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Empirical series of journal h-indices: The JCR category Horticulture as a case study

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Two types of series of h-indices for journals published in the field of Horticulture during the period 1998–2007 are calculated. Type I h-indices are based on yearly data, while type II h-indices use cumulative data. These h-indices are also considered in a form normalised with respect to the number of published articles.

It is observed that type I h-indices, normalised or not, decrease linearly over a period of ten years. The type II series, however, is not linear in nature: it exhibits partly a concave shape. This proves that the journals (in Horticulture) do not exhibit a linear increase in h-index as argued by Hirsch in the case of life-time achievements of scientists.

In the second part of the paper, an attempt is made to study the relative visibility of a journal and its change over time, based on h-indices of journals. It is shown that:

– the h-index over the complete period 1998–2007 of the journal *Theoretical & Applied Genetics* (h = 62) is much higher than that of all other journals in the field;

– the relation between the number of publications and the type II h-index for the whole period is not an exact power law (as it would have to be if the Egghe-Rousseau model were applicable);

– in order to study the dynamic aspects of journal visibility, a field-relative normalised h-ratio is defined to monitor systematic changes in the field of Horticulture. Except for two journals, the Pearson correlation coefficient for yearly values of this field-relative normalised h-ratio indicates that there is no systematic change of the performance of the journals with respect to the field as a whole.

Introduction

In 2005 Hirsch proposed the h-index to quantify an individual's scientific research output [HIRSCH, 2005]. He defined this index, also known as the Hirsch index, as follows. Consider a scientist's list of publications, ranked according to the number of citations received. Then this scientist's h-index is defined as the highest rank such that the first h publications received each at least h citations. Since its introduction many colleagues studied this new concept and extended its definition and application areas. BRAUN & AL. [2006], for instance, applied it to compute an h-index for journals. It has

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been argued that a journal h-index is robust and that it combines a quality and a quantity effect. BANKS [2006] applied the concept to the study of topics, see also [THE STIMULATE-6 GROUP, 2007], while LIU & ROUSSEAU [2007] applied it to library data. During the 11th International Conference of the ISSI RAO [2007] presented an article studying the distribution of the h- and g-indices of 168 scientists. From the discussions related to this presentation it became clear that more empirical data are needed to complement theoretical developments related to the h-index. In this paper we present such data related to series of journal h-indices.

Time series of journal h-indices: definitions

Series of h-indices or h-type indices have been studied before. As it is utterly impossible that one number such as the h-index fully characterises a scientist or a journal, a study of the change of this number over time comes one step closer to a complete description, and still has the advantage of being a summary statistic. The first to study series of h-indices was LIANG [2006]. She, however, considered a time series that goes backward in time. Her first h-index is the one for the year Y (publications and citations), the second one is related to publications in the years Y–1 and Y, and citations received during the same period. In general the k-th element in a Liang sequence considers publications during the period [Y–k+1, Y] and citations received during the same period. ROUSSEAU [2006] considered a time series of h-indices for the journal JASIS and suggested that for the calculation of journal h-indices a normalisation with respect to the number of published articles would be appropriate.

BURRELL [2007C], based on a linear relation between the h-index and age (career age in the case of life-time achievements), proposed the h-rate as an alternative indicator. The existence of a linear relation between h and career age had been suggested by HIRSCH [2005] and confirmed by KELLY & JENNIONS [2006]. We finally note that JIN & AL. [2007] present a short time series of so-called AR-indices for the information scientist and Price awardee B. C. Brookes.

We keep a document set fixed and study series of h-indices for this document set. This document set can be a journal, as in most examples, but it can also be the set of all journals in one particular field, or even all journals in a database, such as the Web of Science. In this article the document set will either be articles published in one journal or articles published in a set of journals, namely journals in the field of Horticulture as defined by the corresponding JCR category.

Many different types of series of h-indices are possible [LIU & ROUSSEAU, 2008] but we will only consider two types (types I and II, defined below), and focus on one in particular (type I). Consider a publication-citation matrix consisting of N publication years, from year Y to year Y+N–1 (the columns) and M citation years, from year Y to year Y+M–1 (the rows). Hence the publication-citation matrix is an MxN-matrix. It

makes only sense to consider the case M ≥ N. In this article the words series and sequence will be used as synonyms.

