



BioGro Inc. - Field Trial Research

Premium 21 on Strawberry Nutrition

Objective:

1. To evaluate the impacts of Premium 21 on the solubilization of soil nutrients
2. To evaluate the effects of Premium 21 on plant uptake and tissue analysis
3. To evaluate how addition of Premium 21 to a fertility program impacts fruit quality metrics

Conclusions:

A fertility-based production strategy designed to improve soil nutrition and ultimately fruit quality metrics in strawberries was tested. This trial evaluated how the role of humic and organic acids in Premium 21 could potentially be used as a management tool. The dissolution of calcium phosphates by organic acids appears a likely explanation for the differences in soil solution calcium and phosphorus that were observed. Tissue tests showed significant differences in micronutrient concentration of Zn, Mn, and Fe. While K and B showed no significant season-long difference, there is an interesting mid-season switch (noticeable in both soil solution and tissue concentrations) that warrants further investigation.

Reasoning:

Humic acid, and organic matter in general, increases the chemical reactivity of the soil by increasing the number of plant-to-soil nutrient exchange sites. More exchange sites typically translates to a higher holding capacity of cation nutrients in plant available forms. To then attain these exchangeable nutrients, plants make a photosynthate investment by exuding certain acids into the rhizosphere as complexing agents.

Premium 21, a combination of humic, organic, and amino acids, is a nutrient use efficacy material that amplifies both parts of this process. Application into the bed and root rhizosphere not only creates a more favorable growth environment but accelerates the flow of nutrients to the plant by pairing them with natural complexing agents. Most effective use in soils with low OM%, coarse-textured or low clay content, and low CEC.

Increasing soil solution, tissue-test, and fruit-test calcium is a focal point of this trial. Shelf-life (fruit firmness) issues related to warmer weather and increased solar radiation have been the source of economic loss in recent seasons. A fertility-based approach, with emphasis on calcium, to maintain marketability in strawberries during climatic changes is thus under evaluation.



Cooperator(s): Berry Boss Farms, Fancy Farms, Castillo Farms

Location: Plant City, FL

Date: 2019/2020 Season

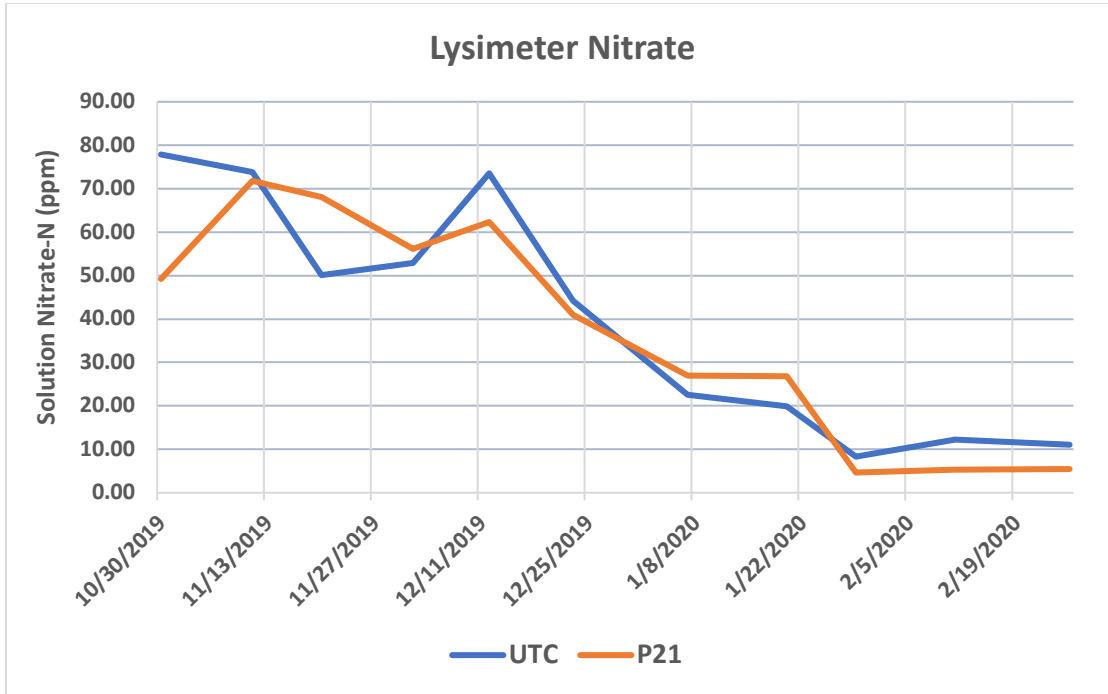
Test Crop: Strawberry

Treatments:

