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Writing a Scientific Paper - Some Tips

General

A scientific paper is written to describe the original research results obtained in laboratory, greenhouse and or field studies. A division of the paper into various logical sections and the style of presentation are guided by the journal to which the article is intended. Even so, the paper has a title, abstract/summary, keywords, introduction, materials and methods, results and discussion and conclusion (take home message). A paper is written with one or more clear messages presented in a convincing manner with the aid of clear evidence in the form of results presented in the tables and or figures.

It is a good idea as it helps and even pays to identify the results to be included as tables and or figures in the paper before starting to write the paper. Not all results generated during the study need to be included in the paper. Only those results that make a story need to form a part of the article.

All the sections or parts of the paper should be presented in a logical, cohesive and connected manner such that the text matter flows smoothly. The article preferably, should be written in active voice; and the use of jargons and excessive acronyms should be avoided. The paper should be written in a simple language.

Specific

Title of the paper should be accurate, short and succinct. And equally importantly, the title of the paper must convey or carry the contents of the paper.

Keywords should be specific, meaningful and appropriate because the judicious use of keywords can facilitate accessibility during literature searches and thus, increase reading of the article by researchers.

An abstract is the most important part of the paper as it provides the window to the contents of the paper. An effective and properly presented abstract is self-contained and clearly states the main objective and concisely summarizes the salient results and brings out the principal conclusion of the study presented in the paper.

The principal function of the introduction in a paper is to introduce the current work as to why there was a need to conduct the study. To effectively achieve this, the introduction should put the significance of the current work in context with the pertinent, current literature, and demonstrate the need for the current study. Moreover, the introduction must clearly state the objective and scope of the study presented in the paper.

The Materials and Methods section should effectively and precisely provide the details of the methods used, such that a

competent worker at a later date can follow, repeat and reproduce the results. In case method used is a standard already published one, an appropriate literature reference should be given to method without too many details. Similarly, the materials and equipment/instrument used in the study should be described. The statistical design of the experiment (s) included in the paper, and the methods used in the statistical analysis of the results should be included under Materials and methods, preferably with a literature citation.

The results need to be presented in clear and condensed manner, either in the form of tables and or figures, depending on the nature of the results. The findings should be stated in clear, simple and concise manner through the combined use of text, tables and figures. It is important to note that the guidelines for preparing the tables and figures for the journal, the paper is targeted, must be referred to. The results should be stated in a concise, clear and logical manner and the approximate place of the tables and or figures should be indicated in the text. For convenience of the presentation of results, the results section may be divided into sub-heads, but remember not to make the text too fragmented.

In certain cases, the Results and Discussion sections can be better combined and presented, depending on the nature of results and guidelines of the journal. The discussion should focus on the salient results established or demonstrated in the paper and also put the results in context with the recent literature in the area of work. It is a good idea to relate the discussion of the results to the objective stated in the introduction. The idea is to relate what you have achieved relative to what you set out to achieve in the introduction of the paper.

A brief statement on the main conclusions that can be drawn from the results should be made. In case, there is no provision or need for a separate conclusion section, the concluding paragraph in the discussion section can be conveniently used to state the conclusions drawn from the study made.

The source of information in the paper should be duly acknowledged. Only references cited in the text should be included under the references section following the guidelines provided by the journal for which the article is prepared.

I conclude this brief communication with a concluding tip by R. B. Me Karrow: "State your facts as simply as possible, even boldly. No one wants flowers of eloquence or literary ornaments in a research article".

I am greatly benefited by reading, among others, the following two references, and recommend them to others, who wish to write effectively.

References for Further Reading

Day, Robert A. and Gastel, Barbara, 2006, *How to Write and Publish a Scientific Paper*. Sixth Edition. Cambridge University Press, Cambridge, UK.

Webster, R., 2003, Let's rewrite the scientific paper. *European Journal of Soil Science* 54, 215-218.

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