

# FINAL REPORT FOR ACID SOIL ACTION AND ASSPRO PROJECTS for the period up to 30 June 2000

**NAME OF PROJECT:** Harden Murrumburrah Landcare Subsoil Acidity Project  
Acid Soil Action Project No.: SR 98.23

## OBJECTIVES:

- ❖ To establish extent of subsoil acidity within the Shire
- ❖ To establish if there is a link between soil type and subsoil acidity
- ❖ To increase awareness of soil acidity & the benefits of soil testing to depth.

The objective of this project was to conduct a cross-sectional survey of the district at 0-10cm, 10-20cm and 20-30cm. The Harden Shire can be broken up into four zones. Each of these zones is slightly different in soil type and rainfall.

Current indicators of sub-soil acidity are poor and it is the aim of the project to firstly assess the extent of the problem and secondly to establish if there are better local indicators.

At present both the soil type (surface) and aspect appear to be an influence. However, within a catchment this can still vary. It should also be noted that sub-soil acidity has been discovered on some of the stronger soil types in the district.

## PEOPLE INVOLVED

Project Leader: Chris Duff, Chandlers IAMA

Others immediately involved:

Project Management committee included: Bill Schumann, Extension Specialist Acid Soils, NSW Agriculture; Louise Hufton, HMLG Co-ordinator; Tim Condon, Chandlers IAMA; Paul Parker, NSW Agriculture, Barry Alcorn supported by Ellis Murphy, George Elliot, Neil McColl, Mark Barber, Peter Holding and Charlie Baldry.

Brendon Scott, Research Agronomist, NSW Agriculture

Ben Brayscher, Biometrician, NSW Agriculture.

Mark Conyers, Research Agronomist, NSW Agriculture

Site of Project: Jugiong Creek Catchment incorporating the Harden Shire

**MILESTONES** (achievements). Please include some detail, e.g. site selected (with some detail of why), soil tested, pasture established etc;

1. 19/2/99 Letter mailed to members of HMLG outlining the aims of the project and requesting their participation (copy attached) . 50 participants and 300 sites.

2. Soil testing took place in April, 1999 and sent for analysis. All sites were GPS referenced and three depths taken 0-10, 10-20 & 20-30

3. 1/6/99 -Results collated and mailed to participants with a copy of the NSW Agriculture – Interpreting soil tests – Rules of thumb brochure and requesting further information about the selected site (copies attached)

4. Numerous committee meetings were held to discuss results and plan presentation of results to participants

5. Subsurface Acidity Project results were presented as a seminar on 23 March, 2000 and attended by 60 people, speakers included Brendan Scott, Mark Conyers, Greg Fenton, Bill Schumann, Chris Duff and a local farmer's presentation Ellis Murphy on his experiences with subsurface acidity and management. Included with the conference papers was a copy of the NSW Agriculture & Acid Soil Action Brochures – Are my soils acid? The Causes of Soil Acidity, Pastures & Acid Soils, Planning on Liming

6. Government & private advisors are using this information as part of every day agronomic advice to local growers.

#### **EXTENSION AND TEACHING ACTIVITIES ASSOCIATED WITH THE PROJECT**

(field days, meetings, publicity)

1. Subsurface Acidity Project results were presented as a seminar on 23 March, 2000 and attended by 60 people, speakers included Brendan Scott, Mark Conyers, Greg Fenton, Bill Schumann, Chris Duff and a local farmer's presentation Ellis Murphy on his experiences with subsurface acidity and management. Included with the conference papers was a copy of the NSW Agriculture & Acid Soil Action Brochures – Are my soils acid? The Causes of Soil Acidity, Pastures & Acid Soils, Planning on Liming

2. Several sub groups within the HMLG are currently undertaking catchment planning. This project will be providing another layer of information that will assist farmers with whole farm planning and subsequent management decisions. Soil acidity has been listed as a major concern for all members of these Catchment groups.

