

Understanding your soils – working with land managers

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Abstract

Training workshops delivered in Victoria, Australia, through the Department of Primary Industries 'Healthy Soils' project has increased the understanding of soils by land managers. This has been clearly demonstrated through evaluation of workshop participants. Land managers and advisers were invited to attend training workshops comprising presentations, hands-on activities and in-field soil assessment to improve their knowledge of soils. Workshops of regionally specific information on subjects such as soil type, soil structure, soil chemical testing, soil biology, and organic matter were held at community centres across Western Victoria initially, expanding into other regions of Victoria over time. Average workshop attendance was 20 participants, with a total of approximately 1060 participants attending 49 workshops to June 2009. Evaluation has demonstrated the usefulness and relevance of these workshops, and learning outcomes were achieved by greater than 80 % of participants. Many participants planned to make better management decisions and change management practices on farm as an outcome of the workshops. The workshops are an example of a successful program to educate land managers of the importance of soils in production systems, providing them with a greater skill set to understand and assess their soils and improve their land management practices.

Key Words

Education, training, evaluation

Introduction

Understanding and managing soil is the key to a productive and sustainable land management strategy. In 2006 the Department of Primary Industries (DPI) Victoria embarked on a four year 'Healthy Soils' project to improve land managers understanding of soils. The project was funded as part of the State Government of Victoria's *Environmental Sustainability Action Statement* (2006-2010) and by the Federal Government of Australia's *Healthy Soils for Sustainable Farms* programme (2006-2008). The project's major focus has been on the grains industry in Western Victoria.

Improving land managers understanding of their soils involved education and training with support from regional farmer groups including Southern Farming Systems, Birchip Cropping Group and Mallee Sustainable Farming. Training workshops of typically 3-6 hours were used to increase land managers awareness of the importance of soils in production systems. Each workshop was regionally specific with the goal to provide land managers with an improved awareness and understanding of their soils, and some skills with which to assess and adapt their land management practices. Workshop topics included 'Understanding soil structure and soil types', 'Understanding soil biology', 'Managing soil organic matter' and 'Managing subsoil constraints', 'Understanding soil tests – chemical'.

Methods

Presentations using Powerpoint

Powerpoint presentations combining text, photographs, tables and schematic diagrams were used during workshops to educate the land managers about their soils. Each workshop participant was also provided with a folder of workshop materials, including supporting Technical Notes and Quick Reference Guides.

Hands-on activities

Hands-on activities such as soil texture, aggregate stability, and a potassium permanganate test for labile carbon were conducted outside (weather permitting), and were used at recess during the Powerpoint presentation component of the workshop.

In-field assessment

A soil pit was used, where suitable, to support the presentation and hands-on components of the 'Understanding soil structure and soil types' workshop. Participants (in groups) used information that they had learnt from the in-house session to characterise a soil profile (assessing soil horizons, colour, structure, aggregate stability, biology, pH, and evidence of compaction and crusting).

Online support

Each participant was provided with access to a password protected *Soil Health Project Forum* website after the workshop. All Powerpoint and written materials were available to download, providing participants with access to resources and contact details for further information.

The Victorian Resources Online (Department of Primary Industries Victoria 2009) website now contains specific information on soil health and provides online support and details of further information for workshop participants. This website also provides access to written references and other online sources.

Evaluation

Each workshop participant was asked to provide feedback using evaluation question sheets. Workshop evaluation is presented graphically (reported here) and typically requested participants to agree or disagree with statements regarding learning outcomes. The evaluation was designed to gather evidence from participants as to whether their understanding of soils was improved as a result of attending the workshop.

Results

At the time of preparing this paper, approximately 475 participants from 49 workshops across Victoria had provided evaluation feedback on the training workshops held in their region (approximately 1060 participants have attended these events to June 2009). Evaluation of workshop participants will continue until June 2010 when the project is completed.

Table 1. Occupation of training workshop participants

Occupation	Percentage (%)
Farmer	64
Consultant	11
DPI extension officer	10
DPI researcher	1
Student	1
Other*	13

* Other occupations identified included hobby farmers, Landcare coordinators, teachers (including university and secondary educators), farmer group coordinators, and local Government employees.

The results presented below have been extracted from extensive evaluation reporting and provide evidence on how the training workshops improved participants understanding of their soils.

Figure 1 shows that over 80 % of participants found the training workshops to be useful, relevant, an efficient use of their time, provided useful resource material, and of high to very high quality.