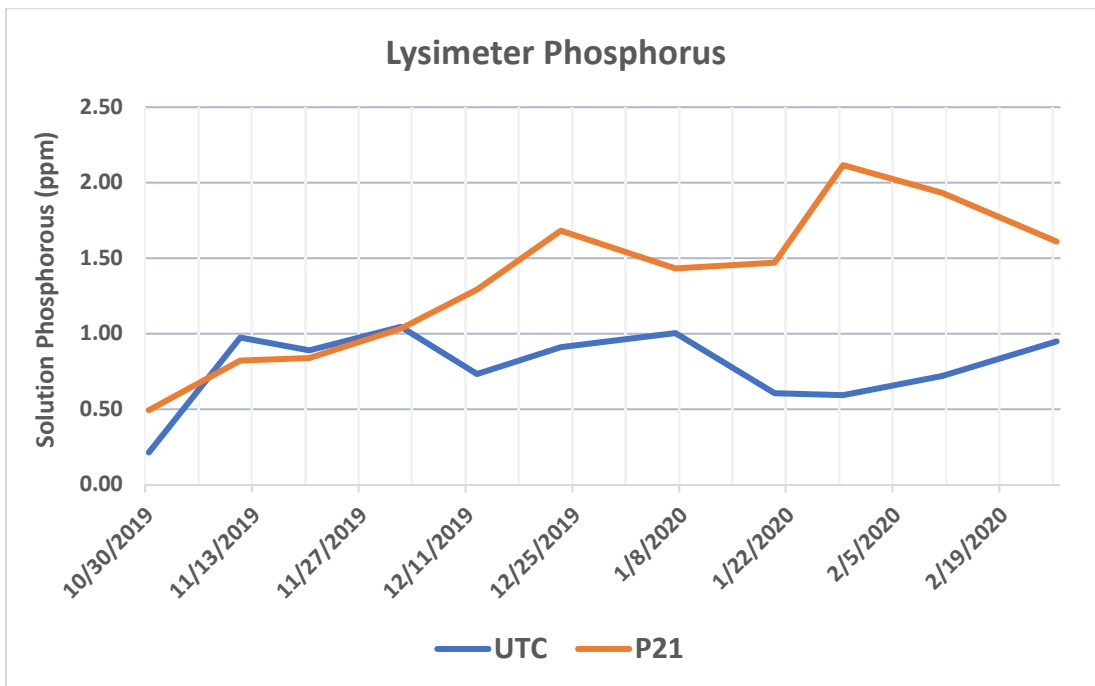
1. UTC – Untreated Control
2. Premium 21 applied at 5gpa per month (October through February). Total of 25gpa. (P21)

Trial Layout/ Explanation of Test Method:

