Extension activities improve producer awareness of soil health

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BACKGROUND

Since July 2001, landholders from 73 properties in the Armidale District have participated in soil sampling workshops. The workshops aimed at enhancing producers' knowledge of soil testing, soil acidity and nutrient status. Six groups of producers, covering the lower half of the Northern Tablelands, learnt about the physical and chemical nature of soils. In addition simple tests for pH, slaking and dispersion were demonstrated. From the 73 properties, 292 soil samples from 146 sites were taken from 0-10cm and 10-20cm depths. These represented the major soil types in the district - basalt, granite and sedimentary.

RESULTS

Twenty four percent of the total samples were from basalt derived soils, 30% from granite derived soils, 43% from sedimentary soils. The remaining 3% were from alluvial soils and have not been reported in this paper.

- pH ($CaCl_2$) - Across the three soil types the majority of samples (84%) in the 0-10cm range had a pH of less than 5.0. In the 10-20cm samples, 81% of soils recorded a pH of less than 5.0. Table 1 summarises these results for the three main soil types.
- Aluminium (measured as a percentage of CEC) - 60% of samples recorded aluminium levels below 5% in the 0-10cm samples, 34% between 5% and 15% and 6% were above 15%. In the 10-20cm samples, 44% had aluminium levels below 5%, 28% were between 5% and 15%, with the remaining 28% above 15%.
- Phosphorus (Bray No 1) - 93% of soils were deficient in phosphorus; that is, less than 20ppm. These results refer to samples taken from the 0-10cm depth. A summary of the phosphorus levels over the various soil types is presented in Table 2.
- Sulphur (KCl^{40}) - 37% of soils recorded less than 5 ppm. 35% recorded between 5ppm and 8ppm while 28% recorded greater than 8 ppm of sulphur. These results again refer to samples taken from the 0-10cm depth.
- Organic carbon (Walkely-Black) - 33% of soils from 0-10cm depth recorded below 2%. In the 10-20cm samples 81% had less than 2%. Unfortunately 20 samples from one group were not recorded for OC at 10-20cm.

Table 1. Soil pH($CaCl_2$) for the three main soil types

pH($CaCl_2$)	Granite		Sedimentary		Basalt	
	0-10cm	10-20cm	0-10cm	10-20cm	0-10cm	10-20cm
<4.50	19%	26%	13%	20%	3%	11%
4.51-5.0	60%	60%	81%	67%	72%	53%
5.01-5.5	14%	14%	6%	13%	17%	19%
5.51-6.0	7%				6%	14%
>6.01					2%	3%

DISCUSSION

We acknowledge that in many cases the landholders' reason for taking soil samples could lead to some bias with results. This may be due to the fact that soil samples were undertaken because of a perceived plant or soil fertility problem. Phosphorus and sulphur levels may have been influenced by season or by recent fertiliser applications. However, these phosphorus results are consistent with previous soil nutrient surveys (Crocker and Holford 1988, Spencer and Barrow 1963) showing 90% of Northern Tablelands soils to be phosphorus responsive.

The primary objective of the workshop was to improve producer knowledge of soil testing, the physical and chemical aspects of soils and to promote improved soil management. Feedback surveys taken from five of the workshops revealed that 21% of the participants had never taken soil samples prior to this programme. 100% of participants said that they would be more confident in using soil tests to improve soil fertility management decisions in the future. Following the workshop, 98% of participants felt they would be confident in asking for information on alternative products to reflect soil test results and to suit specific paddock requirements. 98% of participants said the workshop series was good to excellent.

ACKNOWLEDGMENTS

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Table 2. Soil phosphorus levels (Bray No 1) grouped according to soil type

Phosphorus	Granite	Sedimenta	Basalt
0-10 ppm	77%	82%	53%
10-20 ppm	16%	16%	29%
>20 ppm	7%	2%	18%

from previous page

addition the following producer groups assisted in the organisation of these workshops; Tia-Yarrowitch Landcare group, Winterbourne Landcare group, Armidale Prograze group 2001, Craiglea Prograze group 2001, Aberfoyle Landcare group, Oaky Landcare group, extension students from UNE and the Southern New England Landcare Co-ordinating Committee.

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