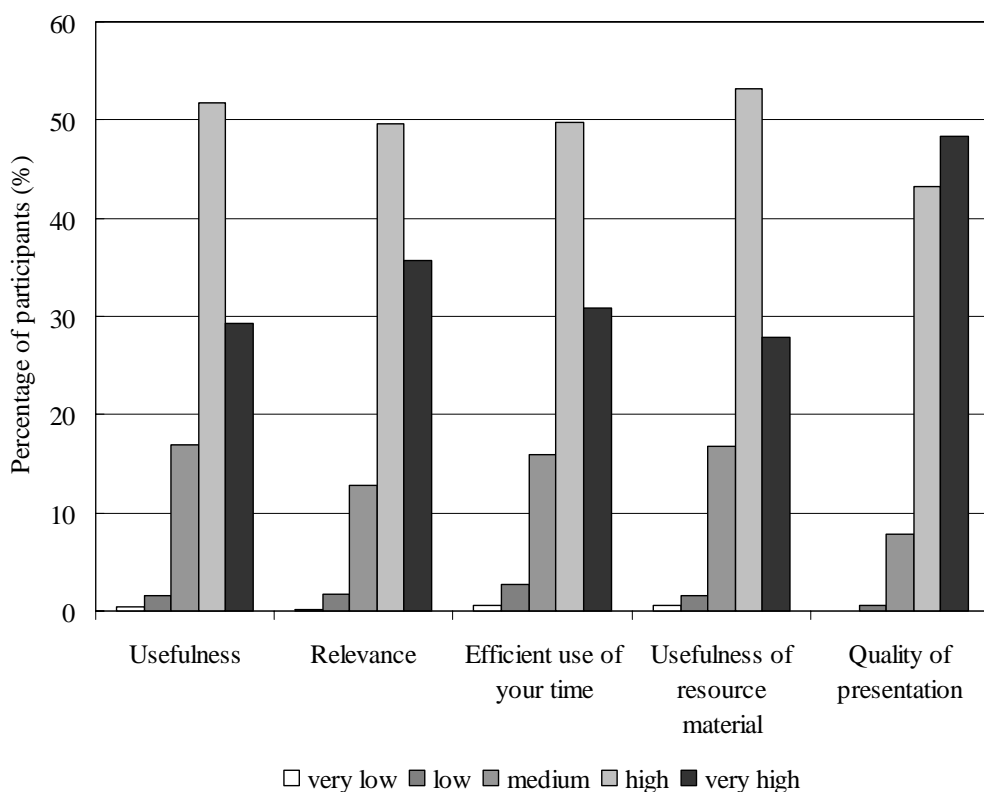


Figure 1. Participants ranked each training workshop from very low to very high regarding usefulness, relevance, efficient use of their time, usefulness of resource material, and quality of the presentation.

Figure 2 shows that, for each of the four learning outcomes, 82 % to 95 % of participants agreed or strongly agreed that the training workshop improved their understanding of soil biology.

