

UF/IFAS Plant Nutrient Oversight Committee Meeting

Meeting Minutes

February 13, 2023

Attendees:

Tom Obreza, Rob Gilbert, Andra Johnson, Saqib Mukhtar, Michael Dukes, Shinsuke Agehara, Bryan Unruh, Gopal Kakani, Kelly Morgan, Samira Daroub, Cheryl Mackowiak, Sanjay Shukla, Rao Mylavarapu, Darryl Palmer, & Jerry Fankhauser

Agenda Item #1 – Opening Remarks & Comments

Senior Associate Dean of Extension and Chief Operating Officer for the UF/IFAS Plant Nutrient Oversight Committee (PNOC), Tom Obreza, opened the meeting at 3:18 pm and then noted the full agenda that includes additional nutrient rate change recommendations for Strawberries and turfgrass. Tom then reviewed the highlights of the October 19, 2022 meeting. They include:

- Proposed sugarcane nutrient rate changes for Nitrogen (N), Phosphorus (P), and Silicon (Si) on transitional soils and also elemental Sulfur (S) on sandy soils were accepted and the updated EDIS document is now live.
- The provisional rate for P in potato proposed by Kelly Morgan was accepted and released (via memorandum from Rob Gilbert and Andra Johnson). This also involves suspending the use of soil test P when determining appropriate application rate.
- Changes in ANSERV/Soil & Water Testing Laboratory format recommendations were made from Rao Mylavarapu for P and Potassium (K). This involves moving away from discrete numbers to a graphical format – leading to more accurate P and K rate recommendations.
- Efforts with PNOC communications... Darryl Palmer is now on staff in Extension administration and has done a lot of work in this communications area.

Agenda Item #2 – Fertilizer/Nutrient Management Project Update

Tom Obreza then moved to meeting agenda Item #2 (fertilizer/nutrient management project update) in order to give an update. For Fiscal Year 2022-2023, UF/IFAS is now finished with the second quarter with these reports now submitted to FDACS-AES. More equipment requested by PIs for their sub-projects has come in and more hiring of post docs and graduate student along with some direct meetings occurring with growers/cooperators. Winter field efforts continues with tomatoes, potatoes, green beans, citrus, and peaches. Grower education has occurred either formally (e.g., meetings) or informally (i.e., direct interaction with growers).

Tom then passed along that Sanjay Shukla has seen a preliminary P response in tomato and green beans... even with soil test values in the high range. Data has been and will continue to be collected in tomato and other commodities funded as sub-projects. Research on grain corn and cotton will commence this spring in addition to continuing lab and modeling work. Challenges in the second quarter include supply chain issues along with workforce limitations. Hurricane Nicole also created some flooding issues in south Florida and then a freeze in December – the latter may have affected cold hardy citrus research. Some of this challenges may lead to funds not being spent ahead of June 30th, so

we possibly seek to carry such funds over and add them to another LBR ask. For FY 2023-2024, UF/IFAS seeks to ask the state legislature for around \$6.2 million in (LBR) funds with some recurring and the balance non-recurring. For this ask, UF/IFAS may include other crops like lettuce, strawberries, blueberries, and also site-specific nutrient rate recommendations. Tom Obreza will soon be engaging with researchers to firm up commodity nutrient rate and other research. Cheryl Mackowiak asked about the \$6.2 million request being firmed up... how much will be recurring? Tom responded by saying that some proportion which is yet to be determined will be recurring. Researchers do need to work to maintain what has been started but there is a need for funds to support site-specific nutrient management research/modeling. Along with LBR funding, FDACS-OAWP has distributed their latest request for proposals and projects funded will most likely mesh with LBR-funded studies.

Rob Gilbert then spoke briefly about the collaboration that has started between UF/IFAS and Embrapa (Brazilian Agricultural Research Corporation) – this will lead to studies both in Brazil and in Florida. Kelly Morgan is working to get ahead of a request for proposals from USDA-Foreign Agricultural Service.

Meeting Agenda Item #3 – Nutrient Fertilization Updates in Strawberry

Tom Obreza then introduced meeting agenda item #3 which is Shinsuke Agehara's presentation on nutrient fertilization in strawberries. Shinsuke then presented his information via a PowerPoint presentation along with supporting publications and a draft updated *Fertilization of Strawberries in Florida* document (Note: supporting documents can be found in the PNOC Teams site).

