

Miscellaneous extractable elements

Chapter 18 of Rayment and Higginson (1992) provided two tests for extractable K^+ . These simple soil fertility tests are retained with the same code numbers. In addition, this chapter provides a selection of other soil tests, brief details of which are summarised in Table 18.1. All of the tests commence with air-dry soil of <2 mm. Each method contains background and application details.

18A1 Bicarbonate-extractable K^+

The bicarbonate-extractable P test of Colwell (1963), based on 0.5 M sodium bicarbonate ($NaHCO_3$) at pH 8.5, was in commercial use by the mid-1960s (Fogliati 1967) as an aid to the responsible marketing of fertilisers in New South Wales. The opportunity to obtain an estimate of extractable K^+ in the same soil extract was quickly recognised. For example, Colwell and Esdaile (1968) reported that for a wide range of soils, the K^+ extracted was highly correlated ($r = 0.96$) with exchangeable K^+ based on an ammonium chloride (NH_4Cl) extraction at pH 7.0. Nowadays, this test, sometimes referred to as Colwell-K, is the 'standard' diagnostic K test used in Western Australia (Bolland *et al.* (2002).

Figure 18.1, based on sample median data from inter-laboratory proficiency programs of ASPAC reported from 1993–1997 (e.g. Peverill and Maheswaran 1993; Peverill and Johnstone 1997), shows a strong, linear relationship between soil K^+ extracted by this method and by Method 18B1 (4 h extraction with 0.05 M HCl).

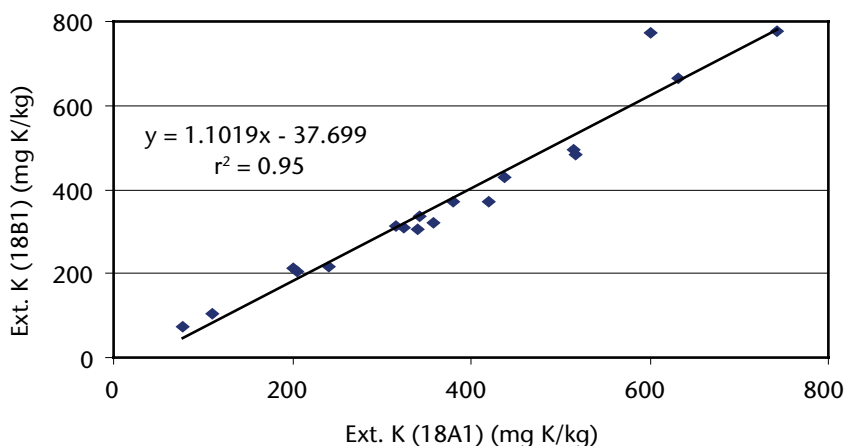


Figure 18.1. Comparisons of median values (air-dry) of soil-extractable K^+ by Methods 18A1 and 18B1, obtained from inter-laboratory proficiency programs of ASPAC from 1993–1997. Grand median values were 350 and 329 mg K/kg for methods 18A1 and 18B1, respectively.