Bags. Four grams of air-dry AER was confined in each bag. The resin was converted to bicarbonate form before use and replicated 4 times.

The Mehlich 3 solution is a combination of acids (acetic, HNO3 and HClO4), salts (ammonium fluoride, NH4F and ammonium nitrate, NH4NO3), and the chelating agent diethylenetriaminepentaacetic (DTPA). Olsen et al. (1954) introduced sodium bicarbonate (0.5 M NaHCO3) solution adjusted at a pH of 8.5 to extract P from soils. But, only 1.0 M NaCl solution was applied to remove P from resin. The 

The 0.5 M HCl solution appeared to dissolve more P from the adhering soil particles, but we could avoid this problem by using the mid NaCl solution to remove P from resin.

c. Soil Solution ratio

The objective of this study was to investigate the soil water ratio for optimal soil P extraction. The experiment was performed on Caribou (1) (acidic soil), and Windthorst (4) (alkaline soil). Two of air-dry soil (12 g) (one with 100 ml of deionized water, and a resin bag were placed in a 250-ml polystyrene bottle; 4 replicates were used for each treatment. The bottle was mounted horizontally on a reciprocating shaker (displacement = 4 cm, speed = 100 rpm) and shaken for 24 hours at room temperature (20 °C). At the end of the shaking period, the resin bag was removed from the suspension, and the solution taken from the soil suspension was retained for measurement.

The results indicated that the 1st hour of shaking the resin bag with either 1.0 M NaCl or 0.5 M HCl solution removed 96% of released P by the 2nd hour of shaking was associated with solution entrapped in the resin bag. When P in this solution (above 1.0 M NaCl/resin bag) was conserved, almost all retained P could be accounted for. Only 65% of retained was removed if 0.5 M NaCl solution after the 2nd hour of shaking. It appeared that the 2nd hour was necessary for 0.5 M NaCl to remove all P from resin.

b. Errors associated with using HCI

The previous experiment indicated that either 0.5 M HCl or 1.0 M NaCl could be used to remove P adsorbed by AER. The objective of this experiment was to investigate why using HCI to remove P adsorbed by AER (from soil suspension) produces P values that are less than NaCl values. The experiment was performed on Caribou (1) (acidic soil), and Windthorst (4) (alkaline soil). Two of air-dry soil (12 g) (one with 100 ml of deionized water, and a resin bag were placed in a 250-ml polystyrene bottle; 4 replicates were used for each treatment. The bottle was mounted horizontally on a reciprocating shaker (displacement = 4 cm, speed = 100 rpm) and shaken for 24 hours at room temperature (20 °C). At the end of the shaking period, the resin bag was removed from the suspension, and the solution taken from the soil suspension was retained for measurement.