Type I series

The first h-index of a type I series is based on all articles published in the year Y, and all citations received during the period [Y; Y+M–1]. The k^{th} h-index of this series is based on all articles published in the year Y+k–1, and all citations received during the period [Y+k–1; Y+M–1]. For the given publication-citation matrix this series consists of N elements. Type I series are illustrated in Figure 1: columns refer to publication years; rows to citation years. Note that we associate with each article the total number of citations received during the period indicated in grey. This series is denoted as

$$\left(h_k^I\right)_{k=1,\ldots,N}$$

and contains N elements.

Publication year / Citation year	Y	Y+1	Y+2	Y+3
Y				
Y+1				
Y+2				
Y+3				
Y+4				
	Y	Y+1	Y+2	Y+3
Y				
Y+1				
Y+2				
Y+3				
Y+4				
	Y	Y+1	Y+2	Y+3
Y				
Y+1				
Y+2				
Y+3				
Y+4				
	Y	Y+1	Y+2	Y+3
Y				
Y+1				
Y+2				
Y+3				
Y+4				

Figure 1. An illustration of the calculation of a type I time series of h-indices (case M = 5, N = 4)

Type II series

The first element in a type II series is equal to the first element of the corresponding type I series. However, the k^{th} h-index of this series is based on all articles published in the period [Y; Y+k–1], and all citations received during the period [Y; Y+M–1]. The type II series of h-indices is denoted as $\left(h_k^{II}\right)_{k=1,\ldots,N}$ and contains N elements. Type II series are illustrated in Figure 2 (grey areas are used for the determination of h-indices).

Publication year / Citation year	Y	Y+1	Y+2	Y+3
Y				
Y+1				
Y+2				
Y+3				
Y+4				
	Y	Y+1	Y+2	Y+3
Y				
Y+1				
Y+2				
Y+3				
Y+4				
	Y	Y+1	Y+2	Y+3
Y				
Y+1				
Y+2				
Y+3				
Y+4				
	Y	Y+1	Y+2	Y+3
Y				
Y+1				
Y+2				
Y+3				
Y+4				

Figure 2. An illustration of the calculation of a type II time series of h-indices (case M = 5, N = 4)

Data collection and the calculation of h-indices of journals in the field of Horticulture

We consider all journals in the category Horticulture of the Journal Citation Report (in short: JCR) (edition 2006). In this edition (2006) the Horticulture category contains 21 journals. Going back to the year 1998 we added all journals that were classified during the period 1998–2006 as horticultural journals by the staff of the JCR (at least once). Journals that changed names were grouped together (*Fruit Varieties Journal*

became *Journal of the American Pomological Society*; *Gartenbauwissenschaft* became *European Journal of Horticultural Science*). In 1998 the field of Horticulture just consisted of 10 journals (what we might call traditional horticulture), later journals on wine research and on plant genetics were added. The journal *Plant Varieties and Seeds* completely stopped publication during this period.

In order to retrieve all articles published in one of these journals the following search string, restricted to the *article* document type was introduced in the *Source Title* field of a general search in the ISI Web of Knowledge (Thomson Scientific) on 15 September 2007.

