

Writing a Scientific Publication

If research was not “written up,”
did it really occur?

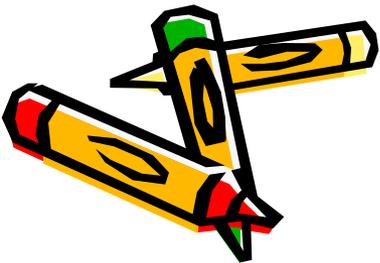
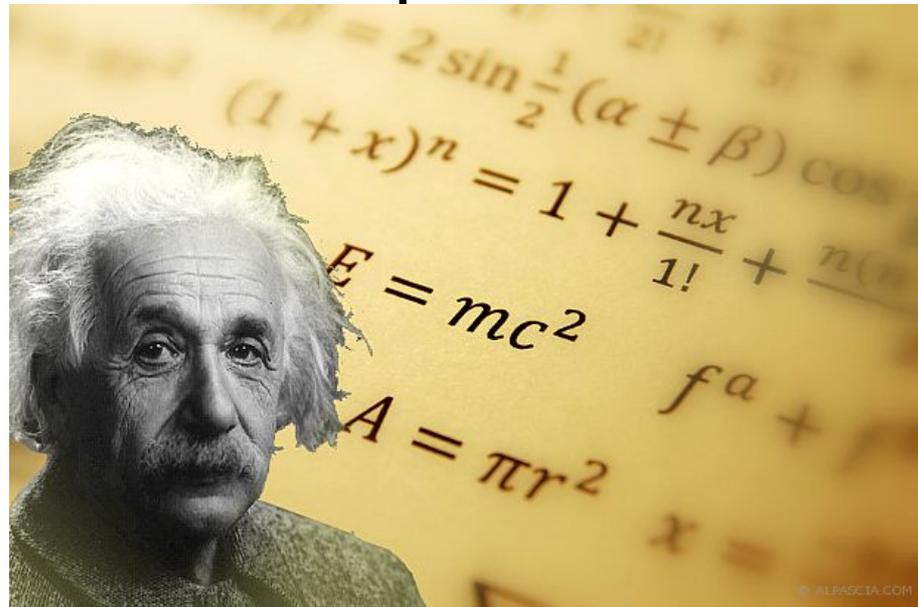


By Fred Kabi

Few scientists find Writing a Scientific Paper easy

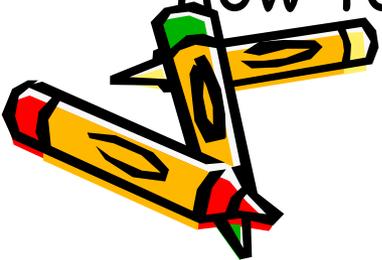
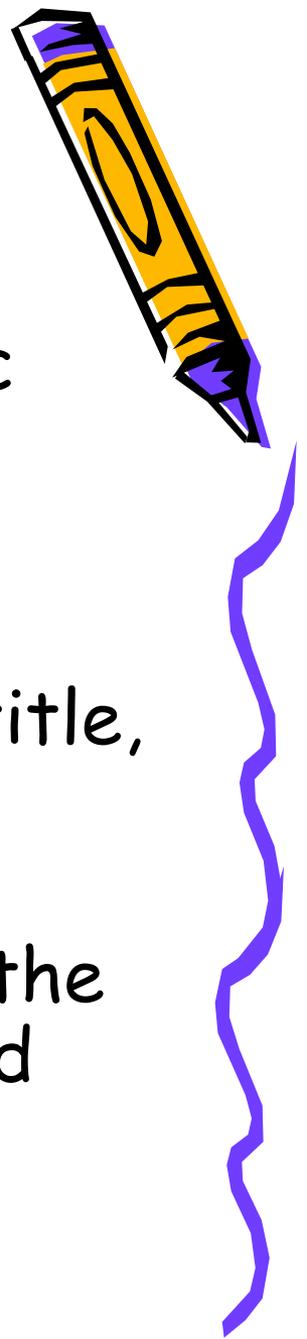


- Yet value may be lost if not published

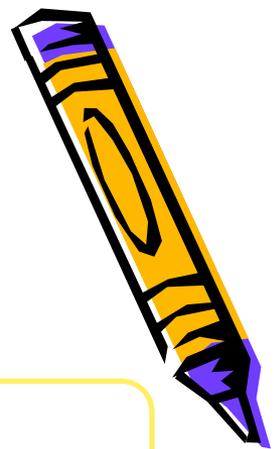


Objectives of this talk

- Describe the main features of a scientific paper
- Discuss the steps in planning to write a scientific paper
- Explain the procedures for developing a title, deciding on authorship and writing an abstract
- Identify the seven usual components of the body of research, discuss the purpose and how to write each component