Summary of Proposed Updated N and K Rate recommendations for Strawberry:

- It should be noted that the majority of transplanted strawberries in production are done so via bare roots, so nutrient research studies were focused on this type of transplanted plant.
- The UF/IFAS total seasonal N (fertigation) recommendation has been about 150 lb./acre for a 150-day season (Mylavarapu et al., 2022), and this new publication updates that recommendation. The new recommended target N amount is 175 lb./acre N; however, length of growing season, tissue testing, and leaching rainfall may result in additional N being required (see table below).
- Adjust the daily N fertigation rate accordingly.
- Adjust K application timing without changing the overall K rate.
- Modify footnotes for N and K rate applications.

Table: Fertigation recommendations for Nitrogen and Potassium for strawberry in Florida.

Nutrient	Nutrient injection rate (lb/acre/day) ^z							Recommended total season amount (lb./acre) ^x
	Time period in the growing season ^y							
	October ^w	November	December	January	February	March	April	
Nitrogen (N) ^v	1.5-2.0	1.0-2.0	1.0-1.5	0.75-1.0	0.50-1.0	0.50-0.75	0.50-0.75	175
Potassium (K ₂ O)	0.6-0.8	0.6-0.8	0.6-0.8	0.6-0.8	0.6-0.8	0.6-0.8	0.6-0.8	150

Tom Obreza then asked Shinsuke about Table 8... was that from the Vegetable Production Handbook? Shinsuke replied that it was in Chapter #2 of that Handbook. Tom went on to ask for clarification on your proposals... a change with N but embedded in that a change also in the fertigation schedule along with updates to footnotes. Shinsuke concurred that those are the proposed changes with the goal of making changes that are practical for growers. It should be noted that the data acquired from these studies is already published. Tom added that Shinsuke brings up a key point in that footnotes are important with updated recommendations – doing so considers the whole production system in strawberries.

Saqib Mukhtar thanked Shinsuke for presenting his results and then asked about his footnotes, specifically about growers being able to go with up to 200 pounds N per acre where there are soils that are prone to leaching. How does that come across from the environmental standpoint and water quality? Shinsuke replied by stating that most growers do a good job in terms of nutrient placement and efficiency as they change rates based on the weather and plant development. The goal here is to give growers options for specific soils and growing conditions. Saqib then added that there may be concerns from some about the footnotes.

Sanjay Shukla then asked about any adjustments based on linear foot of strawberry beds per acre. More plants per acre on 48-inch beds might lead to higher N rates. Shinsuke replied by noting that all studies were done on 48-inch bed spacing which is the typical spacing for area growers. Another question was posed by Sanjay... for these studies to be applicable or scalable to commercial fields, what was your management unit? Shinsuke replied that the individual plot unit was 20-22 plants with these studies done via small scale as commercial growers use large scale fertigation systems for production. Tom then talked about discussion of “what is an acre” years ago and maybe we need to revisit that? Cheryl Mackowiak then asked what the rules or standards will be for making changes to recommendations... 2 years of data at one site? Maybe strawberry production is so concentrated in that area? Tom responded that he would take that under advisement but added that this question is another more complicated topic but due to time constraints we need to continue with our final presentation to the committee.

Agenda Item #4 – Turfgrass N and P Fertilizer Recommendations

Tom Obreza then asked Bryan Unruh from the West Florida REC-Jay to present his proposal to adjust UF/IFAS turfgrass N and P fertilizer recommendations and also present an update on the launch of the UF/IFAS branded soil test kit for lawns. Bryan began by noting that he has shared a chapter (on the PNOC Teams site) as it relates to soil testing and turfgrass fertility. Turfgrass science differs considerably from other commodities in that yield is not quantified. This is a challenge nationally and key scientists in the turfgrass are working on this. When turf is properly maintained, the nutrients applied generally stay put and are not leaching or running off. There is a tremendous human factor with turfgrass management.

Bryan then presented his PowerPoint slide presentation and noted the history of N fertilizer recommendation development on turfgrass (see Microsoft Teams PNOC site). The focus today is on N and P fertilizer with the latter on Bahiagrass management. There was a bit of a debate with regulatory agencies back in 2014 with the N rate in turfgrass. On most Florida soils, reservoirs of P are extensive, so most all P needs for established turf can be supplied by the existing reservoir in those soils. P applications are recommended when soil test results show low to medium P levels with the amount being 0.5 pound per 1,000 square feet. That amount is a fixed number and driven by regulatory agencies. Current evidence from peer-reviewed science literature show that this current recommendation will lead to an overfertilization of P on turfgrass. There are a number of scientists working on this issue in both cool and warm season turfgrass. To summarize, A Mehlich 3 test result of 22 milligram per kilogram or greater of P means that a response to P is highly unlikely in turfgrass. This is my recommendation for P needs in turfgrass.