BIOLOGICAL AGRICULTURE & HORTICULTURE OR FRUIT VARIETIES JOURNAL OR GARTENBAUWISSENSCHAFT OR HORTSCIENCE OR JOURNAL OF THE AMERICAN SOCIETY FOR HORTICULTURAL SCIENCE OR JOURNAL OF HORTICULTURAL SCIENCE & BIOTECHNOLOGY OR JOURNAL OF THE JAPANESE SOCIETY FOR HORTICULTURAL SCIENCE OR POSTHARVEST BIOLOGY AND TECHNOLOGY OR SCIENTIA HORTICULTURAE OR SEED SCIENCE AND TECHNOLOGY OR AMERICAN JOURNAL OF ENOLOGY AND VITICULTURE OR AUSTRALIAN JOURNAL OF GRAPE AND WINE RESEARCH OR EUPHYTICA OR EUROPEAN JOURNAL OF HORTICULTURAL SCIENCE OR EUROPEAN JOURNAL OF PLANT PATHOLOGY OR HORTTECHNOLOGY OR JOURNAL OF THE AMERICAN POMOLOGICAL SOCIETY OR JOURNAL INTERNATIONAL DES SCIENCES DE LA VIGNE ET DU VIN OR JOURNAL OF THE PROFESSIONAL ASSOCIATION FOR CACTUS DEVELOPMENT OR MOLECULAR BREEDING OR NEW ZEALAND JOURNAL OF CROP AND HORTICULTURAL SCIENCE OR THEORETICAL AND APPLIED GENETICS OR VITIS OR PLANT VARIETIES AND SEEDS

Publication year or range was set according to the specific case. Next, results were sorted by 'times cited', the number of retrieved articles were recorded and the h-index determined from the resulting list. This approach was faster than using the available 'Citation Report' option. Series of h-indices of type I and type II were collected. It turned out that the field is completely dominated by one journal: *Theoretical and Applied Genetics*, a journal which is only remotely related to classical horticulture.

Results

Table 1 shows the two series of h-indices for Horticulture. The last type II h-index (1998–now) is the equivalent of Hirsch's life-time achievement h-index (where the 'life' of the journal or the field is assumed to have started in 1998). We observe that this index reaches its final value very soon. The type I h-index decreases from publication year 1998 to publication year 2006 (actually 2007, but as this year is incomplete we do not take it into account). This decrease is expected, because the time span involved in the calculation decreases, but not a logical necessity. Indeed, it is theoretically possible that later issues receive more citations (even over a shorter time span). Examples of

such occurrences were found for individual journals, such as *Seed Science and Technology* (see Appendix).

Table 1. h-indices for the field of Horticulture (date: 15 September 2007)

All journals					
Publication Period	Type I h	# publ	Publication Period	Type II h	# publ
1998	48	2025	1998	48	2025
1999	45	1850	1998–1999	57	3875
2000	40	1846	1998–2000	62	5721
2001	35	2059	1998–2001	63	7780
2002	33	2120	1998–2002	65	9900
2003	27	2029	1998–2003	65	11929
2004	22	2211	1998–2004	65	14140
2005	12	2248	1998–2005	65	16388
2006	7	2186	1998–2006	65	18574
2007 (partial)	2	1165	1998–now	65	19739

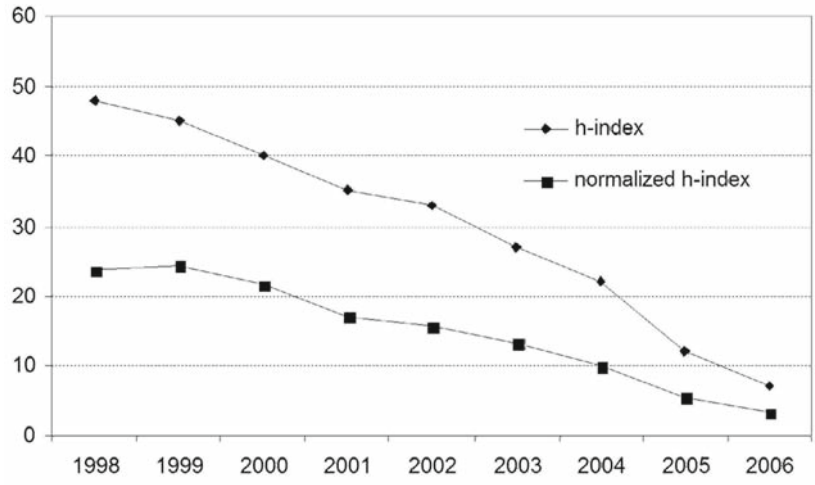

Figure 3. Time series of h-index (type I) of the field of Horticulture

Figure 3 shows the type I series before and after normalising with respect of the number of publications. Values shown for the normalised h-index are calculated as the h-index divided by the number of publications and multiplied by 1000 for clarity. The Pearson correlation coefficient of the two curves lies for both cases between –0.98 and –0.99, indicating a decreasing linear trend. This decrease is expected as each h-index is calculated based on a more recent set of articles. The fact that it is linearly decreasing is expected but, as far as we know, a new factual finding for journal h-indices.

