

Editorial

Editor's Note: *It has always been emphasised among academic community that the most important duty of academics, in order to survive in a university environment is to publish. The following article was published in the 'Crop-Science - Agronomy News', written by Professor Jeff Skousen, West Virginia University. The article is reproduced in an edited version here for the readers with a hope that it will generate some discussion on the issue. Submissions from readers are invited.*

Much has been said and written on the need for research scientists to publish their results. While scientists with publishing responsibilities differ in their ability to conduct research and vary in their personal attitude toward publishing, the failure to publish by scientists is widespread throughout academia and research organisations.

Introduction

Early in my career as a research scientist, I read the book, "How to Write and Publish a Scientific Paper," by Robert A. Day. In it, Dr. Day gives a step-by-step process for developing and writing a scientific paper. A couple of paragraphs in his book made a deep impression on me. Here are two of the many excellent points about publishing that are included in his book.

"Although the ultimate goal of scientific research is publication, it has always been amazing to me that so many scientists neglect the responsibilities involved. A scientist will spend months or years of hard work to secure data, and then unconcernedly let much of their value be lost because of lack of interest in the communication process. The same scientist who will overcome tremendous obstacles to carry out a measurement to the fourth decimal place will be in deep slumber while a secretary is casually changing micrograms per milliliter to milligrams per milliliter and while the printer slips in an occasional pounds per barrel."

Dr. Day's final paragraph in his book states:

"What I have said in this book is this: Scientific research is not complete until the results have been

published. Therefore, a scientific paper is an *essential* part of the research process. Therefore, the writing of an accurate, understandable paper is just as important as the research itself. The words in the paper should be weighed as carefully as the reagents in the laboratory. Therefore, the scientist must know how to use words. Therefore, the education of a scientist is not complete until the ability to publish has been established."

"Reasons for Perishing

In my experience, scientists do not publish for several reasons:

(1) **They do no research worthy of publishing**

There can be many reasons for this. One reason may be that the research is a rehash of other work that has gone on in the discipline. The researchers are not acquainted with the literature in their field so they come up with new ideas (to them) but do not realise that the same kind of work and ideas have already been researched and reported. No journal will accept work that does not contribute to the body of scientific knowledge in that discipline. No new questions were generated and therefore no new findings were obtained.

One of the great advantages of attending conferences, symposiums and other meetings in a person's discipline is finding out what others are doing and what they are discovering. If persons unfamiliar with the scientific literature try to publish their work, they find that the reviewers (usually people who are experts in their fields and acquainted with the body of

knowledge in a subject area) reject their work or require great amounts of revision to be done to coincide with the body of knowledge already done. If the person submitting the work does not take negative comments personally and is willing to put forth the effort in revising the manuscript, the paper may be published based on reviewer comments, if it contains some new information or recognises and confirms previous work.

(2) They are Too Busy to Publish

Sometimes people say they are too busy to write publications. Their schedules do not allow them the time to prepare manuscripts from their student's thesis or from other research they conduct, or it will take them too much time to fix the problems in the data. It requires too much work. Little (or big) mistakes or problems with the data sometimes make the preparation process cumbersome, time-consuming, and labour-intensive. Recalculation of data, redoing the statistics, and developing different conclusions based on the new data is sometimes overwhelming. It just simply takes too long and takes too much energy, and we are all too busy to do everything over again.

Publishing in journals is one of the hardest things to do for most faculty members and research scientists. Research papers have no deadlines as to when they should be submitted to journals and can be sent to the journal editor at any time. Unlike teaching or other meeting-driven schedules where you must show up at a specified time, the author of the paper must initiate journal articles. Since most people are not self-starting or cannot initiate things on their own, publishing is very hard for most researchers. People are just too lazy to put forth the effort or cannot afford the time to devote to a writing project.

(3) Some Scientists are Too Critical of Their Own Work

Some people are actually too picky and critical of their own work. I have known several scientists that expected their research paper to be perfect before submitting it to a journal. While this is an admirable goal, the consequence of this high expectation is that the scientist cannot ever seem to get the paper ready to send to the journal for review. The data are not quite right or good enough, and the scientist always seems to need more data. People in this category conduct excellent research and normally have great data, but

they still think someone may find a little problem with their work or be critical of the data, its analyses or interpretation.