3. This project links in with previously funded and now privately funded Harden Murrumburrah Landcare Group (HMLG) Sustainable Farming Systems Database. Results suggest that there are still unknown factors limiting and causing significant variation in pastures and crop production. The HMLG Sustainable Farming System Database is revealing a difference of over 100% in wheat yield in some areas where inputs, soil type and rainfall are similar, exploring sub-soil acidity could provide an answer to this large yield difference. Individual Landholders and advisers within the group have identified sub soil acidity as a potential major problem already. Sub-soil acidity can reduce production by 45-50% even after 3-3.5t/ha lime has been applied to top (0-10cm) soil. There is a need to identify the extent of the problem and increase the awareness within the district.

4. The information generated from this project will be widely disseminated through the local media and industry newsletters to the local community. The high profile of the HMLG will ensure that this information will be distributed widely throughout the rural community.

5. HMLG has also undertaken a Satellite Catchment study providing benchmark data that will be used by HMLG for a wide variety of planning and resource management within the Harden Shire. This data will provide an invaluable layer of information to assist with 'best practice' management options.

6. This project has reinforced results that they had observed in research trials with regard to the affects of lime and lime incorporation carried through to a commercial farming situation.

**A BRIEF REPORT** suitable for the ASA annual report (1 or 2 paragraphs). Include a list of any significant outcomes/results.

1. This project has been highly successful in raising the awareness of subsurface acidity and the need for it to be explored as a limiting factor to productivity.
2. The funding of this project suggests that there is subsurface acidity does exist throughout the Harden Shire. There was no links shown to soil type however acidity was strongly correlated to low Cation Exchange Capacity. It was observed that whilst incorporation lime does ameliorate acidity, it does not appear to move into the subsurface layers. There was a good trend observed regarding lime run down, reinforcing the current benchmark of 2.5t/ha lasting for around eight years.

The key outcome from this project is that growers and advisors now need to consider subsurface acidity when developing paddock and farm plans in relation to liming and fertiliser strategies as well as species selection for both crops and pastures.

## **Other information**

Sub soil acidity has become an increasing problem in the Harden district over the last eight years. Whilst it is recognised that surface acidity (0-10cm) is the largest and most serious problem, this, to a large extent has been acted upon by the rural community. There are still considerable areas that require liming but the management and economic/environmental considerations are well recognised by farmers. Liming rate has increased from 2,000t 1990 (farm investment of \$) to 25,150t – 1999(farm investment of \$1,257,500)

Harden is not recognised as a district with sub-soil acidity. It would fall into the classification of surface acidity such as commonly occurs in much of southern NSW.

Sub-soil acidity is not as easy and clearly defined a problem in the paddock. It was only in the early 90's that it was identified in the Harden area as a major cause for some of the poorer performing paddocks.

Once surface acidity was corrected it was noted that some paddocks were still not performing to expectations given all other agronomic criteria had been dealt with. The area affected by sub-soil acidity has steadily increased in this time. It is still, however, a poorly understood and recognised problem in the rural community. For areas that have the problem is has drastically altered the management strategies particularly in relation to cropping i.e. crop selection, fertiliser use, lime rates, incorporation methods, Water use efficiency etc.

**ATTACH** copies of publications, conference proceedings etc. Please detail any publicity that the project has attracted and photo that will help describe what the project is achieving.

Conference proceeding as presented at the Subsurface Acidity Project

Information generated by this project has been submitted as a paper in progress to the 10<sup>th</sup> Australian Agronomy Conference to be presented by Brendon Scott in Hobart, February 2001 [[see link](#) to this paper on HMLG projects website]

**OPPORTUNITIES** for publicity in the coming year for your project and/or the ASA/ASSMAC programs. If there are ways that the programs can support you please include details.

Please complete the attached financial project expenditure report and;

**RETURN** completed form **BY FRIDAY 29<sup>th</sup> September, 2000**

Greg Fenton

Project Coordinator, Acid Soil Action.