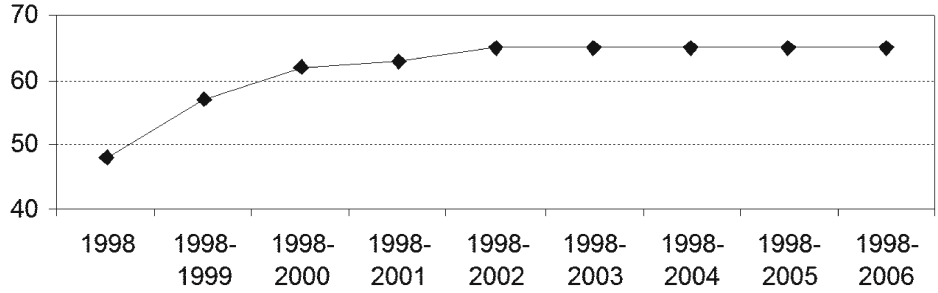

Figure 4. Time series of h-index (type II) of the field of Horticulture

The type II series (Figure 4) is not linear at all and has a concave shape – as predicted by EGGHE [2007] – before it becomes constant. This proves that journals do not exhibit the linear increase in h-index as suggested by Hirsch for scientists.

We further collected data for each journal separately and obtained their series of h-indices. Results are shown in the appendix. Note that some journals were not covered by the JCR from 1998 on and others stopped publication (completely or temporarily).

Considerations regarding journal visibility based on the h-index over the whole period 1998–2006

In this section we investigate if information with respect to relative visibility (quality?) of a journal and its change over time can be obtained from these h-indices.

Does it make sense to compare h-indices or normalised h-indices? First, it is clear that the h-index of *Theoretical and Applied Genetics* (h = 62) is much higher than that of all the other ones. No special analysis is needed to see that this journal is really the top journal in the field. Removing this journal from the analysis (otherwise it would have distorted the results), we obtained the best fitting power law to the remaining data (using nonlinear regression). It turns out that $h = T^{0.425}$ is the best fitting power law ($R^2 = 0.353$), where T denotes the total number of publications over the whole period. Note that, if a linear relation would have been the best fit we would have found this (or an exponent close to 1). This is, however, not the case.

EGGHE & ROUSSEAU [2006] have argued that $h = T^{1/alpha}$ under the assumption that the distribution of citations follows Lotka's power law with exponent alpha. In this case alpha turns out to be 2.35 (Figure 5). Clearly the model proposed by Egghe and Rousseau is not precise enough to explain the relation between the number of publications and the journal h-index in the field of Horticulture.

However, as this power law is just a trend it can be used to separate journals performing above this trend and journals performing below it. In this sense *Molecular Breeding* (h = 33) and *Postharvest Biology and Technology* (h = 31) have a high h-index, both in an absolute as in a relative sense (this is: with respect to the number of publications). Yet, also *Vitis* (h = 16) and the *Australian Journal of Grape and Wine Research* (h = 12), although with a lower h-index, perform very well relative to the number of publications. *Hortscience* (h = 22) performs poor with respect to its number of publications (more than 2500) and also the *Journal of the Japanese Society for Horticultural Science* (h = 12 with 1088 publications) is a relatively poor performer.