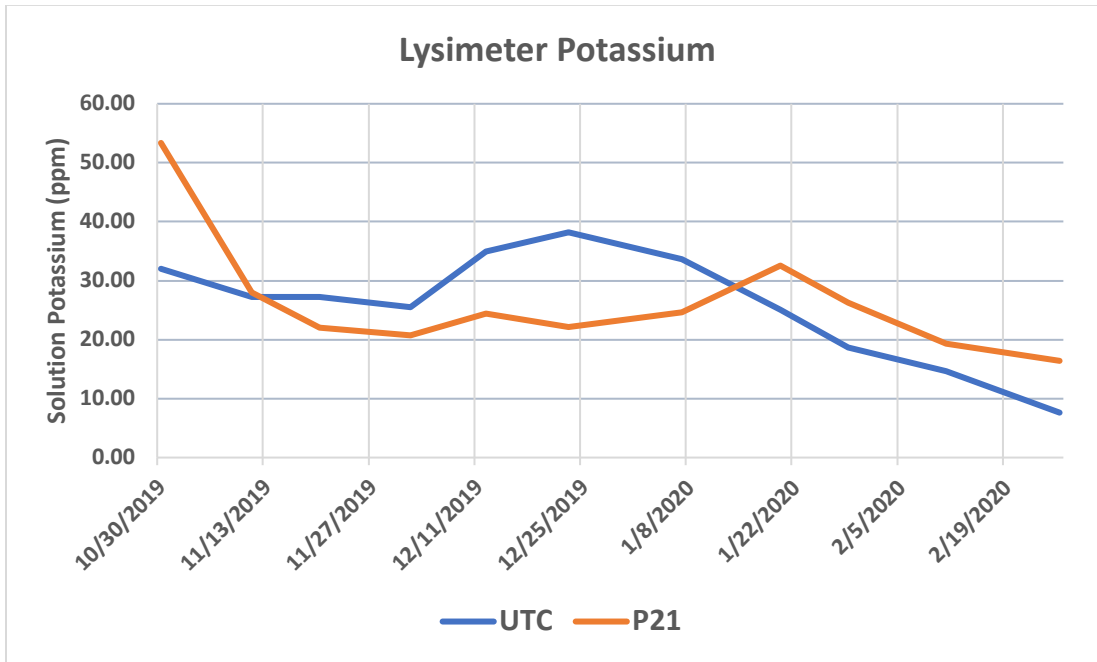
7 lysimeters between 3 locations were installed for each treatment. Total of 11 sample dates are included in results. Sample dates were scheduled every 10-12days starting 10/30/19 and ending 02/26/20. Results for each sample date are an average of all treatment lysimeters on all 3 farm locations. 7 tissue samples were also pulled on each test date to correspond with the each lysimeter area. Total of 10 test dates are included in these results. Test dates were scheduled every 10-12 days starting 11/11/19 and ending 02/26/20. Results for each test date are an average of all treatment tissue samples on all 3 farms locations.



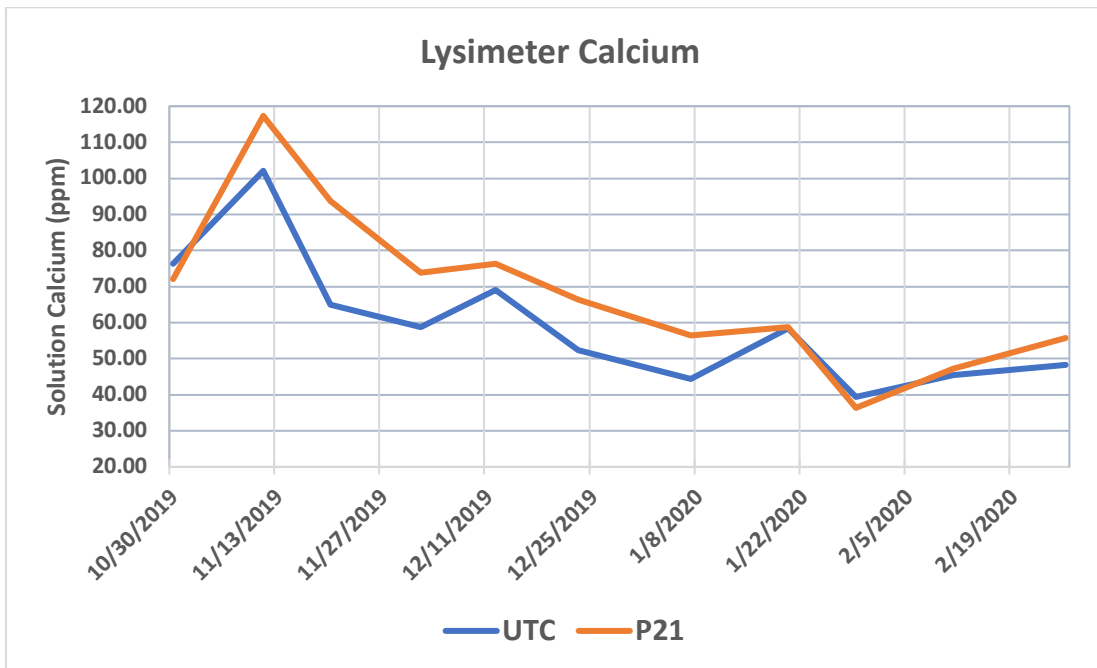
UTC Season Avg: **40.58**, P21 Season Avg: **37.99**, P21/UTC: **-6%**
 Season High: **+34%**, **11/20/19**, Season Low: **-56%**, **02/11/20**



