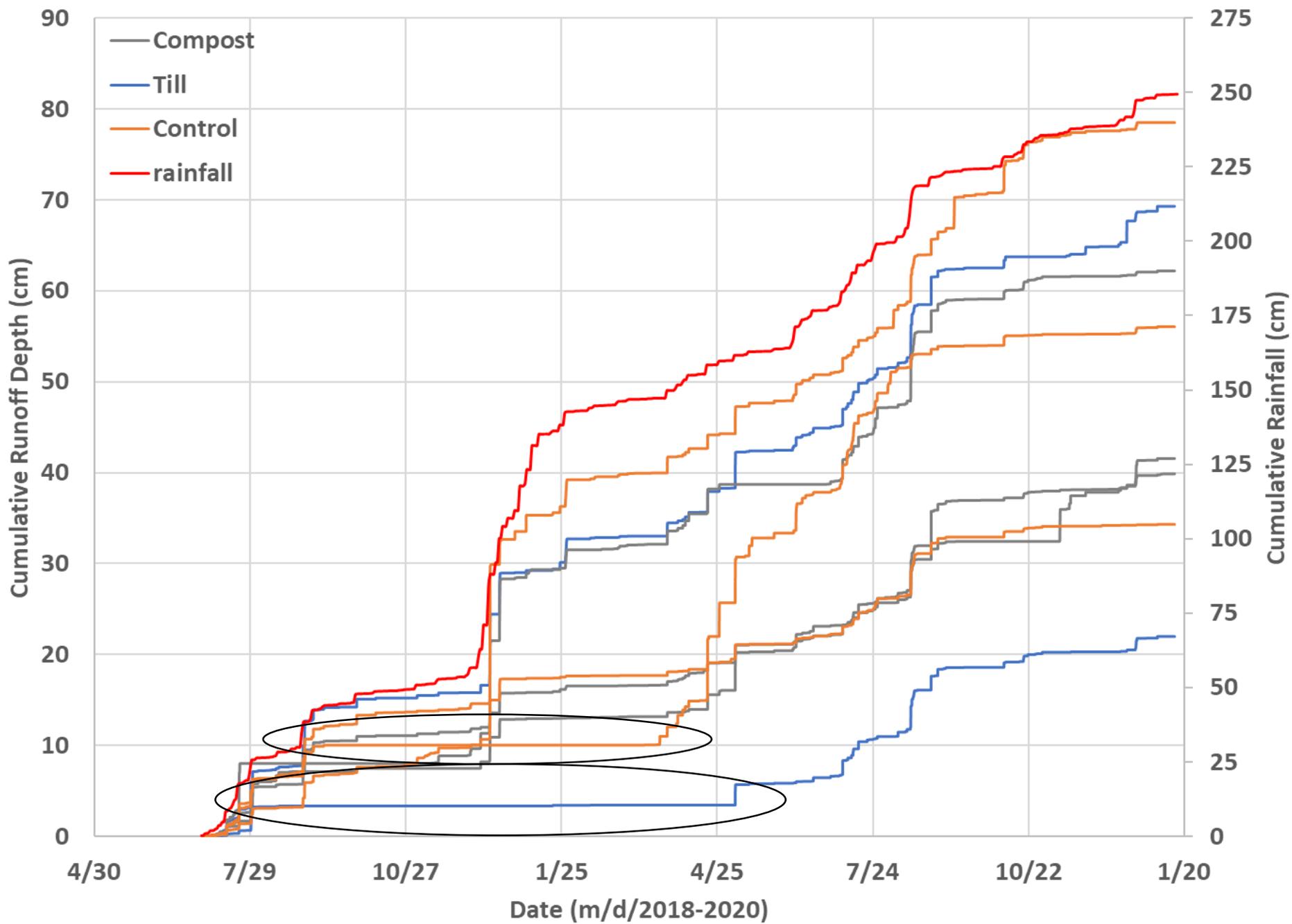


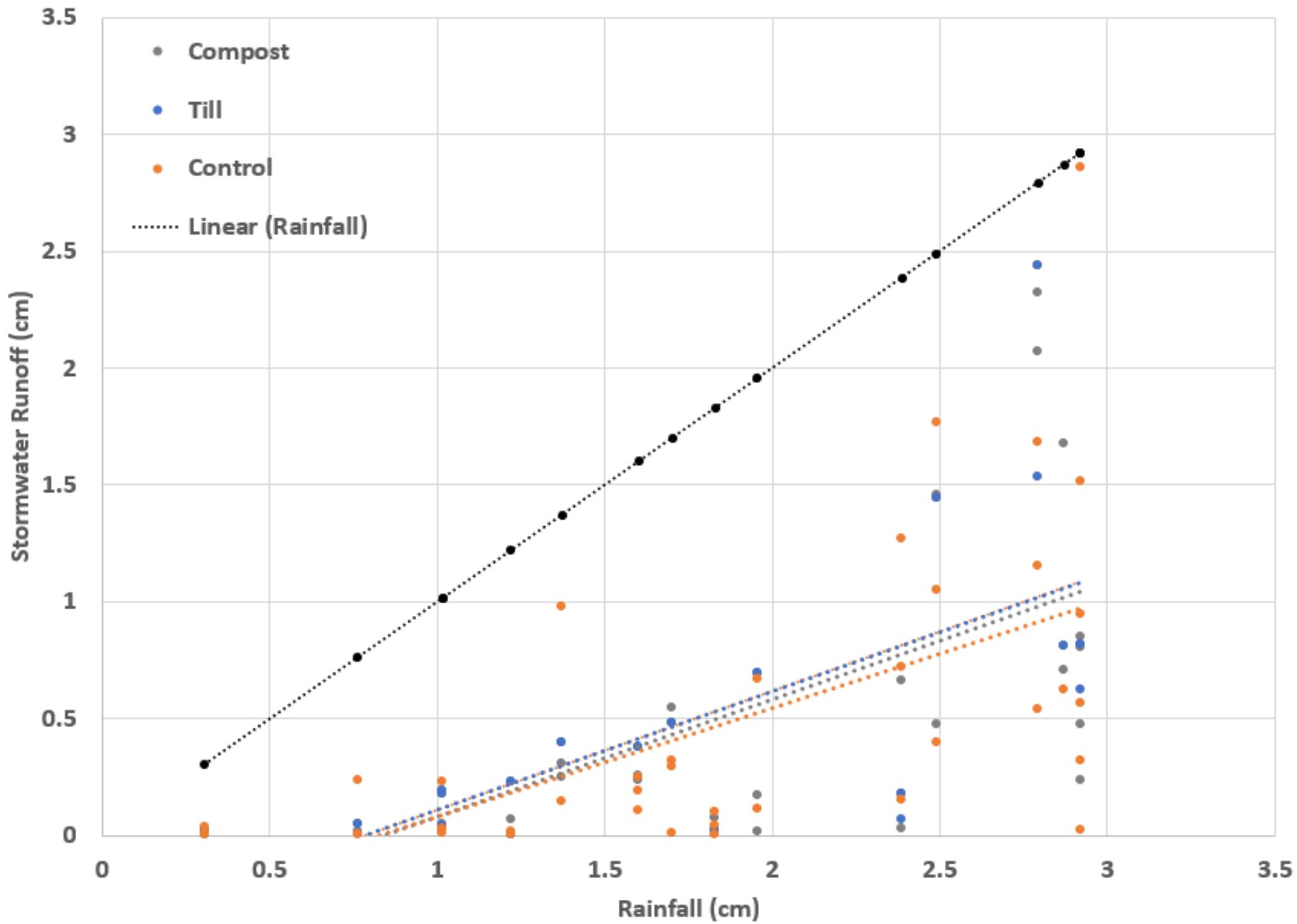