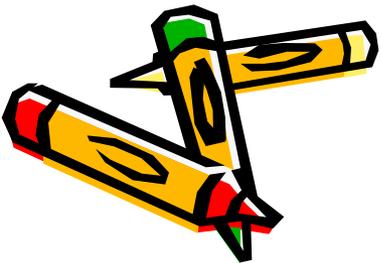
Publishing Research Results: An integral part of the Research Process



- PROBLEM IDENTIFICATION
- HYPOTHESIS FORMULATION

- DECISION AND CONDUCTING OF EXPERIMENT
- DATA ANALYSIS AND HYPOTHESIS TESTING

- WRITING UP OF THE RESULTS
- PUBLICATION



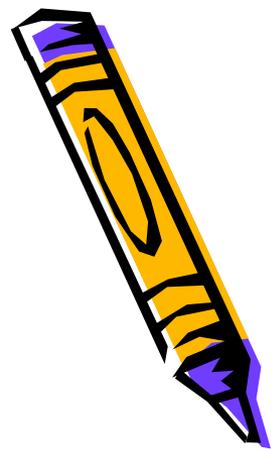
Science Generates Science



- Responsibility of scientist does not end with doing research
- You also have an obligation to publish the results
- Only after then can new knowledge enter the main stream of data base called science
- Your publication of new knowledge can then stimulate debate and further work on the subject
- Publication of your results is therefore important



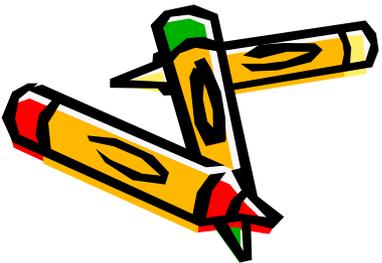
Planning to Write a Research Paper



TWO QUESTIONS BEFORE YOU START WRITING

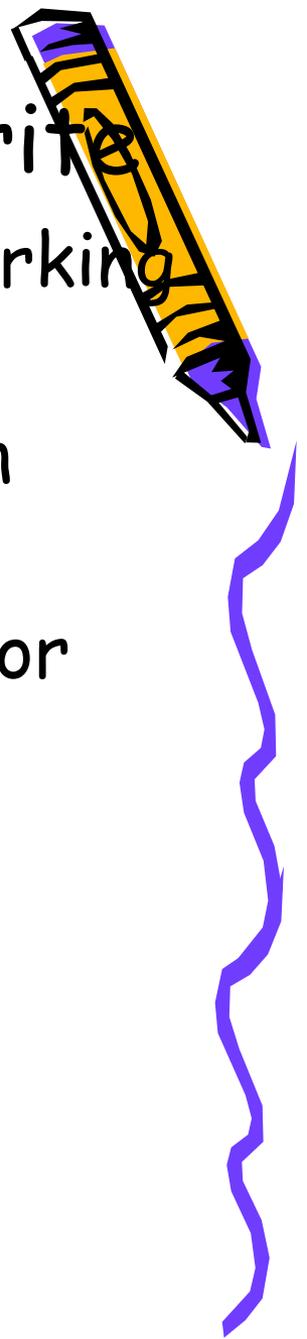
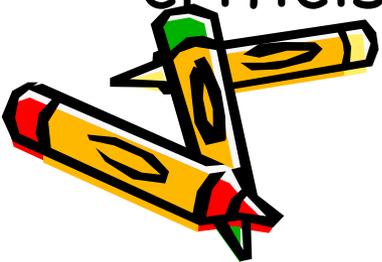
- Do you have results representing advance in knowledge or practice?
- Which journal do you wish to publish in ?

NB: Your results will depend on care you took in planning, designing and recording