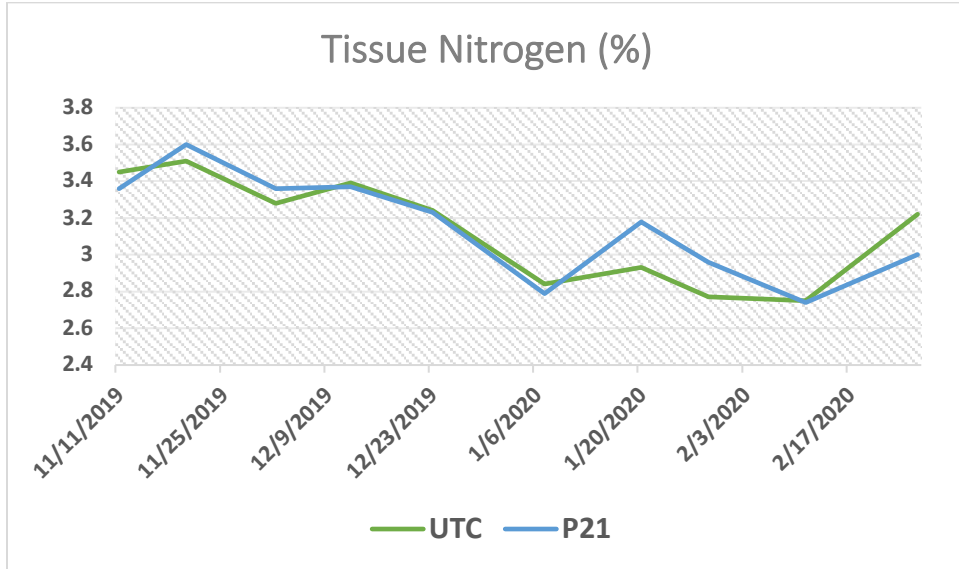
UTC Season Avg: **0.79**, P21 Season Avg: **1.34**, P21/UTC: **+70%**
 Season High: **+256%**, **01/29/20**, Season Low: **-16%**, **11/11/19**



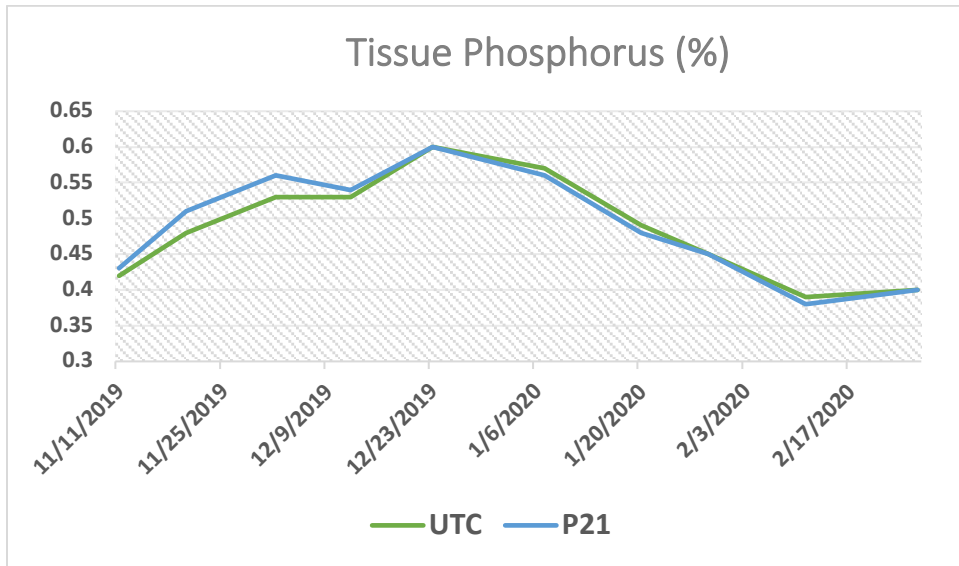
UTC Season Avg: **25.90**, P21 Season Avg: **26.36**, P21/UTC: **+2%**
 Season High: **+115%**, **02/26/20**, Season Low: **-42%**, **12/23/19**