Storm Drains

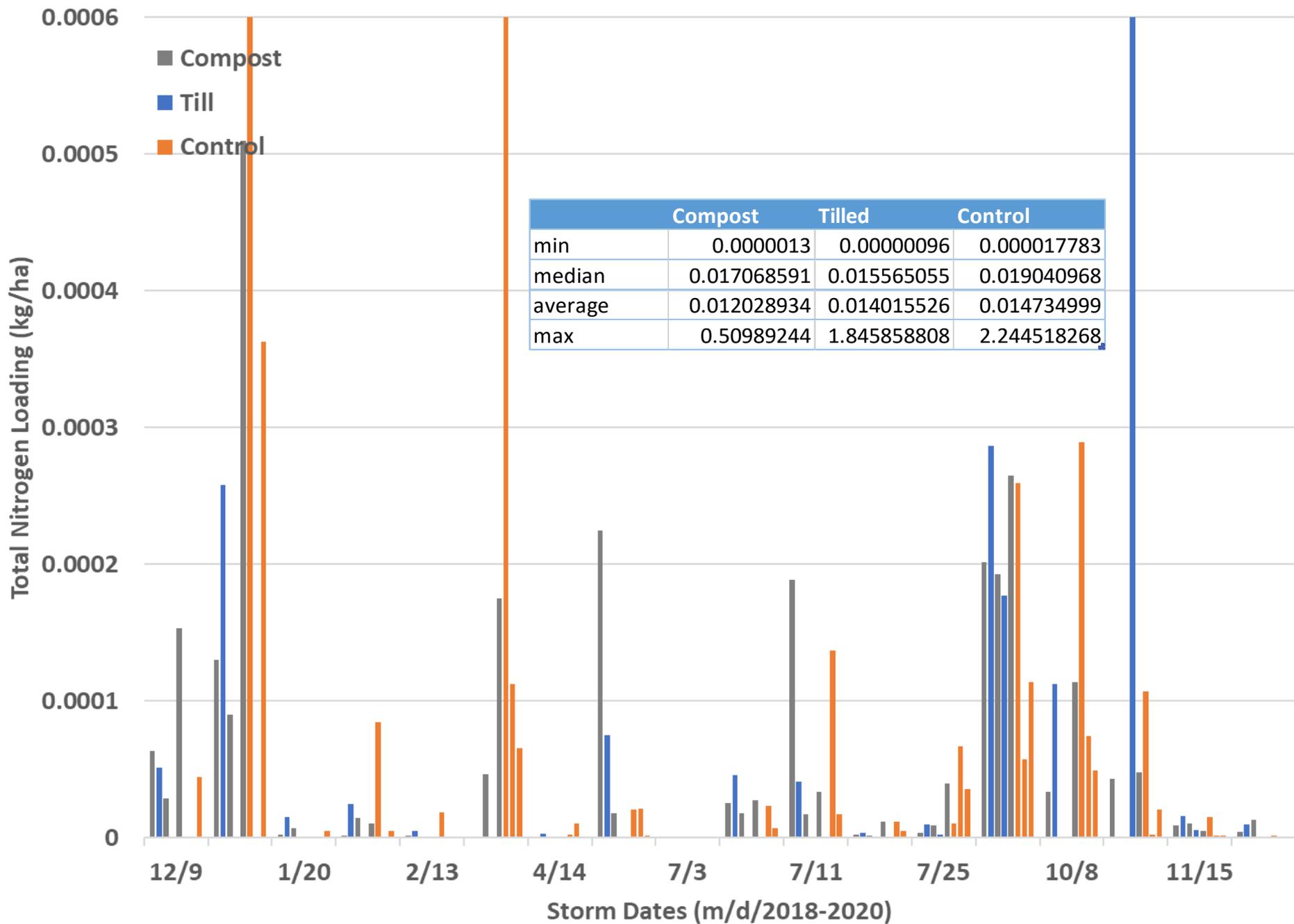


