

Publish or Perish (1) – Journal Prices and Impact

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Science knows only one commandment: contribute to science.

Bertolt Brecht (1898-1956)

1. Introduction

Despite the great importance of publications for individual careers as well as the prestige of research centres and universities, there seems to be little discussion in the soil scientific community on this subject – this as opposed to some other disciplines where lively debates are held on the pros and cons of the present “publish or perish” culture. In the weekly journal of science, Nature, there are regular contributions on the subject and they are of an absorbing interest. Therefore, I thought it might be useful to report some of this discussion, particularly in relation to soil science publications. No doubt there is little new information for some of the readers of this Bulletin but hopefully there is enough news for others, and overall it may perhaps stimulate some discussion.

This is the first of a series of contributions to the IUSS Bulletin on publishing and publications in soil science. A wide range of subjects will be treated like: number of soil science publications, author’s role in a paper, fraud, journal covers, web journals et cetera. In this first note, we have a look at the price of journals and their impact factor.

2. Journal Prices

Many publishing houses in the world have originated from publishing activities of universities, like for example: Oxford University Press, Iowa State University Press,

and PUDOC (Wageningen Agricultural University). In the past decades most universities privatised the publishing of their scientific achievements and handed this over to commercial publishers. The publishers have been very successful, doubled the number of scientific journals in the past 25 years and as an overall result publishing science is big business. Currently there about 160,000 scientific journals with a total value of more than two billion USD (Woestenburg, 1999).

In the past decade, journal prices have steadily increased and this has spurred controversy and some action around the globe. Universities discovered that journals by commercial publishers are of such high standard that they cannot do without and need to accept the price increase. For most libraries journal subscriptions account for a major part (>75%) of their annual budget. Early 1999, a letter was sent out to leading specialist science journals regarding the announced increase in the price of journals subscriptions (Abbott, 1999). The letter, which was signed by German, Austrian, Swiss and Dutch university libraries, was asking how the publishers propose to keep prices affordable in the future. Announced price increases were ranging from 19 to 27%. The increases were deemed necessary because of changes in exchange rates and rising number of submissions to some journals which means that the number of pages published has to be increased, according to the publishers. The libraries pointed out, however, that even if the increase in journal subscriptions is around 10% it still is far beyond the annual budget increase for most institutions. For example, the annual budget of the library of Wageningen Agricultural University was 1.8 million guilders (NLG) in 1991 and this had increased to 2.7 million NLG in 1997 (+50%) but during the same period the average subscription price for a journal increased from 426 to 710 NLG (+67%). As a result, the university library reduced its number of subscription from 4222 to 2800 between 1991 and 1997 (Woestenburg, 1999).

The problems are even more severe in developing countries where libraries have smaller budgets and costs of shipping journals are commonly higher. Reduction in the number of subscriptions has therefore widely occurred in libraries in developing countries. For example, the library of the University of Technology in Papua New Guinea slashed in 1998 the subscription to more than 300 international journals following year after year price increases, a frozen library budget, and a decreasing foreign exchange rate.

Scientists can do very little about library budgets and exchange rates but some argue that scientists need to change their attitudes towards publishing and boycott over-expensive journals. Recently an unpaid referee resigned for the journal Nuclear Physics published by a commercial publisher in protest at inflation in the price of the

journal. The referee added to this that “other referees should think about what they are doing in refereeing for expensive journals, and remember that the serials crises is affecting their home institutions” (Butler, 1999).

In the past few years I have heard also colleagues muttering over papers to be reviewed for soil science or agronomy journals from commercial publishers. I even met soil scientists refusing to review manuscripts within reasonable time (i.e. < 3 months) for reasons that only the commercial publishers benefit from their review activities. Much depends on the personal circumstances but I think the argument holds no water and is more detrimental to colleagues than to the commercial publishers. Assume Dr X has 5 journal publications per year of which 3 are in journals of commercial publishers. Hence, at least 6 reviewers will have a look at the manuscripts of Dr X (and quite likely it improves the manuscript contents). Now it is reasonable that Dr X also reviews 6 manuscripts from journals of commercial publishers per year. If one really wants to go to the extreme and undertake action against commercial publishers than it can be considered not submitting manuscripts to their journals. But that is not happening and biological scientists tend to select their journals more on impact factor than on its price when submitting their manuscripts (Abbott, 1999).

