Soil acidity and phosphorus levels of permanent pasture paddocks on the southern and central tablelands of NSW

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A number of Landcare and producer groups have undertaken soil testing workshops as part of 'Acid Soil Action' community projects. The incentive for individual landholders to participate has been via subsidised soil tests and the interpretation of their soil test results by experienced agronomists. These soils tests represent a snapshot of the soil acidity and fertility status of soils across a large number of paddocks on the tablelands of NSW.

A total of 693 paddocks were identified as fitting the category of non-basalt soils under permanent pasture. These paddocks were sampled in 1999 and 2000 and came from 8 Landcare/producer groups located across the southern and central tablelands. The paddocks were selected and sampled by the farmers and so are not whole farm data. However, farmers were encouraged to sample a range of their paddocks for discussion during the interpretation phase of the workshops. Paddocks were sampled at 2 depths, topsoil (0-10cm) and subsurface (10-20cm). The topsoil samples were tested for pH($CaCl_2$), phosphorus (Colwell), potassium (Colwell), exchangeable cations and cation exchange capacity. Subsurface tests were the same with the exception of phosphorus.

Summary of results

- *Phosphorus (P).* The median Colwell P level was 16 ppm (range 5-140 ppm). 13% of paddocks were above 30 ppm, 66% below 20 ppm and the remaining 21% had P levels between 20 and 30 ppm.
- *Topsoil pH ($CaCl_2$).* The median pH value was 4.4 (range 3.6- 6.9). Only 7% of paddocks were above pH 5 with 65% having a value of less than 4.5.
- *Subsurface pH (10 – 20 cm).* The median value was 4.4 (range 3.6-6.3). Only 7% of paddocks had a pH of 5 or above with 68% having a pH value of 4.5 or less.
- *Top and subsurface aluminium (Al).* Exchangeable Al expressed as a percentage of the cation exchange capacity is considered the best measure for determining Al toxicity to plants. Levels are shown in Figure 1. Note the high proportion of paddocks that have Al above 20%. This is particularly the case for the subsurface layer where 41% of paddocks had Al above 20%.

Figure 1. Exchangeable aluminium levels of soils from permanent pasture paddocks (% of cation exchange capacity).