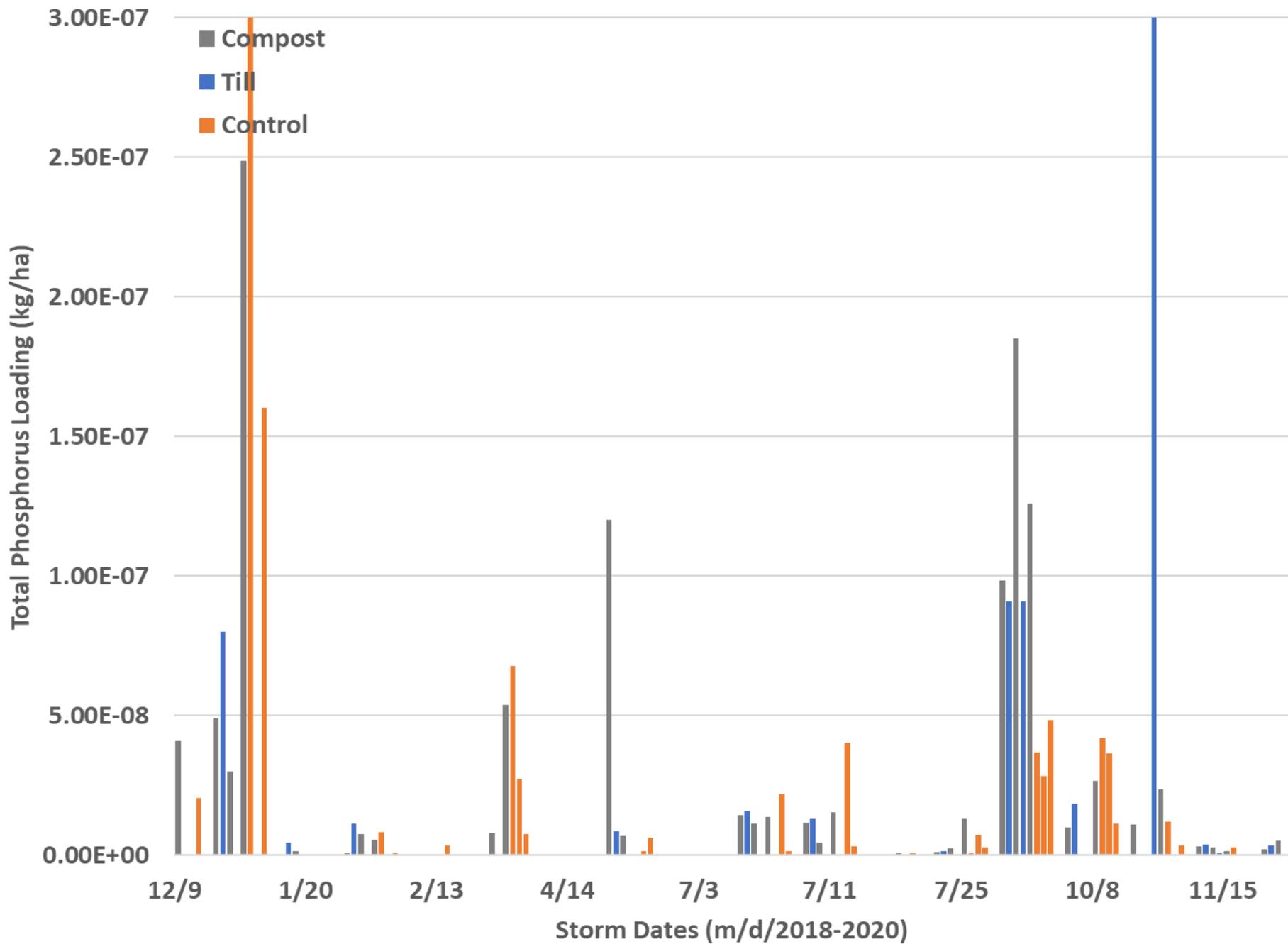
- 8 storm drains equipped with weir boxes
- Uniform treatment in drainage area
- ISCO 6712 autosamplers









