EFFECTS OF CHLORIDE FROM CALCIUM CHLORIDE ON P\textsuperscript{32} ACCUMULATION IN POTATOES\textsuperscript{1}

RESULTS noted herein originate from a pilot experiment designed to test the premise that chlorides under certain circumstances might affect phosphorus in potatoes. Mercer noted that certain increments of chloride appeared to induce foliar symptoms similar to those characterizing phosphorus deficiency.\textsuperscript{2}

Uniformly cut seed pieces of the Kennebec variety of potato were planted in 3,500 g. of a virgin, air-dry soil contained within 1-gallon, glazed jars. The pH of the soil was approximately 5.0. Additions of N, P, K, and Mg were equivalent to 2,000 pounds per acre of a 6-12-12 fertilizer with 2% MgO. Trace elements consisting of B, Mn, Zn, Cu, Mo, and Fe were added in constant amounts for all treatments. Chloride from CaCl\textsubscript{2} was added at increments of 100 ppm, from 0 to 800 ppm. A split-application technique was employed wherein one-half of the nutrients was applied Feb. 21 in 250 cc. aqueous solution, 4 days after planting, and the remainder was applied in like manner April 6 with the addition of 0.8 mc. of P\textsuperscript{32} (P-1) as PO-4 in weak HCl.\textsuperscript{3} Autoradiographs were prepared within 2 weeks thereafter.

 Autoradiographs of 3 leaf samples from each potato plant, composed of a terminal leaf and portions of 2 leaflets which were sequentially removed, indicated that the amount of P\textsuperscript{32} increased as increments of chloride from CaCl\textsubscript{2} were increased to 400 ppm., after which there was an apparent and progressive decrease in the amount of P\textsuperscript{32} (figure 1). This relationship was also evident in below ground portions consisting of tubers, root systems and stolons (figure 2). Hence, the inhibitory effect of the higher amounts of chloride on the uptake of P\textsuperscript{32} is implied.—H. W. GAUSMAN and A. B. AWAN, Agronomy Department, University of Maine.

\textsuperscript{1} Received June 2, 1956.
\textsuperscript{3} P\textsuperscript{32} obtained from Isotopes Division, Oak Ridge Operations, Oak Ridge, Tenn.