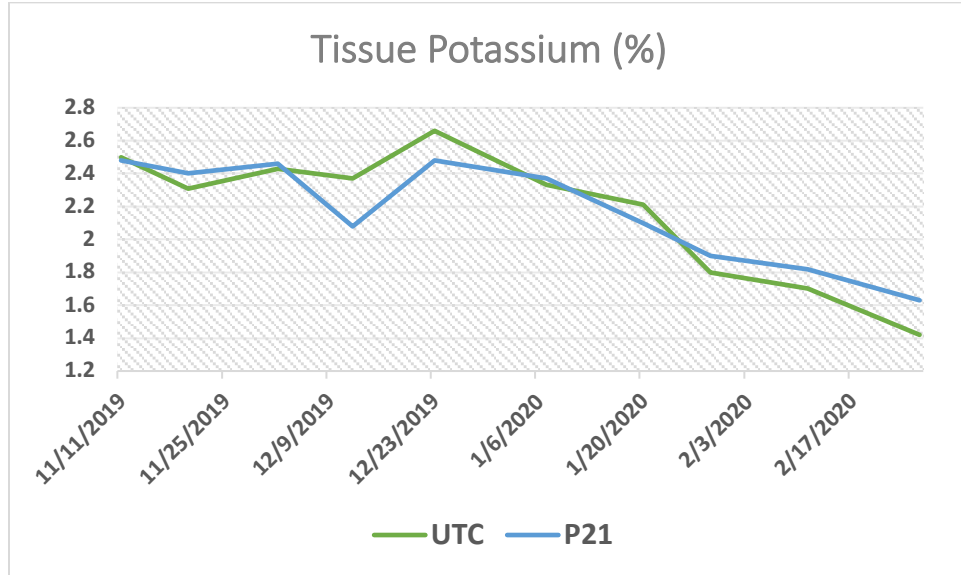
UTC Season Avg: **59.97**, P21 Season Avg: **68.55**, P21/UTC: **+14%**
 Season High: **+44%**, **11/20/19**, Season Low: **-8%**, **01/29/20**



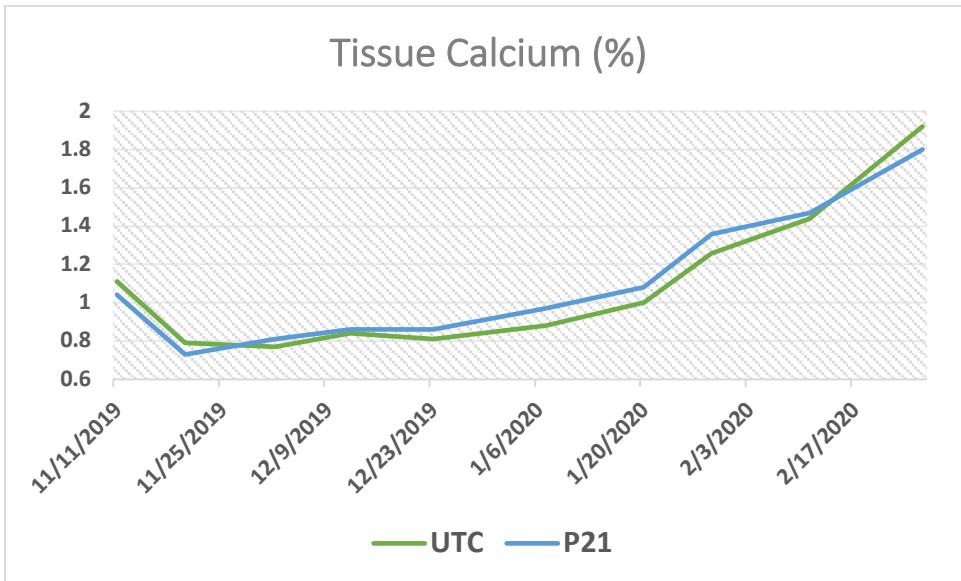
UTC Season Avg: **3.14**, P21 Season Avg: **3.16**, P21/UTC: **+1%**



