Article title	Comparison of Soil Extractants and Spectral Reflectance Measurement for Estimation of Available Soil Potassium in Some Ethiopian Soils
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Abstract	A study was conducted with the purpose of comparing the efficiency of ammonium acetate (NH_4OAc), Mehlich 3 (M-3), Calcium Chloride ($CaCl_2$) and alpha MIR spectroscopy measurement, for the determination of available potassium (K) on 58 Ethiopian agricultural soils. Four soil reference groups were sampled for the study. The NH_4OAc extractant was used as standard method against which K values estimated by other methods were compared. Results showed that generally highly significant correlations existed among all the methods used for available K extraction. The coefficients of determination (R^2) values between NH_4OAc method and the other methods were 0.90 (M-3), 0.70 ($CaCl_2$), and 0.37(spectral). A statistically poor relationship ($R^2 = 0.07$) was found between $CaCl_2$ and spectral methods. On an average, the K extracted by M-3 and $CaCl_2$ amounted to 106 and 49% of NH_4OAc K, respectively while the spectral method detected 196% of the NH_4OAc K. The highly significant correlation between different soil extraction methods indicated that any of the methods can be used to accurately predict the concentration of available K in the soil. The correlations between K concentration estimated by different methods and plant uptake (product of plant K concentration and dry matter yield) of K were the highest with M-3 and the lowest with spectral methods with R^2 values of 0.65, 0.64, 0.54 and 0.16 for M-3, NH_4OAc, $CaCl_2$ and spectral methods, respectively. It can, therefore, be generalized that the M- 3 is a suitable extractant for K in Ethiopian soils, but further study is recommended to determine how these relationships could be translated to plant K uptake under field condition. Besides, the spectral measurement of K as a soil test method for heterogeneous group of soils warrants further investigation and refinement.
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