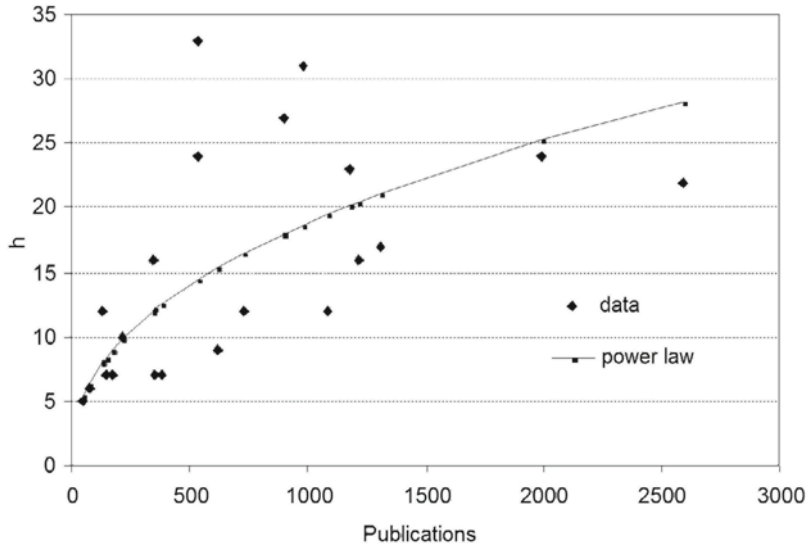

Figure 5. Best fitting power law (excl. *Theoretical and Applied Genetics*)

The overall shape (concavely increasing) of the type II index is very similar for all journals. Hence differences between journals are difficult to trace with a type II index. It seems that this series not suitable for studying dynamic aspects of journal visibility.

Finally, we considered for each journal J (for which we have complete data) the yearly values of the field-relative normalised h-ratio, defined as:

$$\frac{h_j}{Pub_j} \Big/ \frac{h_F}{Pub_F} = \frac{h_j}{h_F} \Big/ \frac{Pub_j}{Pub_F}$$

where the index F refers to the whole field.

Table 2. Pearson correlation coefficient for yearly values of the field-relative normalised h-ratio

Journal	R
American Journal of Enology and Viticulture	0.42
Biological Agriculture & Horticulture	0.00
Euphytica	0.04
European Journal of Plant Pathology	0.47
Gartenbauwissenschaft / European Journal of Horticultural Science	0.95
Horticultural Science	0.11
Hortscience	–0.23
Journal of Horticultural Science & Biotechnology	0.00
Journal of the American Society for Horticultural Science	0.17
Journal of the Japanese Society for Horticultural Science	0.33
Molecular Breeding	–0.72
New Zealand Journal of Crop and Horticultural Science	0.11
Postharvest Biology and Technology	–0.38
Scientia Horticulturae	0.27
Seed Science and Technology	0.28
Theoretical and Applied Genetics	0.12
Vitis	0.44

The critical values for a two-sided test (H_0: R = 0) on the 10% level are –0.669 and +0.669 [EGGHE & ROUSSEAU, 1990, p. 448]

It turns out that the Pearson correlation coefficient R for the period 1998–2004 is almost always very close to zero, indicating no systematic change of the performance of the journal with respect to the field (see Table 2). Two journals are an exception to this rule: *Gartenbauwissenschaft / European Journal of Horticultural Science* which shows an increasing trend, indicating that this journal is performing better over time, with respect to the field as a whole. This journal has experienced a name change, indicating a more international orientation. It seems that this strategy was successful.

The other exception is *Molecular Breeding* which is performing worse (decreasing trend for this indicator) than the field as a whole. Note that this observation is somewhat surprising as *Molecular Breeding* is among the best performers over the whole period. This proves that a time series analysis may reveal other characteristics than a one-point analysis, even if this one-point analysis is based on a long period (10 years).

Conclusion

Citation data were collected for each journal in Horticulture separately and for the field as a whole and series of h-indices were computed. Two types of series of h-indices for journals published in the field of Horticulture during the period 1998–2007, are analyzed. Type I h-indices are based on yearly data, while type II h-indices use cumulative data. These h-indices are also considered in a form normalised with respect to the number of published articles.

It is observed that, as expected, type I h-indices as well as normalised h-indices are decreasing over a period of 10 years. The trend is linear in nature. However, the behaviour of type II series is not linear: it exhibits a concave increase until it stays constant. This shows that the journals (in Horticulture) do not exhibit a linear increase in the value of the h-index as argued by Hirsch, at least in the case of scientists' lifetime achievement.