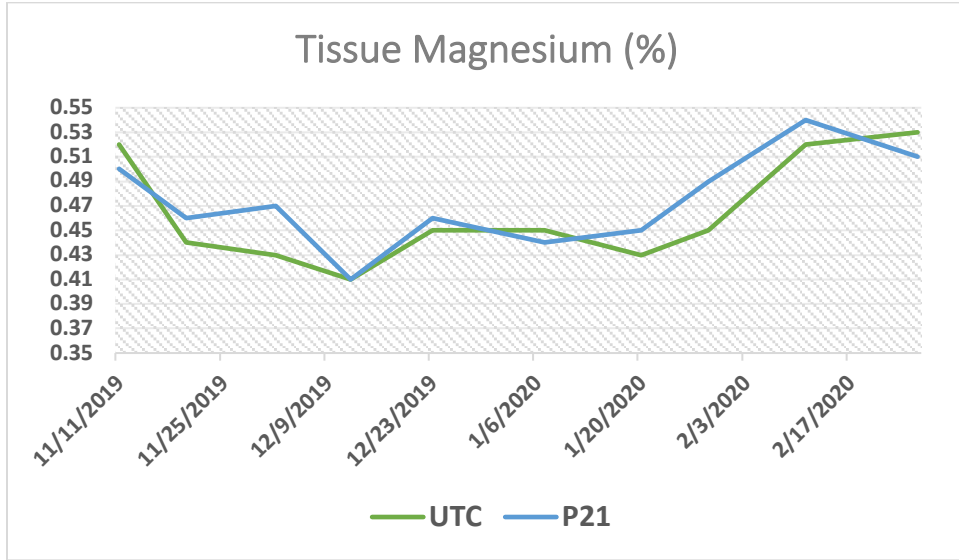
UTC Season Avg: **0.49**, P21 Season Avg: **0.49**, P21/UTC: **0%**



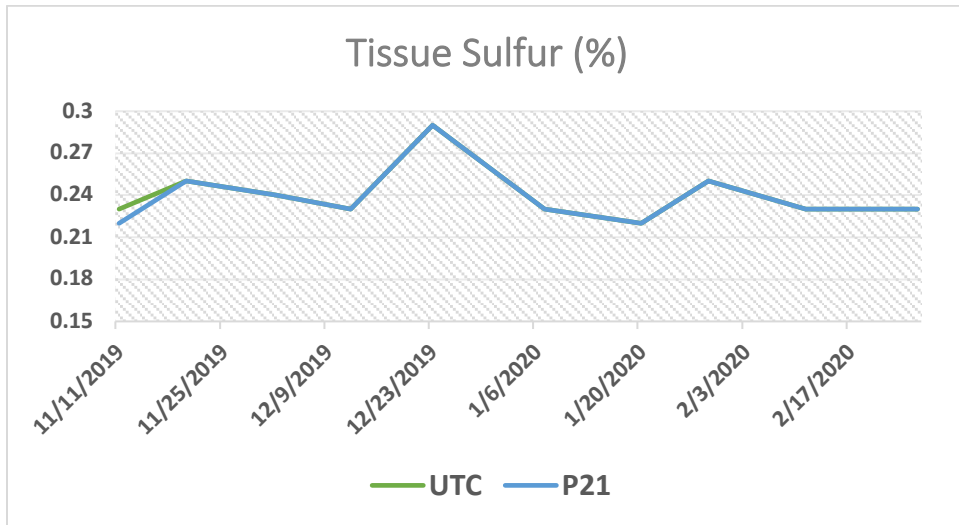
UTC Season Avg: **2.17**, P21 Season Avg: **2.17**, P21/UTC: **0%**



