A SIMPLE METHOD FOR MEASURING FLUORIDES IN FOLIAGE USING THE FLUORIDE SPECIFIC ION ELECTRODE[1]

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ABSTRACT

A determination of fluoride in lime-ashed samples of Magnolia and Pinus was carried out by potentiometric titration with an Orion specific ion electrode. Results compare closely with those obtained by the standard fusion-colorimetric method. The foliage samples were rinsed in distilled H_2O to remove deposited particulates, dried to a constant dry weight at 70° C, chopped into small pieces, and ashed in a lime-water slurry at 600° C. A weighed amount of ash, 1 gram or less, was added to 100 milliliters of 1M H_3PO_4 in a 150-milliliter plastic beaker and the solution mixed by magnetic stirring. The potential (E_0) of the unknown solution was measured with a millivolt meter. One milliliter of standard fluoride (100 ppm) was added to the original solution and the new potential (E_1) was measured. From the change in potential, ΔE ($\Delta E = E_0 - E_1$), and the concentration of added standard fluoride, the concentration of fluoride in the ashed sample can be calculated by the known addition method. Measurements obtained by the fluoride-electrode method were within 10 percent of those obtained on the same ashed samples by the standard method and precision was within 5 percent.

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