

SOIL SCIENCE IS IN GREAT SHAPE

Soil science is in great shape and flying high according to Sydney University soil scientists Alex McBratney and Budiman Minasny, and Alfred Hartemink from World Soil Information, in response to Philip Baveye's article in the March edition of Profile.

We seem to have been overcome by doom and gloom. In the March issue of Profile in a reprinted North American article we were assailed by disaster, trouble and crises in soil science. It reminded us of the navel-gazing of the 'Is pedology dead and buried?' discussion a few years ago. Do any of you remember the 2004 SuperSoil Conference? One of the keynote speakers proclaimed that there would probably be only one soil science professor left in Australia in a few years. At the moment this prognostication seems to have gone awry, as soothsaying often does.

As far as we can tell we now have more professors than ever – about ten and likely to grow further. A quick head count of non-retired full-time academic professors in our universities suggests three at the University of Queensland, one at the University of Southern Queensland, one at Southern Cross University, one at Sydney University, one at the University of South Australia, two at Adelaide University, and two at the University of Western Australia. (There are probably more – so an update in Profile would be welcome.)

How well are these professors going? At the moment in Australian universities we have the Research Quality Framework exercise. One extremely important, but by no means the only, measure of quality is citation score. A particularly useful measure of this is the so-called 'h index'. This index was proposed by Hirsch (2005) as an assessment of the research performance of individual scientists. It is based on the number of papers published by the scientist and how often these papers have been cited. Hirsch defined it as: 'a scientist has index h if h of his/her total number of papers have at least h citations each.'

We recently conducted a study on the h index of some 280 soil scientists across the globe (Minasny et al 2007) and found that h index is linearly related to the scientific age of the scientist, with t representing the number of years since the first published paper. The average relationship between h index and scientific age for soil scientists is $h = 0.7 t$. This means that on average 10 years after a soil scientist's first publication, the top 7 papers should have been cited more than 7 times.

So if we compare our Australian professors with the earlier study (Figure 1), we see that by world standards we are doing very well. Most of our professors are above the $h = 0.7 t$ line, which is the average for soil scientists, and some are really high-flyers, near or above the $h = t$ line (which characterises a successful scientist in a main discipline such as physics).

There are some differences between sub-disciplines of soil science, on average the h index for soil biologists > chemists > physicists > pedologists. Jock Churchman (also in the March Edition of Profile) showed that publication in soil science by Australian researchers is increasing at a rate of 4% per year.

So, in summary, we have more professors than ever, and they are, for the most part, high flyers, scientifically. Moreover, the two highest flyers are women. So we think Australian soil science is in pretty good shape.

There's no need to be doomy or gloomy – let's get on with it.

References

Baveye P, Jacobson AR, Allaire SE, Tandarich JP and Bryant RB 2006. Whither goes soil science in the United States and Canada? *Soil Science*, 171: 501-518.

Hirsch JE 2005. An index to quantify an individual's scientific research output. *Proceedings of the National Academy of Sciences of the United States of America*, 102, 16569–16572.

Minasny B, Hartemink AE, McBratney AB 2007. Soil science and the h index. *Scientometrics* (In Press). #

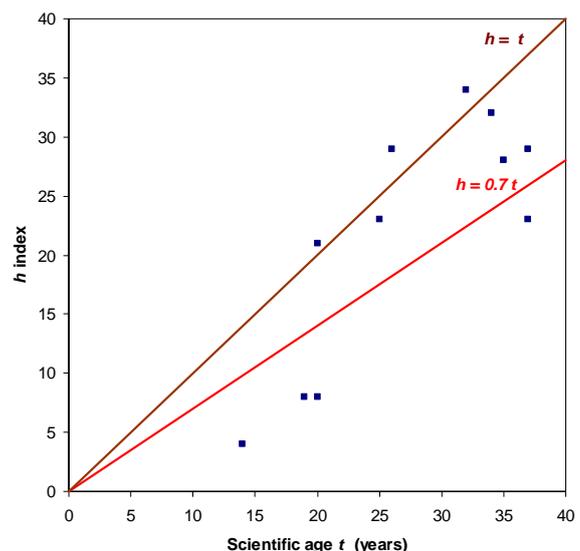


Figure 1. h index for Australian professors in soil science as a function of their scientific age t .