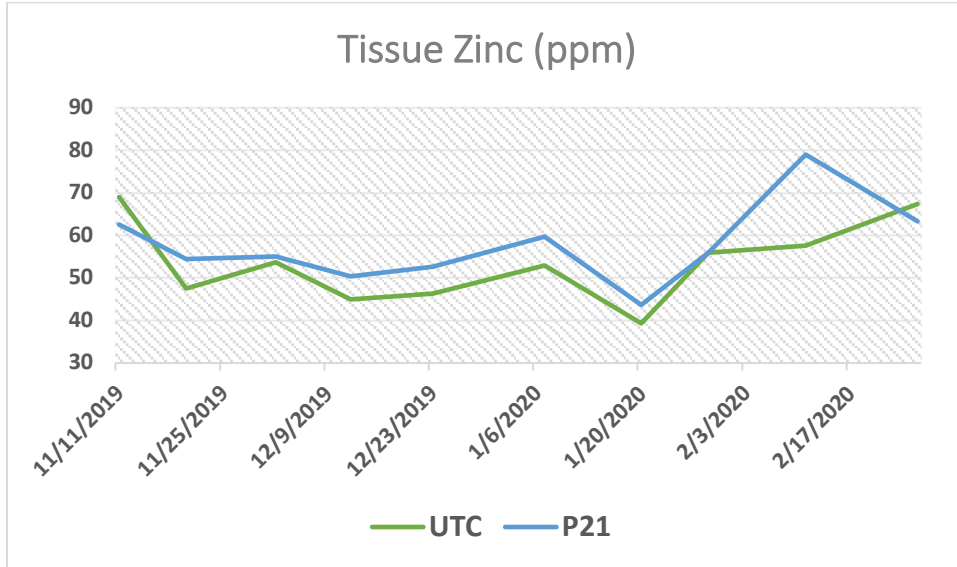
UTC Season Avg: **1.11**, P21 Season Avg: **1.15**, P21/UTC: **+3%**



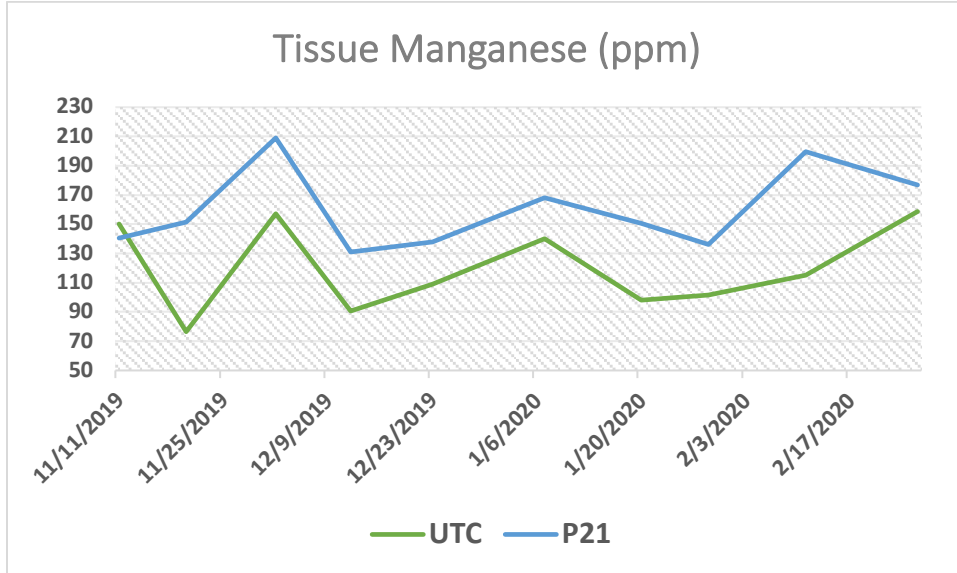
UTC Season Avg: **0.46**, P21 Season Avg: **0.47**, P21/UTC: **+2%**



