A COMPARISON OF GLASS AND QUINHYDRONE ELECTRODES FOR DETERMINING THE pH OF SOME IOWA SOILS: III. THE CHANGE IN pH OF THE SOIL-WATER MIXTURE WITH TIME1

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In previous investigations (4, 5),3 experiments were conducted to determine the suitability of different types of glass electrodes, and to study the variability of the results obtained with glass and quinhydrone electrodes in determining the pH of soils. The study on the suitability of different types of glass electrodes showed that similar results were obtained with each of the four types employed. The modified bulb, silver-silver chloride type, however, was found most practicable for routine determinations. When the determination was made by either the glass or quinhydrone electrode, the variability in the pH of 25 replicate samples of different soils was comparatively small and presumably of little consequence. The "QH" and "QH electrode" errors were found to be only slight for the soils studied and it was concluded that with these soils the quinhydrone electrode method would give fairly reliable results when compared with those obtained with the glass electrode. The potentials of the glass and quinhydrone electrodes were found to change somewhat during the pH determination, and it was concluded that it is desirable to check the glass and quinhydrone electrodes against a known buffer solution at frequent intervals during their use.

In these earlier experiments it was also observed that the potential difference of the soil suspensions, when determined by either the glass or quinhydrone electrodes, changed somewhat with time. Although the potentials of the electrodes themselves changed slightly during the 20 minutes they were immersed in the soil suspensions, when checked against a standard buffer solution before and after immersion, this change appeared to be large enough to account for only a very small portion of the drift observed in the pH of the suspensions.

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3Figures in parenthesis refer to "Literature Cited," p. 595.