

# UF/IFAS Plant Nutrient Oversight Committee (PNOC) Meeting

## Meeting Minutes

October 19, 2022

### *Attendees:*

Tom Obreza, Rob Gilbert, Andra Johnson, Saqib Mukhtar, Michael Dukes, Gopal Kakani, Kelly Morgan, Chris Gunter, Dean Kopsell, Samira Daroub, Cheryl Mackowiak, Sanjay Shukla, Eric Simonne, Mabry McCray, David Liu, Rao Mylavarapu, Lincoln Zotarelli, Christian Christensen, & Jerry Fankhauser

### *Welcome & Comments:*

Associate Dean of Extension and Chief Operating Officer for PNOC, Tom Obreza, opened the meeting and noted that the agenda and minutes of the July meeting are in the Outlook calendar invite. Tom then asked Dean of Research, Rob Gilbert, if he had any comments... Rob then thanked all for all the ongoing and important work and if time allows he would like to discuss the Brazilian Embrapa project at the end of this meeting.

Tom Obreza then brought up the July meeting minutes highlighting the \$8.7 million nutrient management project that was just starting in addition to the Phosphorus (P) recommendations in potato and carrots, citrus, and sugarcane. Those recommendations were approved by the committee and are now in the process of getting into the literature. That is one item of discussion for later in this meeting... how we communicate such changes in nutrient recommendations. Years ago, this process was rather slow and involved bulletins, EDIS documents, etc. though such delays were not as important relative to the world today where growers are trying to meet BMPs. So how do we get changes in recommendations out more quickly? We have ideas but we need some input from the committee. The idea of the interim or provisional recommendation was also discussed and will be explored further during this meeting.

Tom then showed all the cover of the Florida Grower magazine in August, and it shows the cover story written by Frank Giles and was about our nutrient management project for which Tom submitted content for – Dr. Angle also provided content for the story. A simple map showing commodities being researched and where in the state was also created and has been shown to some in the industry.

### *Discussion:*

Tom then updated all the current nutrient management project... the contract from FDACS-AES was not in place until late July. The first quarter reporting is completed with a lot of work done in the first two months. FDACS-AES wants to know activities, events and findings, what is coming up? Activities include purchasing equipment, hiring post docs, lab analysis, preparing fields, etc. Trials that have been started include snap beans, citrus, Limpograss, and tomato. Not many findings yet but some Limpograss results are in. The next quarter's efforts will involve acquiring more equipment and hiring people, getting field work established, hurricane damage assessment, etc. but overall a lot of foundational work is being done. Obstacles include recruitment of students and post docs, supply chain issues, hurricane damage, and study planning in cooperator fields.

Sanjay Shukla then noted that two experiments were adversely impacted by Hurricane Ian with central Florida site having tomato fruit damage. The south Florida site had significant tomato plant damage due to wind. Both experiments, though, are being continued which is good because doing so allows us to evaluate nutrient rates in tomatoes under more extreme weather conditions. Most of other experiments have been postponed due to flooding at present but all commitments for doing on-farm studies are still in place. The other project experiencing hurricane damage was Davie Kadyampakeni's citrus studies with Kelly Morgan also involved – some sites ended up going under water. It is now a matter of the health of the affected trees moving forward.

Other aspects to this project are now underway which includes firming up next year's "ask" for nutrient management research. Mary Ann Hooks is involved in this conversation and has noted that getting recurring funding from the state legislature for this needed work is not feasible. Senator Albritton has asked UF/IFAS for a 3-year plan – this is most positive and will require us to get a plan in place. There is now more of an emphasis in site-specific nutrient management recommendations which has not really been defined yet – there may be a special "ask" for this effort. Also, we may seek to add more commodities to future requests for funding.

Tom also brought up the question of nutrient leaching and water quality in the environment... this was not really included in the LBR funding as only "appropriate rates for applying fertilizer for normal and economic crop production to achieve maximum yield and quality and minimize nutrient inefficiencies to the environment" was outlined in this statute. The bottom line is that we are following what the state legislature wanted UF/IFAS to do with this funding.

Tom then asked for questions and comments...

Samira Daroub – Do you have on a public website a list of sub-projects that were funded. Tom responded that there is not anything online yet, but we need to consider how to do that. What about water quality and can we leverage work with FDACS? Tom then noted that transparency is important, and growers are looking for such information.

Tom Obreza – Site-specific nutrient management (SSNM) means different things to people and Sanjay Shukla's work further reinforces that.

Samira Daroub – SSNM includes soil texture, organic matter, and soil water and possibly weather also.

Chris Gunter – Irrigation and production practices are also site-specific, so maybe a one-pager from a UF/IFAS perspective.