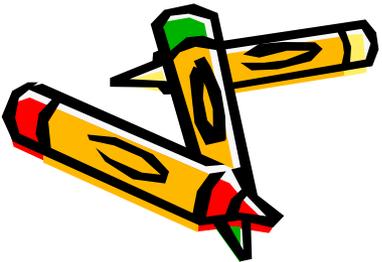
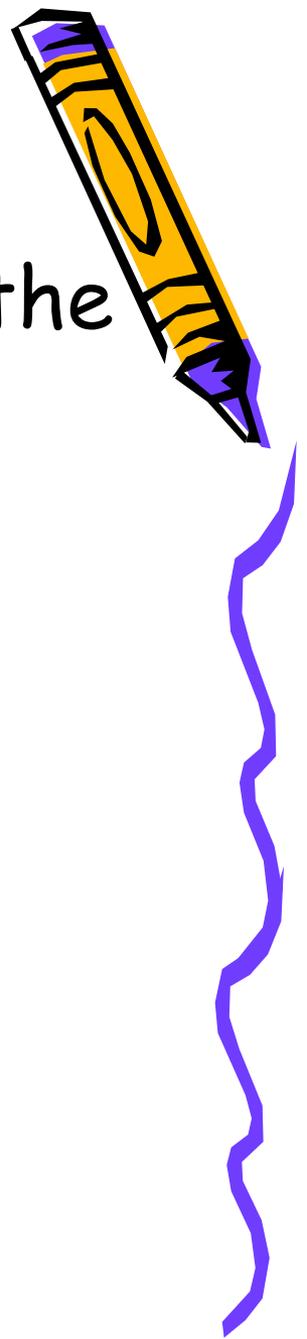
Assess your results before you write

- Analyse and Tabulate your results with working figures and graphs
- Sketch your conclusions as clearly as u can with your major findings
- Relate your conclusions to the hypothesis or research questions
- Discuss your conclusions with experienced scientists in different fora
- Listen carefully to the comments and criticisms



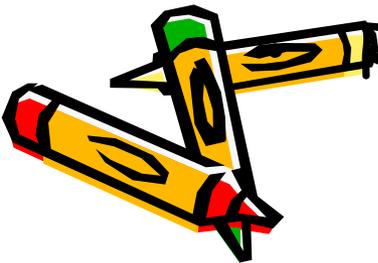
Your choice of Journal

- Your choice should be determined by the nature of your work
- Reputation of the journal
- Circulation of the journal and Impact factor
- Frequency of publication
- Page costs
- Beware of predatory journals



Organisational lay out of manuscript

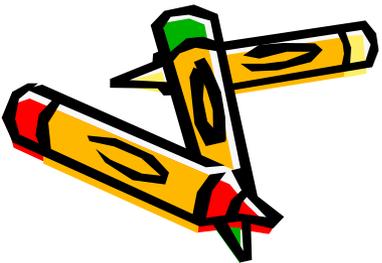
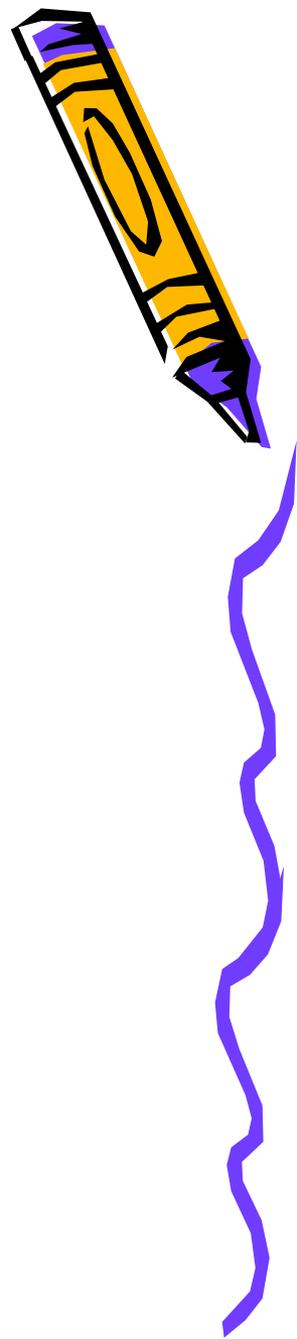
- Your choice of journal will influence format
- However, classical organisation of main body in agricultural sciences may include:
 - Introduction
 - Materials and methods
 - Results
 - Discussion
 - Conclusion/Summary
 - Acknowledgements and References



Dealing with components of a research Paper

1. Preliminaries

- Title
- Authorship
- Abstract



How to word Your title



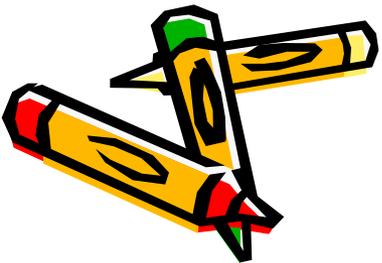
- Make it short and specific (Brevity and specificity)
- Bring out the main subject clearly

Specific title

Effect of unacidulated and acidulated rock phosphate on nodulation and dry matter yield of *Canavalia ensiformis*

