Comparison of Soil pH Meters: Store-bought, Portable Scientific meters, and University Soil Analytical Laboratory

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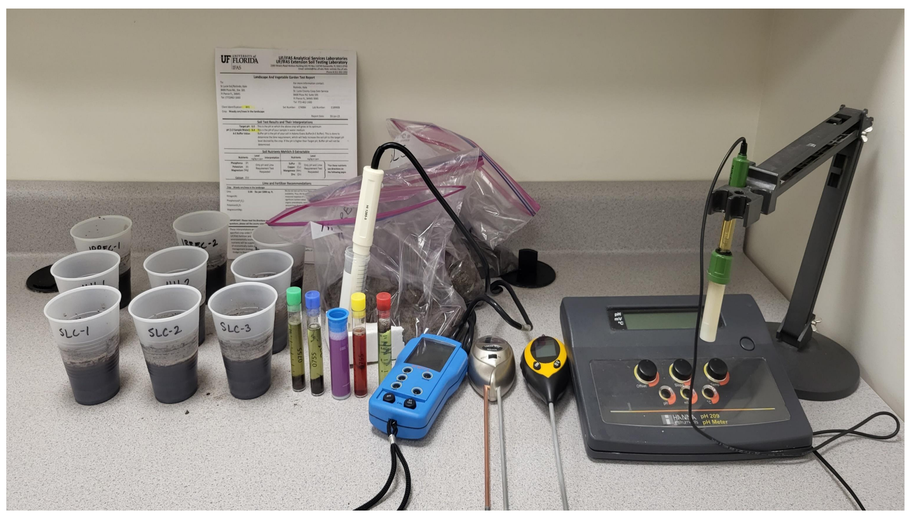
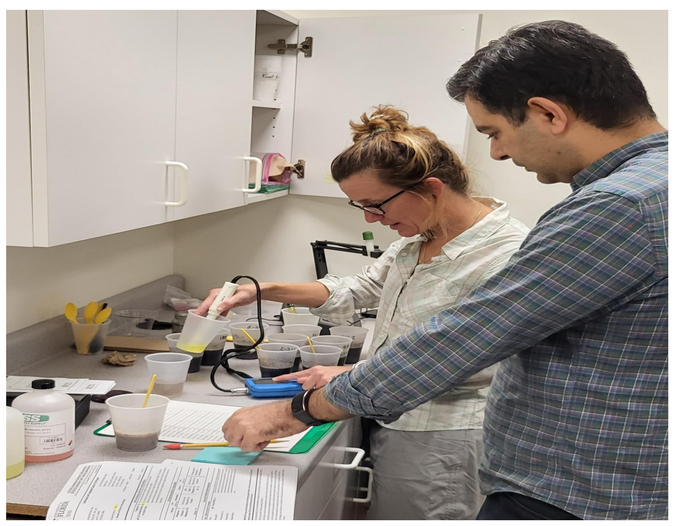
SITUATION

Annually, many homeowners visit UF/IFAS Extension St. Lucie County plant clinics seeking solutions for unhealthy plants. Extension Agents commonly advise homeowners to send soil samples to the University of Florida Extension Soil Testing Laboratory (ESTL) for pH analysis. Many clients have informed Agents that they intend to utilize a pH meter they purchased from a local store. The purpose of this experiment was to determine whether the pH meter in ESTL and store-bought pH meters produced significantly different results.



pH meters used for measuring soil pH



Extension Agents processing soil samples

University of Florida Extension Soil Testing Laboratory

METHODS

A four-question survey was given to 115 St. Lucie County residents. Survey questions included - have you measured your soil pH, and if so, how; have you ever used a store-bought soil pH meter, and do you feel that these types of pH meters are accurate? 64% (N=74) of respondents stated that they believe store-bought pH meters are accurate, while 32% (N=37) stated store-bought pH meters may or may not be accurate, 4% (N=4) stated that store-bought pH meters are not accurate. To test the accuracy of store-bought pH meters, we submitted a soil sample to the UF ESTL and use three store-bought pH meters. For pH testing, soil samples were collected from three different sites. The results of three store-bought pH meters were compared with those of one portable scientific pH meter and the ESTL pH results.

RESULTS

Results from the portable scientific pH meters and the ESTL were very similar. The results for the store-bought pH meters were significantly different from that of portable scientific pH meters and ESTL pH results.

sample	UF ESTL	portable scientific meter	store-bought meter #1	store-bought meter #2	store-bought meter #3
4H-1	6.4	6.3	7	7	(based on color chart) 7
4H-2	6.5	6.3	7	7	(based on color chart) 7
4H-3	6.5	6.3	7.1	7	(based on color chart) 7
SLC-1	6.3	6.3	7	7	(based on color chart) 7
SLC-2	6.5	6.5	7	7	(based on color chart) 7
SLC-3	6.7	6.5	7	7	(based on color chart) 7
IRREC-1	6.4	6.3	7	7	(based on color chart) 7
IRREC-2	6.5	6.4	7	7	(based on color chart) 7
IRREC-3	6.5	6.4	7	7	(based on color chart) 7

CONCLUSION

Store-bought soil pH meters produce a wide range of readings. Since store-bought pH meters are inaccurate, they should not be used in place of scientific pH meters, or the pH meter used in the university's soil testing laboratory. This could lead to confusion for homeowners attempting to diagnose landscape issues.

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