Tom Obreza – IFAS Extension has acquired Daryl Palmer who will be the public relations/communications person for getting information out to growers and others.

### *Potato Phosphorus Fertilizer Presentation*

Kelly Morgan then began his presentation on proposed changes to P fertilization in potatoes. Tom requested that he get all involved in potato nutrient management work together to assemble data and summarize findings. His presentation can be found on the PNOG Teams site.

### Summary and Suggested Provisional Potato P Recommendations

- With soil tests, recent research results found that potato yield increased with increasing phosphorus rates at current IFAS recommended high M1 and M3 index values.

Recommendation is to suspend use of M1 and M3 soil test requirements for fertilizer applications until better data is obtained.

- Potato yields increased with increased P rates up to 100 pounds per acre  $P_2O_5$  in Dr. Liu's studies, and up to 225 pounds per acre for the initial LBR-funded studies. Recommendation is to use existing UF/IFAS fertilizer P rates for low M1 and M3 soil test of up to 120 pounds per acre (plus 25 pounds per acre in cold soils) as supplemental fertilizer application.

Questions and comments from the committee...

Samira Daroub – What do you mean by suspending the use of the soil tests? Kelly responded by saying that UF/IFAS recommends that all fertilizer recommendations should be based on soil test results. In this case with P in potato production, growers should not rely on M3 results for P rate determination.

Tom Obreza – Mehlich 3 has never been classically calibration here in Florida so there is a lot we do not know in terms of applicability – this applies only to P in potatoes and not other crops. Also, the use of “provisional” with nutrient rate recommendations is a new(er) concept. The definition of provisional is existing only until permanently or properly replaced, providing or serving for the time being only, or accepted or adopted tentatively or conditionally. If we do such a conditional recommendation, provisional seems to be the appropriate term, especially with 2023 potato production looming.

Eric Simonne – Should we clarify that this is chipping potato versus table stock? Kelly responded that the two studies noted in his presentation included both types.

Chris Gunter – What are the optics of this provisional recommendation language... is it a recommendation or are we just not sure at present? We have had years and years of nutrient research in potatoes and now we are putting out a provisional rate for P fertilization. Kelly responded that we are sticking to a maximum P rate of 120 pounds per acre which is where we were ahead of this change.

Sanjay Shukla – Some growers in central and southwest Florida have been asking for a letter noting compliance with BMPs (relief) with provisional rate.

Rob Gilbert – UF/IFAS is only in year number one with this nutrient management studies, so are still far from having more firm to final rate recommendation changes. Looking at these two recommendations, are they contradictory? Kelly responded that the second recommendation is for all soils (regardless of M3 test result for P).

Tom Obreza – To Rob's point, Dr. Liu had three years of data that were consistent with this recommendation.

Dean Kopsell – How many cultivars (diverse genetics) were used in these studies? Kelly Morgan responded that two of the studies were table stock and one with chip varieties with the latter being the same variety. Dean then wondered about how many different cultivars or varieties are grown in the industry. Lincoln Zotarelli added that Atlantic and Red LaSoda are the standard varieties grown here in Florida as they are both high yielding. Dean went on to note that with higher P applications, there should be concerns about the impact to the environment. Kelly then responded that this is indeed a concern, but these studies did not address any possible consequences to the environment.

Michael Dukes – What we are struggling with here is the current P recommendation now being replaced by a provisional one... FDACS-OAWP might choose to reject information we generate due to no associated water quality research. Should we engage with FDACS-OAWP about this soon?

Chris Gunter – On the soil test recommendation language, does the soil test appear in the actual statute language? Tom Obreza responded that the UF/IFAS rate recommendations are the BMP so whatever is in our current literature is what becomes the BMP unless we provide new guidance as with this specific provisional rate for P fertilization in potato.

Michael Dukes – If we are to go to FDACS-OAWP, Kathryn Holland would be a good first point of contact as this issue may also involve DEP. Tom Obreza responded that we are just going with the science and staying aligned with statute language with the LBR funding.

Tom Obreza – Kelly Morgan should consider reframing the provisional rate language and bring it back to the committee.

#### *Sugarcane Fertilizer Recommendations for Transitional Soils and Sands in South Florida*

Mabry McCray then began his discussion on a couple of nutrient rates in sugarcane production that need to be changed. An EDIS document on these proposed changes is finished with just a couple of approvals still needed. They include Nitrogen (N), P, Silicon (Si), elemental Sulphur (s) recommendations on sand and rates for transitional soils. Transitional soils are the mucky sand or sandy muck soils in or near the EAA as these soils transition to more sand soils. There is a range in organic matter across these types of soils and such variation affects nutrient availability and rates needed for sugarcane production.