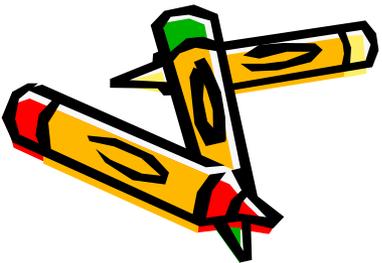
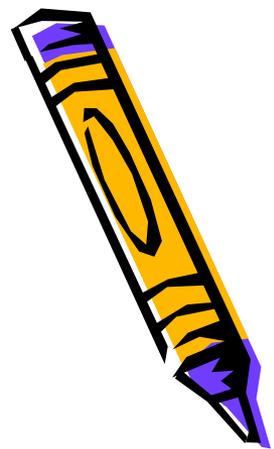
General title is not acceptable

Effect of phosphatic rock fertilisers on performance of *Canavalia ensiformis*



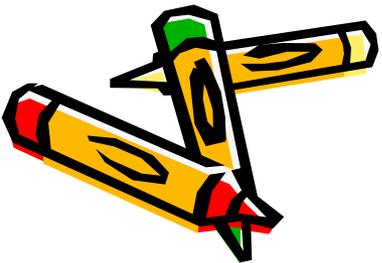
Authorship

- This is a sensitive issue and only those who significantly contributed to the work should be listed in order of magnitude of their contribution
- *Write names in accordance to the style required by the journal of your choice.*
- Give the address of each author at the time the work was done
- If any author has since moved, give their present address in a footnote as may be required by the journal



Abstract & its main purposes

- Guides subject matter experts in assessing content of the paper
- Provides maximum possible information to peripheral readers
- Assists abstracting journals in quick reproduction of authors abstract

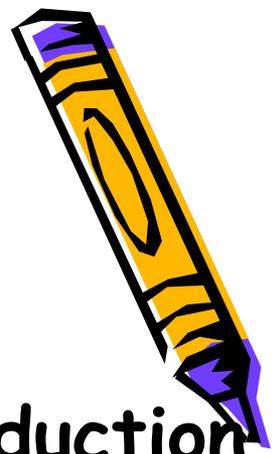


Four components of abstract

- Statement of the problem and objective (The Why)
- Methods used (The how)
- Major results (The what)
- Conclusion (The so what)



The Introduction

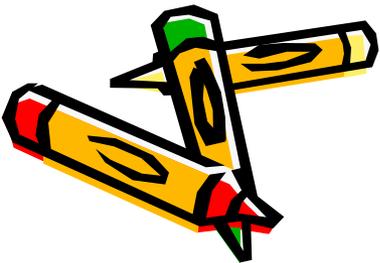


- **Purpose**

Provide sufficient background information to allow reader evaluate the results of the study

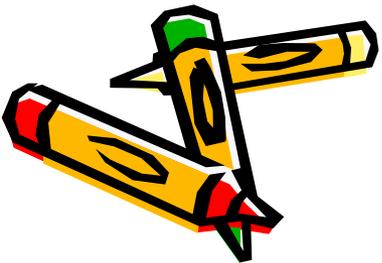
Elements of Introduction

- Provides background info
- A brief review of lit.
- Logic underlying work
- Statement of the objective



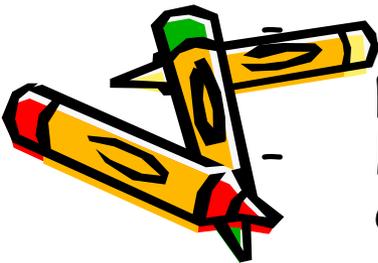
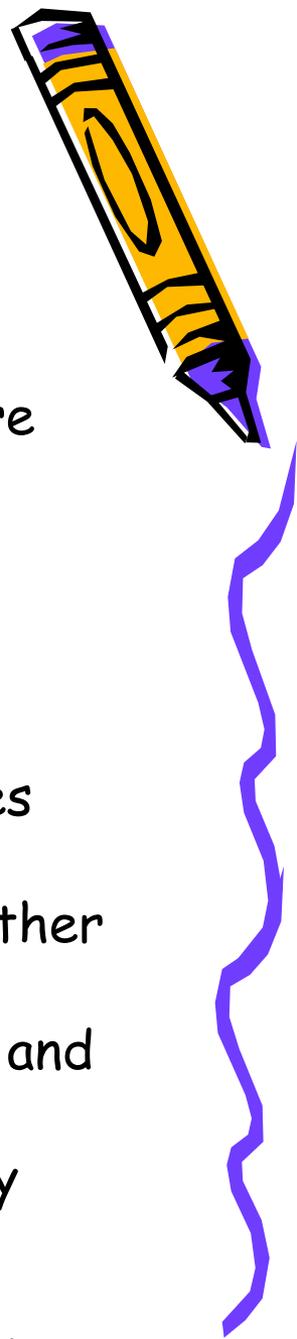
Materials and Methods

