

Effects of Soil Acidity in the Yeoval Area

S.Orr, A.Bulkeley, M.Strachan, and
V.Collins

University of Western Sydney (Hawkesbury),
RICHMOND NSW

Introduction

In recent years there has been a widespread shift toward sustainable agricultural systems. Throughout NSW, soil acidity has been shown to be a limiting factor not favouring this shift (Helyar *et al.*, 1990). Preliminary research has shown that this problem exists within the Wellington region, but more information is needed to define the scope of the prob-

lem. A project was commenced in September 1990 to examine the acid soil problem in one district (Yeoval) within the Wellington region.

Method

The project was a cooperative exercise between District Agronomist Craig Watson, sixteen farmers from the Yeoval area, and four student from U.W.S.Hawkesbury. The underlying methodology of the project was Action Learning. This was approached from two directions: (1) Farmers were interviewed to gain their perceptions of the problem; and (2) Soil samples were analysed to verify these perceptions. A semi-structured interviewing technique was used to obtain information from farmers. One or two soil samples were collected from each property, selecting paddocks in which production decline was apparent. Samples were analysed in U.W.S.Hawkesbury laboratories.

Table 1: Properties of soils surveyed in the Yeoval area.

	pH	P	N	Conductivity	CEC	Al
Units		mg/kg	%	ds/m	meq/100g	% CEC
Method	CaCl ₂	Bray	Kjeldahl		1:5	.0125 M BaCl ₂
Samples	20	22	13	5	5	5
Range	4.1-5.1	2.4-34.6	0.07-0.17	0.3-0.5	4.0-9.2	0.2-2.7
Mean	4.7	12.5	0.1	0.4	6.3	1.0

Results

Interviews: The major points which the farmers raised in the interviews were:

- Poor establishment and unsatisfactory persistence of lucerne;
- Decline in barley yields; and,

- Of the limited number of farmers whom had previously conducted soil tests, low pH (measured in CaCl₂).

Soil Analysis: A recent Soil Conservation report indicated that the two major soil types within the region, were red brown earths (basalt) and non-calcic brown soils (granite). There was no significant difference in pH between these two types within the farms sampled. Analysis of soils sampled are shown in Table 1.

Discussion

Both soil tests and interviews showed that soil acidity is a potential problem in the Yeoval area.

However, aluminium levels are low and would not appear to limit production, except for sensitive species. Preliminary research suggests that manganese could be the toxic element in this region, but further research is needed to confirm this (P.Orchard, per. comm.). As a result of this study, an informal farmer group has formed which will focus initially on lime trials.

References

- Helyar, K.R., Cregan, P.D., and Godyn, D.L. (1990). Soil acidity in NSW - current pH values and estimates of acidification rates. *Australian Journal of Soil Research*, 28:523- 537.