Cheryl Mackowiak asked if type of species of grass grown affects P needs? Bryan responded that there are five major turfgrasses and samples collected did not define what species of turf, but he does not believe that the data shows that there is much of a difference. Cheryl added a comment about Mehlich 3 as there are some concerns about the test with soils in the Panhandle. Bryan then added this change may likely eliminate P recommendations in turfgrass – this may significantly reduce P impacts in the urban landscape.

Tom Obreza noted that many assume that when UF/IFAS updates fertilizer recommendations, such changes are for an increase, but this shows that there is more of a balanced approach. Rao followed up with a question about Bahiagrass and N recommendations at this point... with P recommendations have you had any discussions with Maria Silveira at RCREC-Ona? She does work with nutrient needs in Bahiagrass. ANSERV lab has the BMP-type samples from Bahiagrass nutrient research so should there be a larger conversation about nutrient needs in this species? Bryan responded by noting that sod production of Bahiagrass has increased in the last few years with pastures being the main source of such sod in years past. More and more Bahiagrass sod is being found in urban landscapes due in part of restrictions in irrigation. In established Bahiagrass pastures, N rates vary from 1.3 to 3.7 pounds per 1,000 square feet. In south Florida Bahiagrass lawns, an N rate of 1.0 pounds per 1,000 square feet looks to be more advantageous lawn maintenance and lower potential for leaching. The current high-end rate of 4.0 pounds per 1,000 square feet be lowered to 2.0 pounds per 1,000 square feet to reduce the potential for nitrate leaching from seasonal fluctuations in rainfall. Bryan added that UF/IFAS turfgrass program uses a standardized 1-9 scale of evaluating turf with around 5 as an acceptable level.

Additional Comments:

Michael Dukes – If this N rate change goes through, could there be added language about what type of landscape the Bahiagrass is in? Bryan responded that he agrees with such language being added.

Rao Mylavarapu – We do need to look at the Bahiagrass in lawns differently than this species in rangelands.

Bryan Unruh – There is a statement in current N recommendations in turfgrass that notes that in high maintenance turf, these rates may be doubled in certain regions in the state. This is a residual statement going back a number of years. This goes to what is high and what is low in terms of acceptable rates?

Sanjay Shukla – What about the unintended consequences of having the high-end rate of N for certain turfgrass situations? Bryan responded that back years ago, the turfgrass team was tasked with coming up with some interim rate recommendations and that effort led to funding from DEP for rate research.

Bryan then transitioned to talking about the new UF/IFAS brand soil test kit for lawns. This is a private-public partnership with AgriTech and was a year in the making. This will go public on Wednesday, February 15th and will be available in all 67 county Extension Offices. There were around 82 Extension staff members on a recent webinar done to bring all up to speed on the use of the kit. There is a video that users view to see how to take a soil test. This test kit set up is geo-located with samples going to a private laboratory. UF/IFAS knows exactly where the sample has come from, and the customer receives a tailored recommendation including how much of a nutrient to apply. There are virtually no P recommendations unless there is a special situation. Notices to customers that reside in a fertilizer-restricted zone will be sent when applicable. This data platform should, over time, assist in AI development for more specific nutrient recommendations.

Questions from the committee:

Cheryl Mackowiak – How long is that partnership contract for? Bryan responded by noting that it is set up for a long time. AgriTech is a Woerner Company and has operations here in Florida.

Gopal Kakani – Is the data that will be acquired available to UF/IFAS scientists? Bryan responded that in the budget that was created, there was an amount identified for AI efforts with the datasets.

Samira Daroub – For the P recommendations, will that impact the sod producers? Bryan responded that it sure could have an effect. On the sod side of the equation, the sod manual from 2008 was updated and was ready to go but was then ditched. Sod is one of those commodities that could benefit from nutrient rate LBR funding. Sod recommendations should be doable, but it could be more of a challenge up in the Panhandle. Is there an impact from weather in terms of temperature and rain? Specifically, cold temperatures on P uptake. Bryan responded that he has reached out to Clyde Fraise in ABE to discuss but has not heard back from him yet. There are some questions from sod producers up in the TCAA area – this may be a function of the St. Johns River effect in that area.

Tom Obreza then appropriately noted that this meeting is out of time, so Darryl Palmer's presentation will have to be postponed to the next PNOC meeting. All will be encouraged to go to the PNOC website and comment accordingly. Saqib Mukhtar did ask if the proposed recommendations would be voted on post-meeting and Tom said that they will be, but some clarification of such changes will have to be firmed up ahead of any voting.

The meeting was then adjourned at 5:03 pm.

Submitted by: Jerry Fankhauser