(4) Some Scientists cannot take Criticism

In connection with being too critical of their own work, some scientists are petrified of reviewer comments and criticism. They suspect that some potential reviewer, after reading the paper, may think less of them because of their research methods or interpretation, which may jeopardise the author's reputation. On the other hand, some scientists feel that their work and results are the definitive work on the subject. The researchers feel that any adverse comment by a reviewer obviously shows the reviewer's ignorance and his inability to recognise groundbreaking discoveries. The authors cannot bear scrutiny.

(5) All reasons cannot be categorised, but many are simply excuses for not publishing. There are other miscellaneous reasons for people not publishing, which tend to be excuses rather than actual reasons. They may be cynical of certain journal editors, saying that this journal only publishes work by these institutions or researchers, so they give up after one rejection. Another problem with some scientists is that they cannot organise the data into a publishable unit. They feel *all* the data are important and none can be eliminated. Sometimes they cannot step back far enough from the data to see which values are important and which are irrelevant.

Others complain that they have no research money or they have no technical support (including manpower or equipment). Some scientists, after discovering the answer to a question for them, lose interest in the research and are unconcerned about making others aware of their findings through publication. Once in a while, someone will say their work is confidential and releasing the information would infringe upon the agreement they have with a funding agency or company. "The patent is pending," and they must therefore hold back on publishing the information. While this is a legitimate excuse for the short term, often the researchers have lost interest in publishing the information after the patent is finally granted.

Another reason is that the scientists are uncomfortable with the data. The data do not fit what one would expect and the researchers cannot determine

which sit on my shelf. The theses contain data that I should dust off and try to get published. But the data are confusing and I cannot explain them to my satisfaction. So the thesis sits in my office and I feel guilty for not doing something with it.

Perhaps to alleviate this guilt, I could share the conflicting data with a colleague or another researcher not acquainted with the study. As such, maybe they could make sense of it, give suggestions, or find missing elements in the data. I have done this a few times by sharing this data with a colleague unconnected to the research and asking him to look at it. His perspective was fresh and he saw the important information that the data contained. He helped me to eliminate the superfluous numbers and concentrate on the real story.

Some Final Comments

For students conducting graduate work, it is imperative that they understand their work must result in a journal article. Students should ask themselves (and perhaps their advisors) some of the following questions early in their graduate programmes.

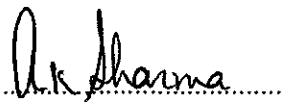
- Am I familiar enough with the literature to know the format and construction of a research article?
- Does my work adequately reflect or recognise the work that has already occurred in my discipline?
- Is my research too shallow or too broad that I cannot reach specific conclusions?
- Does my academic advisor and do my committee members publish regularly in journals and are they familiar with the literature?
- Does my advisor push me to put my work in manuscript form?

- Is my work suitable for publication and if not, what should I do to make it publishable?

I realise most graduate students obtain great experience during their graduate programme, and sometimes the data collection and analysis are very significant parts of a student's instruction. Sometimes the work is not published because the student made mistakes during the data collection process or improper treatments were used. Yet, the student writes a thesis and obtains a degree. However, advisors should help students avoid the major mistakes that might negate the study for publication while still allowing the student to learn by their own mistakes. This is a fine balance. The advisor must help the student develop a well-defined, researchable topic, worthy of publication.

I also hasten to add that many research scientists publish regularly and, as a result, are well-known in their respective disciplines. So, it is clear that they do understand this basic philosophy on research and publishing: if the work is not published, then it was not done. When unpublished, the research goes unnoticed, there is no definite result of the work (a thesis is not an adequate final publication product), the data from the work are only found in the library of the institution where it was done, and the research is hard to reference and obtain. So, the research is nearly non-existent and may as well not have been done. Granting agencies are pleased to give financial support to scientists who publish, and they are happy to see that their funds resulted in work reported in refereed journal articles.

The proof of good research is a resulting publication in a leading journal. So why aren't you publishing your work?"



Professor Anil K. Sharma
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