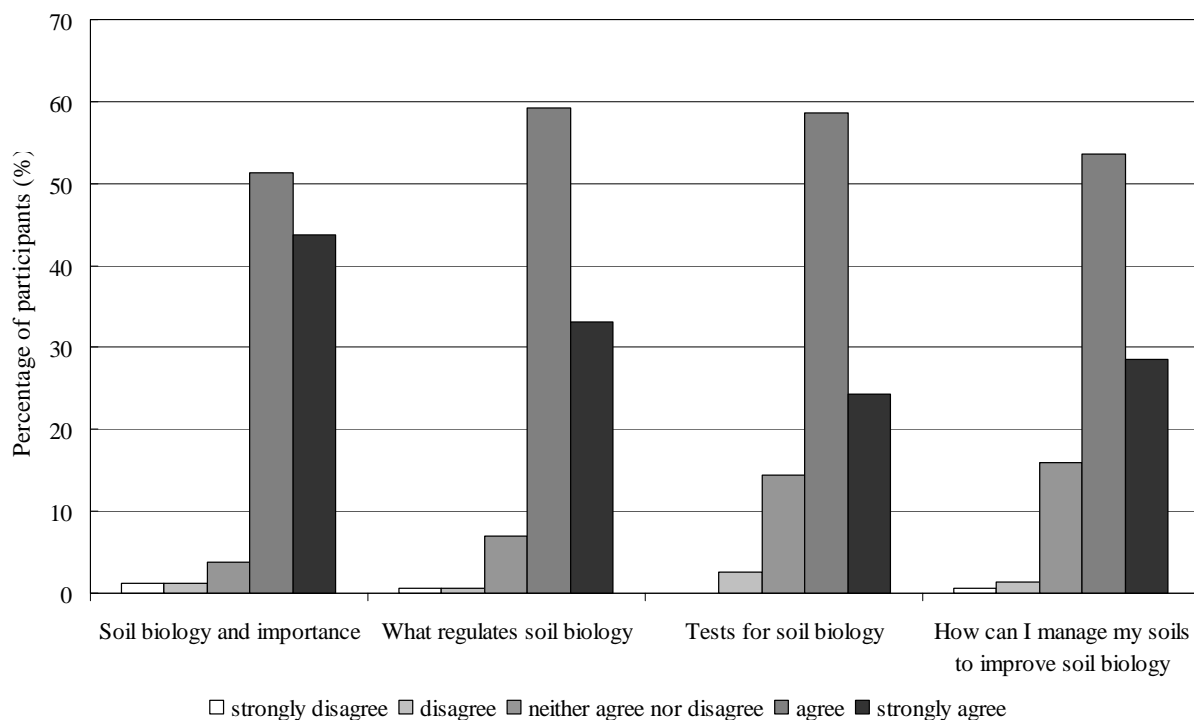


Figure 2. Evaluation data for the question “The ‘Understanding Soil Biology’ training workshop improved my understanding of...”.

Participants were strongly encouraged throughout the training workshops to apply their new-found knowledge to their own soils by looking at the soil profile, assessing aggregate stability, looking for earthworms and other biological activity, testing for nutrients, and looking for evidence of compaction, crusting and erosion. For many participants the workshop exposed them to the complexity of their soils, and how management (for example traffic and cultivation) significantly influenced their soil condition. Participants were asked “How will what you learnt today help you to do your job better?” To detail just a few responses: “Careful planning with rotations, herbicide use, stubble management, etc”; “Adopt practices that will increase biological activity”; “I will now go and look at [the] structure of the soil and make management decisions”; and “Be more viable as a farmer into the future”.

Figure 3 displays the responses of 296 participants to the evaluation question “How will what you learnt today help you to do your job better?” Responses were categorised by key words such as “understanding”, “decisions”, “awareness”, “communicate”, and “confidence”. Key messages were also used to categorise responses (e.g. “I need to refine my stubble retention practices e.g. less tillage to get same result” categorised as ‘change practices’).

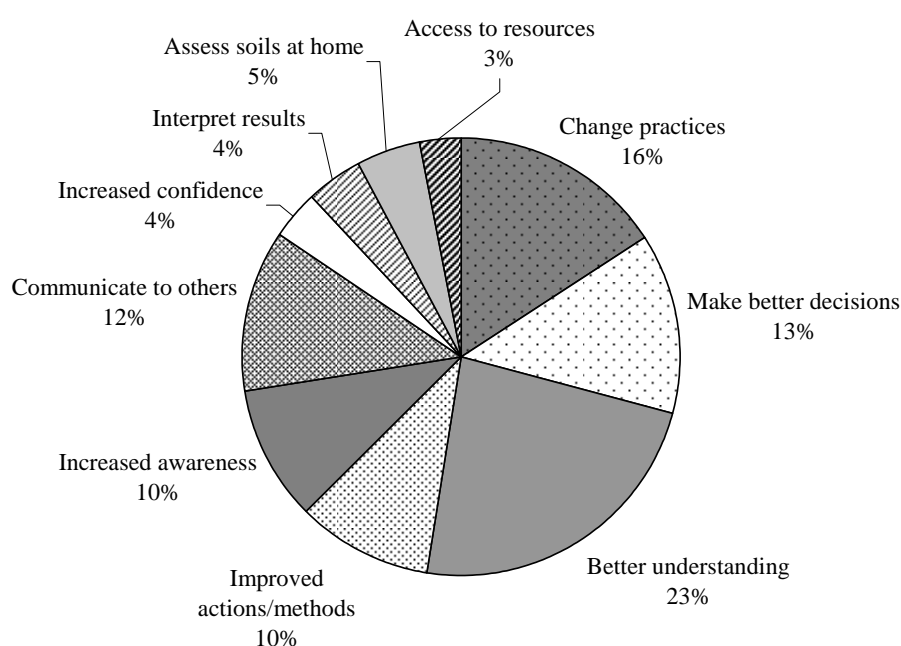


Figure 3. Responses to evaluation question “How will what you learnt today help you to do your job better?” categorised by key word/key message.

Conclusion

The training workshops clearly resulted in an increased understanding of soil, and the intention of workshop participants to apply their knowledge to their soils. The workshops were successful at increasing awareness of the importance of soil to the farming community of Victoria, and how soils can be managed to contribute to improved farm productivity. The benefit of these workshops to individuals, groups and farming communities is evident in the evaluation data collated and represented here. It is anticipated that the workshops will encourage significant changes in farming practices across Victoria in the future, and will be integrated with a ‘Soil Health Management Plan’ as part of other ‘Healthy Soils’ project work. The training workshops will continue to be conducted throughout Victoria and the information disseminated via the Victorian Resources Online website (Department of Primary Industries Victoria 2009).

References

Department of Primary Industries Victoria (2009) Victorian Resources Online website
www.dpi.vic.gov.au/vro