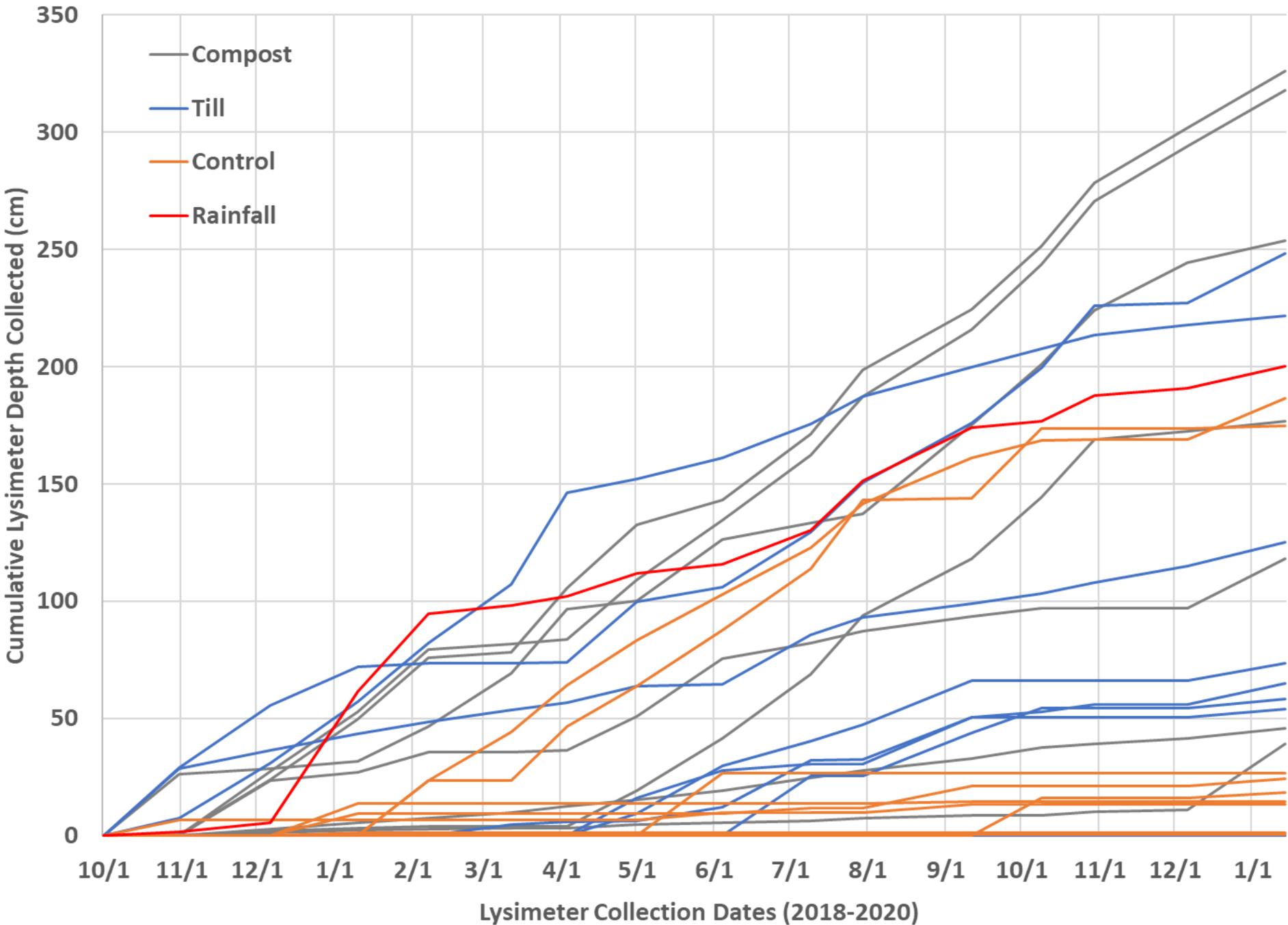


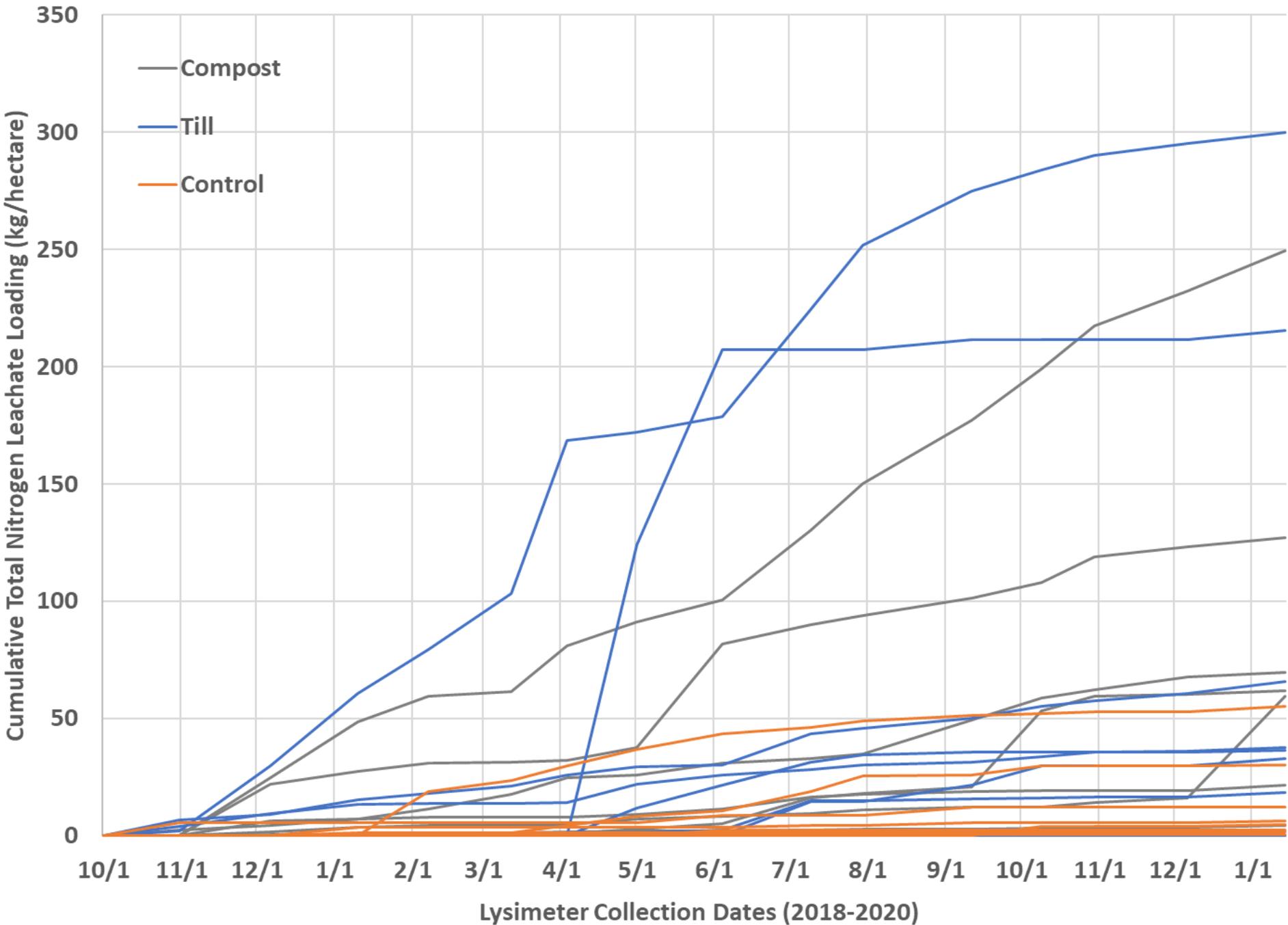
Leachate

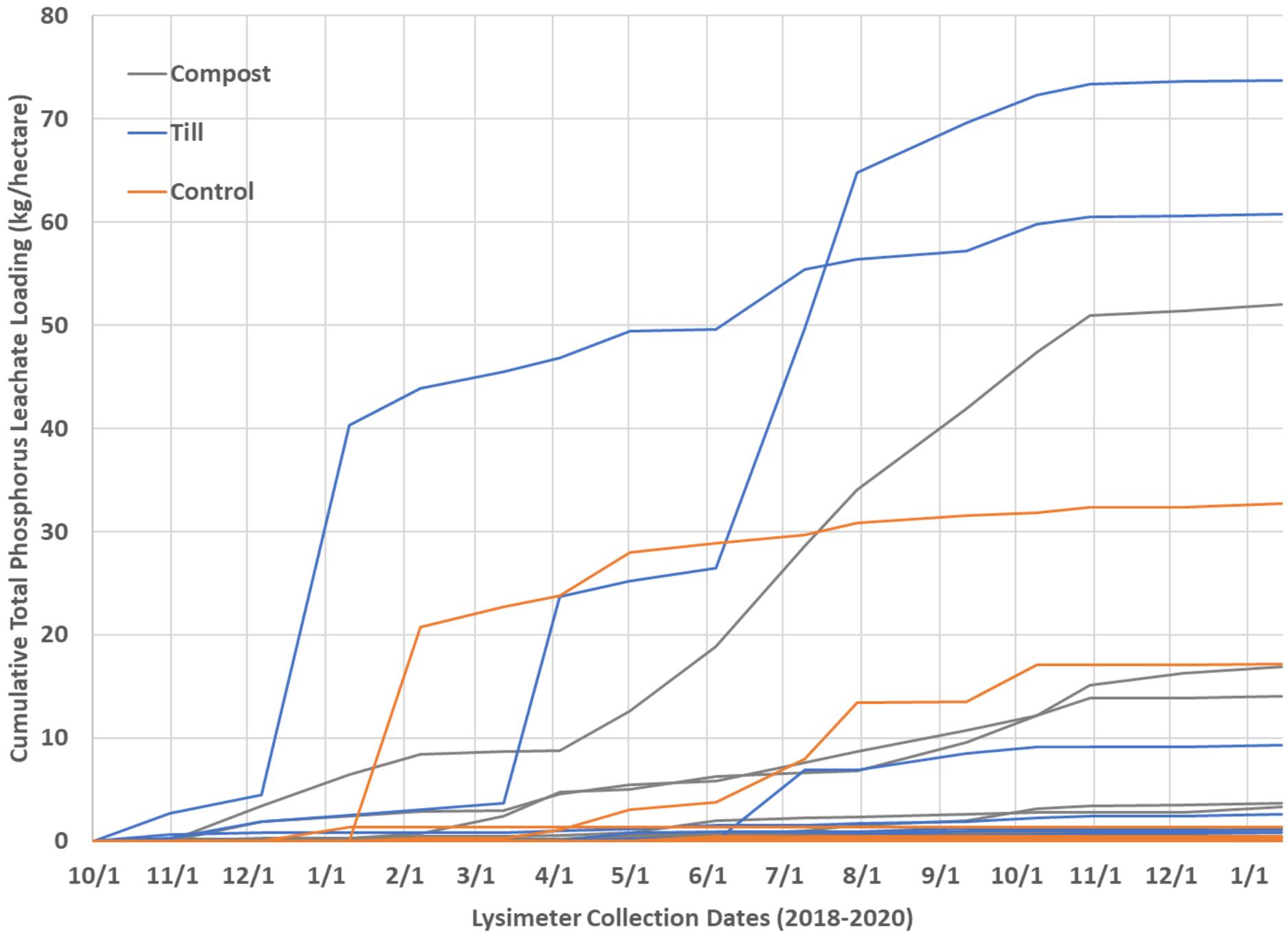


- Lysimeters installed during construction
- Invert: 12" below soil surface
- Pumped monthly
- Samples analyzed for TN & TP









Soil Moisture Sensors

- 12 soil moisture sensors
- Collect volumetric water content within top 6"
- 25% reduction in irrigation run time
 - Return to 100% run time at any time



Hunter®



Conclusion

- **Runoff**
 - Trends based off of 17 sampled events
- **Leachate**
 - Leachate loading may be driven by differences in leachate volume rather than nutrient concentrations
- **Soil Moisture**
 - Differences in volumetric water content across the three treatments
- **So What?**
 - Is there potential to further decrease irrigation?
 - What will results from 14 months of runoff vs rainfall data show?

Questions?

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AGRICULTURAL & BIOLOGICAL
ENGINEERING