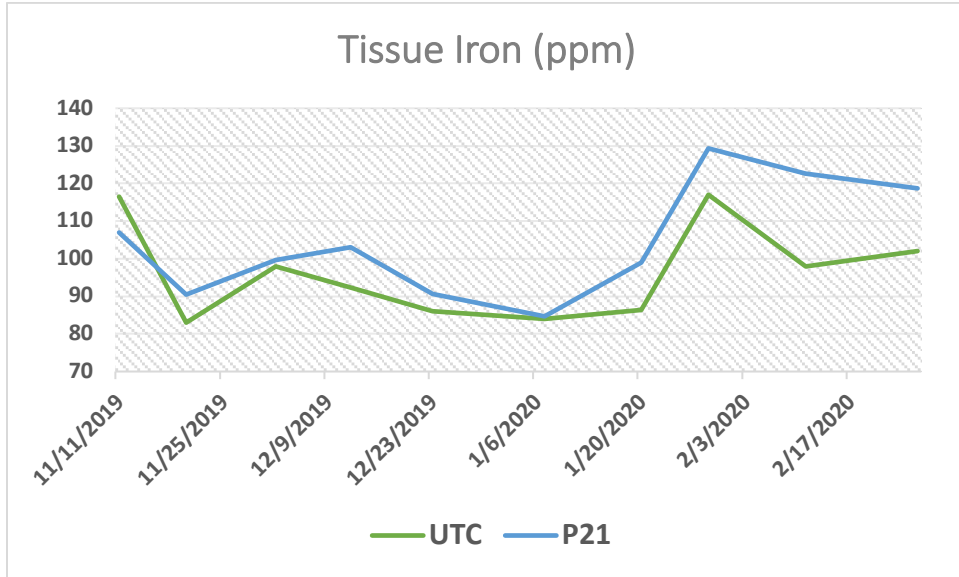
UTC Season Avg: **0.24**, P21 Season Avg: **0.24**, P21/UTC: **0%**



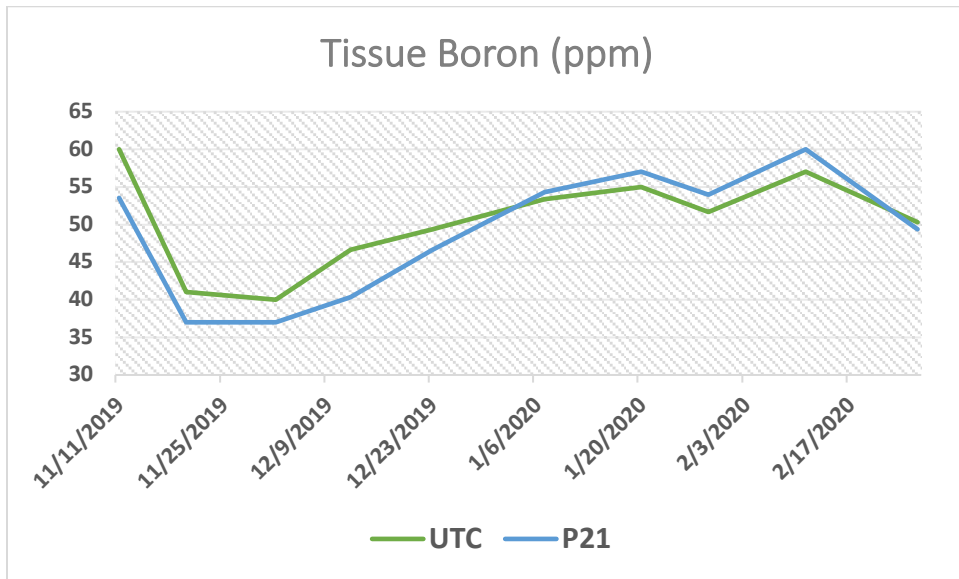
UTC Season Avg: **53.5**, P21 Season Avg: **57.7**, P21/UTC: **+8%**



UTC Season Avg: **119.7**, P21 Season Avg: **160.1**, P21/UTC: **+34%**



UTC Season Avg: **96.3**, P21 Season Avg: **104.5**, P21/UTC: **+9%**



UTC Season Avg: **50.4**, P21 Season Avg: **48.9**, P21/UTC: **-3%**