#### Summary

- Include an option to calculate N, P, and K recommendations for transitional soils (sandy mucks and mucky sands) by using actual soil organic matter content to interpolate between recommendations for sands and mucks.
- Update elemental sulfur recommendations for sands and mucky sands.

#### Questions and comments...

Cheryl Mackowiak – For the organic matter determination, can growers essentially do that once or is there a frequency recommendation? Mabry responded that these soils are indeed transitional but percent changes are not large so he would recommend that organic matter determination be done every other time they plant sugarcane (ca. every 8 years).

Rob Gilbert – Are sugarcane growers moving to transitional soils than muck? Mabry responded that he is seeing more production on sands with continued production on transitional soils.

Rao Mylavarapu – UF/IFAS has demonstrated that higher rates of elemental S led to only around 3 weeks of response before soil pH began to rise again. Mabry responded that he and others use granular S in the furrow at planting. In doing so, he has seen the response last for most of the life of the sugarcane crop.

### *Changes to Fertilizer Rate Recommendation Format Following Review of ANSERV Laboratory.*

Rao Mylavarapu then began his discussion on the UF/IFAS ANSERV Laboratory and the recommendations that came from an external review by Dr. Kissel from the University of Georgia. One of the recommendations he made was to use equations to calculate P and K recommendations for soil tests. Currently, the lab uses a stepwise recommendation but employing a model the recommendation will change based on parts per million of a particular nutrient (P, K). Rao is continuing with modeling exercises with testing in a month or two.

Questions and comments...

Tom Obreza – This topic and presentation by Rao Mylavarapu was more informational and done to let all on PNOC know what is happening at the ANSERV Lab.

Cheryl Mackowiak – Going to equations is good... one question that I have is that given that growers take things very literal, so how are you going to round rate recommendations? Rao Mylavarapu responded that the lab is able to calculate values down very low but that is impractical. With lime, we get down to the per pound but most or all round up higher at the field level. With precision applicators, more precise rates can be applied but we are still at the pounds per acre level at present.

### *External Communications*

Tom Obreza then went to discuss the topic of communicating nutrient management projects and updated rate recommendations – they are intertwined. Our researchers are working directly with growers and these growers want to know what is happening with the studies and results to date. We could consider creating a website to communicate externally and also deposit documents (e.g., EDIS documents). We could also go the newsletter route like IFAS Extension uses – timely updates to growers and others. What are the thoughts here?...

Samira Daroub – Growers must implement BMPs to be considered in compliance, right? How do we communicate to other soil testing labs outside of Florida? Tom Obreza responded that we can only control what comes out of our soil testing labs... we cannot control other commercial lab information.

Saqib Mukhtar – The idea of a dedicated website is a good one, but it is important to always refer growers and others to the one website where EDIS publications are located. Tom Obreza wonders what the growers want to see with such an online presence. Sanjay Shukla added that growers desire transparency from UF/IFAS and having one place to access latest nutrient rate information. Also, have larger stakeholder meetings to give updates as new rate information emerges.

Tom Obreza – noted that given how engaged UF/IFAS administration is with this rate effort, where does UF/IFAS Extension fit with disseminating new rate information?

### *Embrapa Collaborative Effort Opportunity*

Rob Gilbert then talked about the Embrapa-Brazilian Agricultural Research Corporation which is like the Brazilian USDA. Embrapa is interested in increasing the collaboration with U.S. researchers and UF/IFAS in particular. Areas of collaboration might include climate change and larger projects including crop nutrient management. Given the war in Ukraine and supply chain issues, Embrapa wants to partner with us in areas like precision nutrient rate management with big data and AI, biological projects (soil

biology and health, new products including fertilizers and biostimulants, and more efficient uses of existing nutrient sources. UF/IFAS faculty have been identified for the first few meetings including some on PNOC. Rob Gilbert's request is for assistance with leadership on this emerging collaborative effort with Embrapa. This is a complex process with negotiations and leadership is needed.

Kelly Morgan was then asked by Rob Gilbert to talk about a recent grant proposal that is going to the Foreign Ag. Service. Kelly then talked about the team that was put together to put forth a proposal to look at the increases in food and fertilizer costs worldwide – such increases adversely impact low-income countries - how might they be addressed and improved. This proposal also does include Embrapa and USAID (for information). How do we collect needed data that can lead to improved nutrient rate recommendations? Rob Gilbert then talked about the path forward for this opportunity and seeks to know which faculty might be interested in being a part of this overall opportunity (with Embrapa). Sanjay Shukla wondered about types of crops with Rob Gilbert responding that it is rather open, but crops should have significance across the world. Tom Obreza stressed that information needs to go out to more across the Institute so interest can be gauged.

The meeting was then adjourned at 11:00 am.

Submitted by: Jerry Fankhauser