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## The Effects of Potash and Crop Residues on Available Potassium in Some Alkali Soils of Iowa

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THE EFFECTS OF POTASH AND CROP RESIDUES ON  
AVAILABLE POTASSIUM IN SOME ALKALI  
SOILS OF IOWA

HARTZELL C. DEAN AND F. B. SMITH

Many investigators have found that high-lime soils may often be deficient in available potassium. According to the present theory, the low availability of the potassium in such soils is probably due to the high concentrations of calcium salts. The "so-called" alkali soils of Iowa have been found to contain high concentrations of both calcium carbonate and calcium bicarbonate. Apparently the concentrations of these salts are so high that they tend to depress the availability of the potassium in the soil.

Greenhouse and laboratory experiments were made to determine the effects of various treatments on the availability of potassium in two so-called alkali soils. The original soils were found to be very low in available potassium. All of the treatments, potassium chloride, straw, and sweet clover, increased the available potassium in both of the soils. Potassium chloride gave the greatest increase while straw and sweet clover showed approximately the same effect. Apparently, some of the potassium that was applied in the various treatments entered the exchange complex, probably replacing part of the calcium that was previously present.

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A MODIFICATION OF BETTENDORFF'S ARSENIC  
TEST AND A QUANTITATIVE DETERMINATION  
FOR SMALL CONCENTRATIONS OF MERCURY

W. BERNARD KING AND F. E. BROWN

The presence of mercuric chloride affects Bettendorff's test for arsenic. The addition of enough mercuric chloride to make its concentration 0.00001 M., before the addition of stannous chloride: (1) hastens the appearance of the coloration, (2) increases the sensitivity of Bettendorff's test ten fold to one hundred fold and (3) enables the test to be made in a lower concentration of hydrochloric acid. Mercuric chloride in 0.00001 M. solutions does not produce turbidity when stannous chloride is added. In the presence