- Detailed materials and methods enable repeatability and validation of results
- Describes what materials you used e.g tools, chemicals, plants, animals, equipment and geographical location
- Description of the experimental design and what was done to complete experimentation
- If new equipment is used it should be described



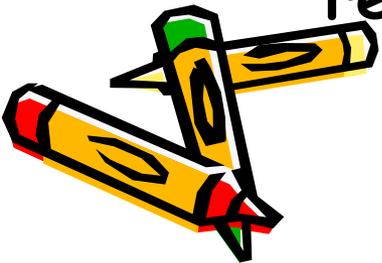
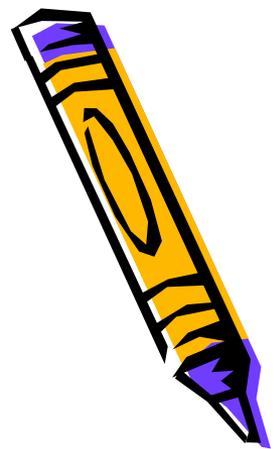
Writing Research Results

- Results constitute the new knowledge that you are contributing to science
- Therefore results must be presented clearly and accurately
- Sometimes results and discussions are presented together depending on the notes to the authors
- Write your results in relation to tables and figures and draw out important findings
- Do not replicate observations in your table but rather give means and their measures of variability
- Use tables when you wish to present exact values and figures when interested in trends
- Avoid repeating in the text numerical data already presented in tables.
- However, you may repeat values for group data to emphasize evidence in which conclusions are based



Suggestions for writing a discussion

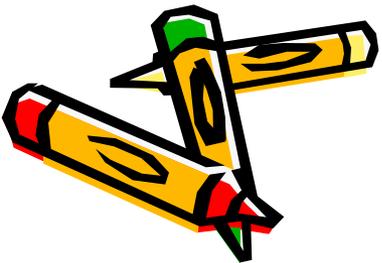
- This is the most demanding section
- The section must answer the question: what do my results mean and what are their implication
- Many paper are rejected because of either faulty methodology or faulty discussion
- Avoid too much verbiage or too long discussions and verbose.
- Robert A. Day in his book titled "How to write and Publish a scientific paper" calls it the **squid technique**: this is where the author is doubtful about their facts or reasoning and retreats behind a protective cloud of ink.



Some suggestions for writing discussion



- Present the principles, relationships and generalisations shown by the results and avoid restating what you have already presented in results.
- Avoid discussing every bit of the results in minute details but rather pick the major results in the context of your hypothesis, comment on their significance and relate them to previous work
- Point out any exceptions and define unsettled points. Never take the risk of trying to cover up or fudge data that does not seem to fit
- Show how your results or interpretations agree or contrast
- Do not be shy to discuss theoretical as well as practical implications of your results



Summary/conclusion



- Pull the threads of your argument together in a logical order using the observed facts to reach a conclusion
- Enlarge upon the significance of your new results to suggest new lines of work
- The discussion should end with a short summary/conclusion regarding the significance of the work and recommendation
- Anderson and Thistle (1947) contend that finally a good writing like a good music has to end in a fitting climax



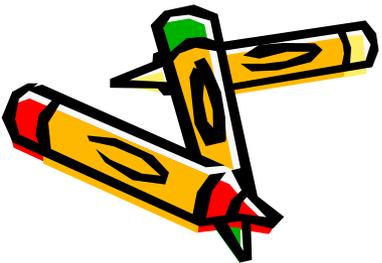
Acknowledgement & References

Acknowledgements

- A) Usually placed at the end of the paper before references
- B) Acknowledge those who provided funds, materials, technical assistance, and advice in conducting the work

References

- All References cited in the text must appear in the reference list
- The citation in the list should be complete and accurate presented according to required style by the journal
- Use reference managers ie Ref Man, EndNote to ensure accuracy



Finally...Avoiding Plagiarism

- To avoid plagiarism:
 1. Document every source for information that is not “general knowledge”—this includes facts and ideas.
 2. Cite every time a fact or idea is used unless it is clear that one citation is referring to a group of facts or ideas.
 3. If you quote material, put quotation marks around the quoted stuff and include a page number within the citation.
 4. It is alright to paraphrase material, but you still have to cite from where the paraphrased material came.
 5. When in doubt, cite the source.

