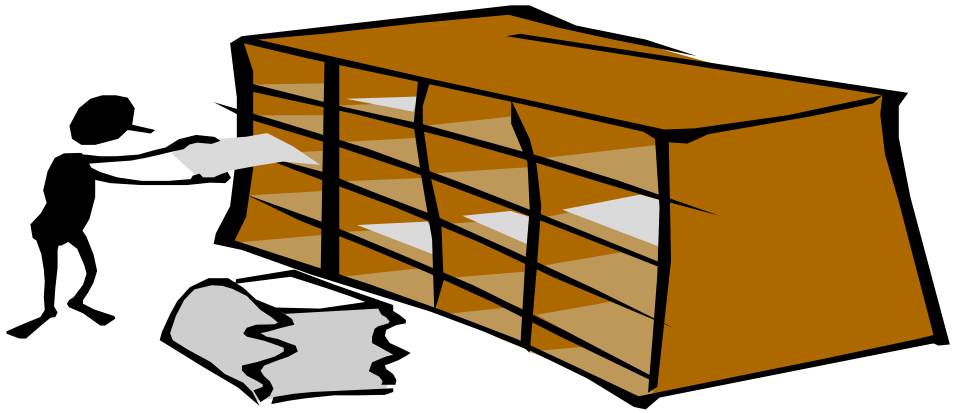
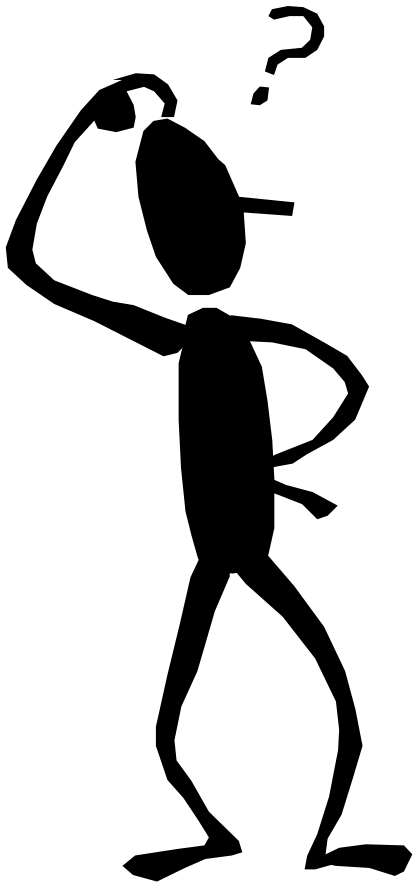
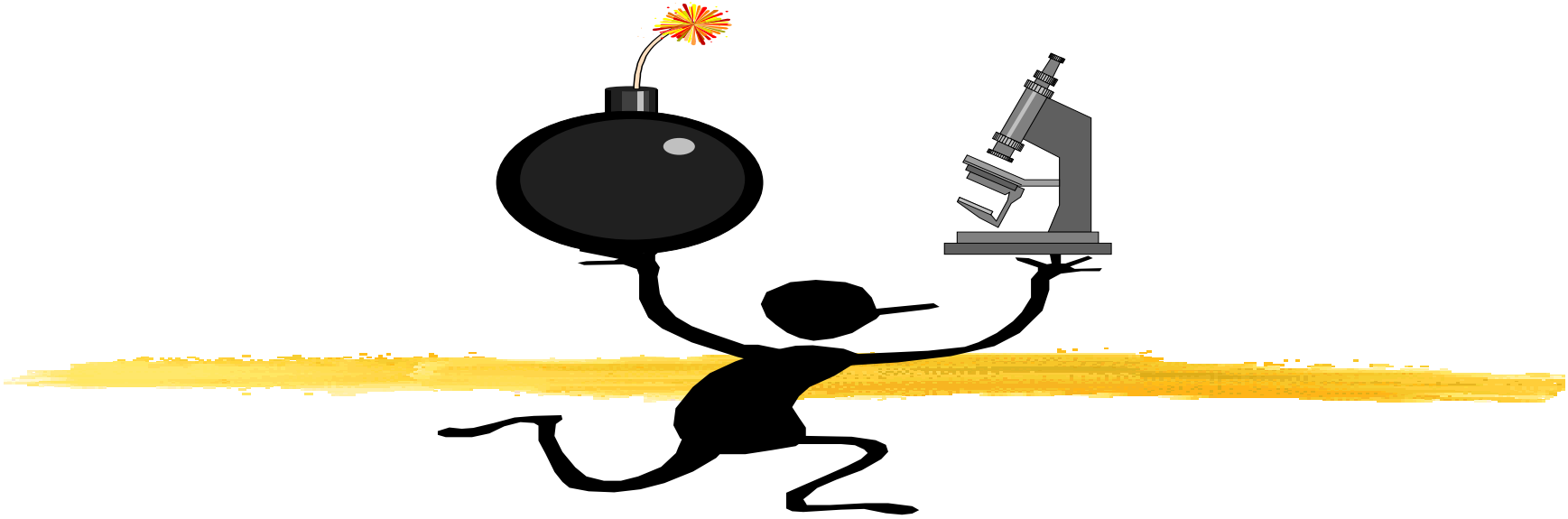
Publication as an output of Science