In the second part of the paper, an attempt was made to study the relative visibility of a journal and its change over time, based on h-indices of journals. For this analysis we note the following three observations.

1. The h-index of the journal *Theoretical & Applied Genetics* (h = 62) is much higher than that of all other journals.

2. The Egghe-Rousseau power law model is not applicable to the field of Horticulture. Yet, the resulting model is used as a separator between high and low performers.

3. In order to study dynamic aspects of journal visibility, a field-relative normalised h-ratio is defined and studied in the field of Horticulture. Except for two journals, the Pearson correlation coefficient for yearly values of this field-relative normalised h-ratio indicates that there exists no systematic change of the performance of the journals with respect to the field as a whole.

As we found no evidence for the linear increase of the h-index over time (as proposed by Hirsch), nor for the Egghe-Rousseau model about the power law relation between the number of publications and the h-index, this suggests trying another approach, such as BURRELL's [2007A, B], something we consider out of the scope of this article, but which we hope to be able to do in the near future. Moreover, it is clear that collecting more empirical data on time series of h-type indices is necessary. Work on a characterisation of different h-type time series – a necessary first step – can be found in [LIU & ROUSSEAU, 2008].

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Appendix

This appendix contains type I and type II h-indices for each journal and for each year during the period 1998–2006 (+ 2007 partially) if available. The Pearson correlation for the regression line of the type I h-index over the period 1998–2006 is also given (if data for its calculation are available).

Biological Agriculture & Horticulture	I		R = –0.98	II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	7	19	1998	7	19
1999	6	20	1998–1999	8	39
2000	6	25	1998–2000	9	64
2001	5	32	1998–2001	10	96
2002	4	22	1998–2002	10	118
2003	4	30	1998–2003	10	148
2004	2	19	1998–2004	10	167
2005	1	19	1998–2005	10	186
2006	1	32	1998–2006	10	218
2007 (partial)	0	0	1998–now	10	218

Fruit Varieties Journal / Journal of the American Pomological Society	I			II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	5	46	1998	5	46
1999	5	37	1998–1999	6	83
2000	2	10	1998–2000	6	93
2001	–	–	1998–2001	6	93
2002	–	–	1998–2002	6	93
2003	–	–	1998–2003	6	93
2004	4	30	1998–2004	7	123
2005	2	26	1998–2005	7	149
2006	1	26	1998–2006	7	175
2007 (partial)	2	21	1998–now	7	196

Gartenbauwissenschaft / European Journal of Horticultural Science	I		R = –0.77	II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	4	46	1998	4	46
1999	5	46	1998–1999	5	92
2000	5	43	1998–2000	6	135
2001	4	44	1998–2001	6	179
2002	4	37	1998–2002	6	216
2003	5	42	1998–2003	7	258
2004	3	37	1998–2004	7	295
2005	2	44	1998–2005	7	339
2006	0	44	1998–2006	7	383
2007 (partial)	0	15	1998–now	7	398

Hortscience	I		R = –0.98	II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	15	285	1998	15	285
1999	15	247	1998–1999	19	532
2000	14	287	1998–2000	22	819
2001	10	266	1998–2001	22	1085
2002	8	252	1998–2002	22	1337
2003	8	253	1998–2003	22	1590
2004	7	316	1998–2004	22	1906
2005	5	405	1998–2005	22	2311
2006	3	275	1998–2006	22	2586
2007 (partial)	1	140	1998–now	22	2726

Journal of the American Society for Horticultural Science	I		R = –0.998	II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	18	182	1998	18	182
1999	16	115	1998–1999	20	297
2000	15	116	1998–2000	21	413
2001	13	118	1998–2001	23	531
2002	11	150	1998–2002	23	681
2003	9	133	1998–2003	23	814
2004	7	126	1998–2004	23	940
2005	5	130	1998–2005	23	1070
2006	3	104	1998–2006	23	1174
2007 (partial)	1	72	1998–now	23	1246