3. Impact Factor

Some recent correspondence to Nature suggested that journal prices and impact factors are inversely related. It was found that the most expensive chemical/medical journals had the lowest impact factors. What about soil science journals? A list of soil science journal was compiled from publishers which are commercial ($n=8$) and non-commercial ($n=6$), i.e. national soil science societies, see Table 1. This list, by no means complete, could be relatively easily assembled. Most journals published by national soil science societies are, however, published in close cooperation with commercial publishers, for example Soil Use and Management from the British Society of Soil Science is published by CAB International. Likewise, there are journals of commercial publishers that are published in cooperation with the International Union of Soil Science, like for example Biology and Fertility of Soils, but such cooperation is merely a formality. The distinction between commercial and non-commercial soil science journals is somewhat vague.

For each journal the impact factor for 1997 as well as the price and number of pages and papers was assembled.

Table 1. Soil science journals, their impact factor and prices for 1997

Rank †	Journal	Published by:	Impact factor	Price USD ‡	number of:	
					pages	papers
1	European Journal of Soil Science	National Soil Science Societies	1.811	209	766	82
2	Soil Science Society of America Journal	National Soil Science Society	1.336	137	1814	238
3	Soil Biology and Biochemistry	Commercial	1.326	1314	2341	251
4	Soil Science	Commercial	1.253	195	966	103
6	Plant and Soil	Commercial	1.193	2645	3098	305
7	Applied Soil Ecology	Commercial	1.127	593	636	58
9	Australian Journal of Soil Research	National Soil Science Society	0.868	300	1407	97
10	Geoderma	Commercial	0.839	1667	2395	111
11	Catena	Commercial	0.639	787	1194	68
12	Journal of Soil and Water Conservation	Soil and Water Conservation Society	0.617	60	464	55
13	Canadian Journal of Soil Science	National Soil Science Society	0.613	113	721	83
14	Soil and Tillage Research	Commercial	0.610	1099	1474	94
15	Soil Use and Management	National Soil Science Society	0.595	195	304	45
17	Land Degradation and Rehabilitation/Development	Commercial	0.574	295	362	22

† ranking based on impact factor of ISI

‡ institutional prices in US Dollars

Journals with the highest impact factor in 1997 were the European Journal of Soil Science and the Soil Science Society of America Journal – both published by national soil science societies. In this list, commercial and non-commercial soil science journals are equally distributed across the ranking of the impact factor but journals published by national soil science societies are on average six times cheaper than those of commercial publishers. Some of the journals by national soil science societies have, however, page charges which affects the price picture. As mentioned, prices quoted are institutional subscription rates (libraries) and personal subscriptions for members are even lower. Also the journals published in cooperation with the IUSS are considerably cheaper for IUSS members than for institutions or for non-IUSS members. Despite these confounding factors, there seems little relationship between the impact factor of a journal and its annual subscription rate – this contrary to the report in Nature on chemical/medical journals (Abbott, 1999).

An important factor when correlating impact factors to the price of a journal is the actual number of pages published. For example the subscription price for Soil Use and Management was USD195 and 304 pages were published in 1997. Geoderma was in 1997 nearly nine times more expensive but it also published nearly eight times more pages. Hence the price difference seems justifiable. Less well compare the Soil Science Society of America Journal and Soil Biology and Biochemistry which had about a similar impact factor in 1997. The Soil Science Society of America Journal published 1817 pages in 1997 and its subscription rate was USD137. Soil Biology and Biochemistry published 29% more pages but its price was more than 800% higher than the Soil Science Society of America Journal. The commercial journals published on average 1.8 page per USD whereas the national soil science society journals averaged 6.2 pages per USD. Society journals are on average three times cheaper.

Correlating the pages/USD to the impact factor showed no obvious pattern, but there is a relation between the number of pages published and the annual subscription rate, and this depicted in Fig. 1. Journals from national soil science societies show almost no price increase with increasing number of pages published. However, there is almost a linear price increase for journals from the commercial publishers.

