Comments and Letters to the Editor

Comments on "A Trickle Irrigation System for Frequent Application of Nitrogen to Experimental Plots"

We were interested to find that the report by J. E. Hairston, J. S. Schepers, and W. L. Colville (Soil Sci. Soc. Am. J. 45:880–882) entitled "A Trickle Irrigation System for Frequent Application of Nitrogen to Experimental Plots" was accepted for publication. Based on our small-scale research and large, field-scale commercial experience with trickle irrigation systems for sugarcane, and that of others in Israel, Arizona, and California with other crops, we feel that even with many improvements this report might qualify as a note or perhaps be most appropriately located in a "Methods and Materials" section of a longer paper which includes some data.

In addition to no mention of the tube's orifice spacing and diameter, one serious omission from the system of Hairston et al. is some device to measure the amount of water applied, e.g., metering valve or water meter, especially if the system is to be used for irrigation as well as fertilization. Is there no effect of the water × nitrogen interaction on yield? For our fertilization and amounts of water experiments, we prefer to have a pressure regulator and a pressure gauge at each plot and a manifold connecting the ends of all tubes of one plot; a drain or flush valve is connected to the manifold. These precautions as well as filtration and chlorination of water are highly recommended to minimize orifice plugging and assure uniform distribution of water and fertilizer.

Hairston et al. apparently did not determine the water distribution efficiency by measuring the flow rates of water from orifices, tubes, or plot manifolds. If the water distribution efficiency is high, fertilizer distribution will likely be uniform.

Instead of determining water distribution efficiency, Hairston et al. used analyses of water, soil, and plant tissue samples for nitrogen to evaluate fertilizer distribution. Neither the form of N (urea?) nor the method of laboratory analysis was stated. Soil and tissue sampling errors as well as some methods of N analysis can give coefficients of variation as great as those reported, especially if high-biuret urea is the substrate.

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References

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Enclosed is our response to comments by R. P. Bosshart and L. T. Santo.

We are not trying to compete with large trickle irrigation companies of the world, including those of Israel, in the design of trickle irrigation systems. We definitely have no interest in large field-scale commercial systems as used in Israel and on sugarcane in Hawaii. We thought we had a simple system that provided good water and fertilizer distribution to small-scale plots and wanted others to know about it. In fact, at least 25 individuals have requested reprints of the article. Most of these people are interested in good water distribution on small research plots with as little investment in equipment as possible.

We thank Dr. Bosshart and Dr. Santo for drawing our attention to some parts of this paper that were not made sufficiently clear. We kept the paper short so as not to