Journal of Horticultural Science & Biotechnology	I		R = –0.98	II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	12	124	1998	12	124
1999	10	126	1998–1999	13	250
2000	10	124	1998–2000	15	374
2001	9	127	1998–2001	15	501
2002	8	124	1998–2002	16	625
2003	7	147	1998–2003	16	772
2004	6	161	1998–2004	16	933
2005	4	128	1998–2005	16	1061
2006	2	158	1998–2006	16	1219
2007 (partial)	1	71	1998–now	16	1290

Journal of the Japanese Society for Horticultural Science	I		R = –0.93	II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	8	188	1998	8	188
1999	11	174	1998–1999	12	362
2000	7	125	1998–2000	12	487
2001	7	125	1998–2001	12	612
2002	6	137	1998–2002	12	749
2003	4	92	1998–2003	12	841
2004	2	97	1998–2004	12	938
2005	3	78	1998–2005	12	1016
2006	1	72	1998–2006	12	1088
2007 (partial)	1	23	1998–now	12	1111

Postharvest Biology and Technology	I		R = –0.85	II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	15	62	1998	15	62
1999	20	83	1998–1999	24	145
2000	21	104	1998–2000	30	249
2001	15	74	1998–2001	30	323
2002	16	105	1998–2002	31	428
2003	13	140	1998–2003	31	568
2004	12	126	1998–2004	31	694
2005	7	128	1998–2005	31	822
2006	4	159	1998–2006	31	981
2007 (partial)	1	118	1998–now	31	1099

Scientia Horticulturae	I		R = –0.90	II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	11	100	1998	11	100
1999	10	116	1998–1999	13	216
2000	9	114	1998–2000	15	330
2001	11	136	1998–2001	17	466
2002	10	168	1998–2002	17	634
2003	8	85	1998–2003	17	719
2004	6	163	1998–2004	17	882
2005	4	181	1998–2005	17	1063
2006	3	243	1998–2006	17	1306
2007 (partial)	1	151	1998–now	17	1457

Seed Science and Technology	I		R = –0.86	II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	8	81	1998	8	81
1999	6	100	1998-1999	10	181
2000	6	86	1998-2000	10	267
2001	8	71	1998-2001	11	338
2002	6	66	1998-2002	12	404
2003	5	77	1998-2003	12	481
2004	3	87	1998-2004	12	568
2005	4	79	1998-2005	12	647
2006	2	81	1998-2006	12	728
2007 (partial)	1	23	1998-now	12	751

American Journal of Enology and Viticulture	I		R = –0.97	II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	15	65	1998	15	65
1999	18	74	1998-1999	21	139
2000	13	57	1998-2000	23	196
2001	11	60	1998-2001	23	256
2002	9	54	1998-2002	24	310
2003	8	47	1998-2003	24	357
2004	6	62	1998-2004	24	419
2005	4	50	1998-2005	24	469
2006	3	66	1998-2006	24	535
2007 (partial)	1	37	1998-now	24	572

Australian Journal of Grape and Wine Research	I			II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	–	–		–	–
1999	–	–		–	–
2000	–	–		–	–
2001	8	18	2001	8	18
2002	7	23	2001–2002	9	41
2003	6	24	2001–2003	11	65
2004	7	25	2001–2004	12	90
2005	5	19	2001–2005	12	109
2006	2	25	2001–2006	12	134
2007 (partial)	0	13	2001–now	12	147

Euphytica	I		R = - 0.95	II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	19	238	1998	19	238
1999	15	152	1998–1999	20	390
2000	16	175	1998–2000	21	565
2001	15	271	1998–2001	23	836
2002	14	286	1998–2002	24	1122
2003	12	249	1998–2003	24	1371
2004	8	196	1998–2004	24	1567
2005	5	207	1998–2005	24	1774
2006	2	216	1998–2006	24	1990
2007 (partial)	1	137	1998–now	24	2127