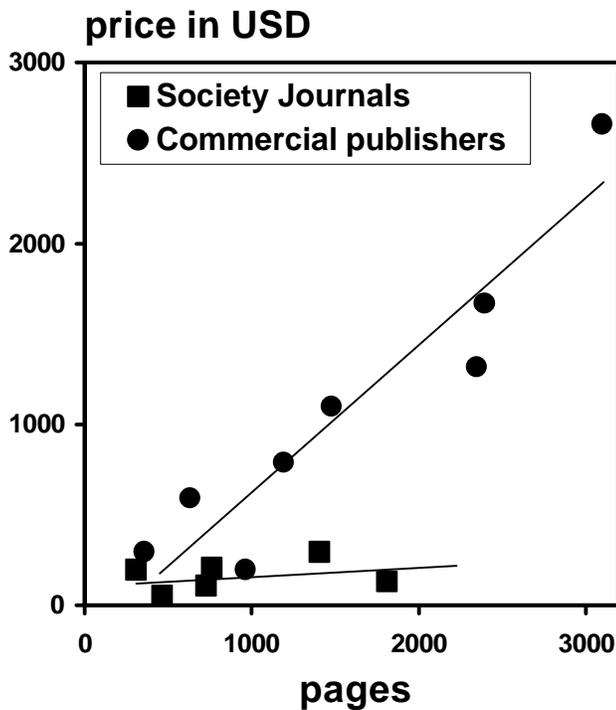


Fig. 1 Relationship between number of pages published and annual subscription rate for 14 soil science journals in 1997.

A less obvious but interesting relationship exists between the average length of a soil science paper and the impact factor of the journal. At first sight there seems no relation as papers of 10 to 12 pages are found in journals across the entire impact factors ranking. Likewise, journals with impact factors between 0.5 and 1.0 publish papers ranging in average length from 3 to 22 pages. However, journals with high impact factors publish on average shorter papers. Not surprisingly and conform the general believe: if you want to be read – make it short.

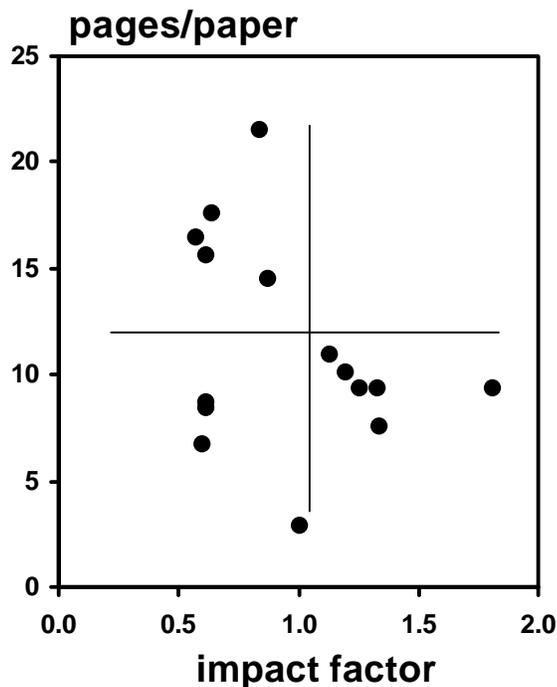


Fig. 2 Relationship between impact factor of 15 soil science journals and the average length per paper (data of 1997).

Admittedly, there is a discomfiting factor in this relationship, being the number of words per page. For example about a 1000 words fit on a page in the Soil Science Society of America Journal (Hatfield et al., 1998) whereas less than 500 words are published per page in Geoderma. Correcting for the number of words per page does, however, only slightly alter the graph as few data points move down the vertical axis.

In conclusion, there is great variation in the price and impact factor of soil science journals - but these are not related. Also no relation exists between the impact factor on one hand and the publisher (commercial, national soil science societies) on the other - but journals from national soil science societies are on average much

cheaper. It also seems apparent that journals with shorter papers have more impact, but that is no great news.

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