European Journal of Plant Pathology	I		R = –0.91	II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	18	99	1998	18	99
1999	17	91	1998–1999	22	190
2000	12	94	1998–2000	22	284
2001	17	98	1998–2001	26	382
2002	14	101	1998–2002	27	483
2003	11	96	1998–2003	27	579
2004	9	103	1998–2004	27	682
2005	6	109	1998–2005	27	791
2006	7	108	1998–2006	27	899
2007 (partial)	1	69	1998–now	27	968

Horttechnology	I			II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	–	–		–	–
1999	–	–		–	–
2000	–	–		–	–
2001	7	111	2001	7	111
2002	7	100	2001–2002	9	211
2003	5	97	2001–2003	9	308
2004	4	78	2001–2004	9	386
2005	4	129	2001–2005	9	515
2006	3	103	2001–2006	9	618
2007 (partial)	0	66	2001–now	9	684

Journal International des Sciences de la Vigne et du Vin	I			II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	–	–			
1999					
2000					
2001	5	19	2001	5	19
2002	3	20	2001–2002	6	39
2003	3	31	2001–2003	7	70
2004	2	29	2001–2004	7	99
2005	2	21	2001–2005	7	120
2006	1	24	2001–2006	7	144
2007 (partial)	0	12	2001–now	7	156

Journal of the Professional Association for Cactus Development	I			II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	3	10	1998	3	10
1999	0	0	1998–1999	3	10
2000	0	0	1998–2000	3	10
2001	2	11	1998–2001	4	21
2002	0	0	1998–2002	4	21
2003	3	10	1998–2003	4	31
2004	3	8	1998–2004	5	39
2005	1	7	1998–2005	5	46
2006	1	6	1998–2006	5	52
2007 (partial)	0	0	1998–now	5	52

Molecular Breeding	I		R = –0.97	II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	20	55	1998	20	55
1999	23	52	1998–1999	28	107
2000	19	60	1998–2000	30	167
2001	15	55	1998–2001	32	222
2002	13	57	1998–2002	32	279
2003	11	57	1998–2003	33	336
2004	9	76	1998–2004	33	412
2005	7	63	1998–2005	33	475
2006	2	61	1998–2006	33	536
2007 (partial)	1	39	1998–now	33	575

New Zealand Journal of Crop and Horticultural Science	I		R = –0.96	II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	6	41	1998	6	41
1999	5	39	1998–1999	7	80
2000	5	31	1998–2000	7	111
2001	5	32	1998–2001	7	143
2002	3	31	1998–2002	7	174
2003	3	39	1998–2003	7	213
2004	3	44	1998–2004	7	257
2005	1	51	1998–2005	7	308
2006	1	48	1998–2006	7	356
2007 (partial)	0	0	1998–now	7	356

Theoretical and Applied Genetics	I		R = –0.99	II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	45	329	1998	45	329
1999	41	322	1998–1999	52	651
2000	36	340	1998–2000	56	991
2001	30	327	1998–2001	58	1318
2002	30	345	1998–2002	60	1663
2003	24	341	1998–2003	60	2004
2004	22	391	1998–2004	62	2395
2005	11	338	1998–2005	62	2733
2006	7	298	1998–2006	62	3031
2007 (partial)	2	138	1998–now	62	3169

Vitis	I		R = –0.90	II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	9	39	1998	9	39
1999	7	36	1998–1999	11	75
2000	9	38	1998–2000	13	113
2001	9	42	1998–2001	16	155
2002	6	42	1998–2002	16	197
2003	6	39	1998–2003	16	236
2004	4	37	1998–2004	16	273
2005	2	36	1998–2005	16	309
2006	2	37	1998–2006	16	346
2007 (partial)	1	20	1998–now	16	366

Plant Varieties and Seeds	I			II	
Publication Period	h	# publ	Publication Period	h	# publ
1998	4	16	1998	4	16
1999	5	20	1998–1999	6	36
2000	3	17	1998–2000	6	53
2001	3	22	1998–2001	6	75
2002	–	–	1998–2002		
2003	–	–	1998–2003		
2004	–	–	1998–2004		
2005	–	–	1998–2005		
2006	–	–	1998–2006		
2007 (partial)	–	–	1998–now	6	75