Central Issues

- What Is Science?
- What constitutes a publication?





“Science is a way of acquiring testable knowledge”

Science

- Entangling the web
- Understanding the underlying mechanisms
- Providing a theoretical basis for interpretation & forecasting

Purpose (benefits) of publication

- Provide answers to questions
- Point to issues that need to be addressed or missing linkages
- Broaden scientific perspective
- Basis for creating knowledge
- Means to critical analysis and focussing future events
- Medium of communication
- Database for decision making

Purpose

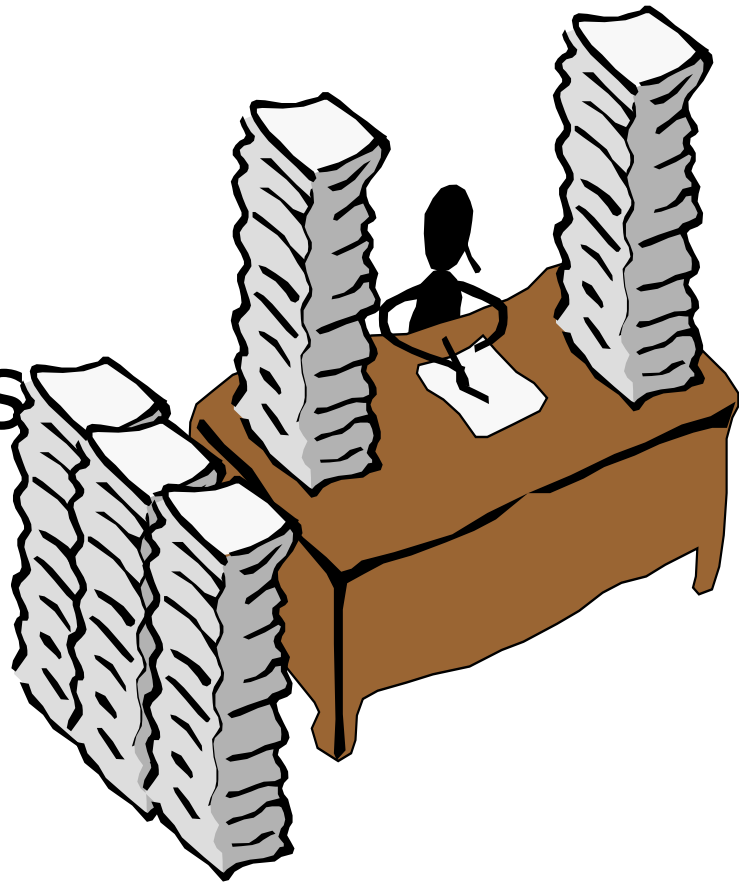
- Communicate useful ideas supported by rigorous analysis and arguments

  (*Paul Woomer*)

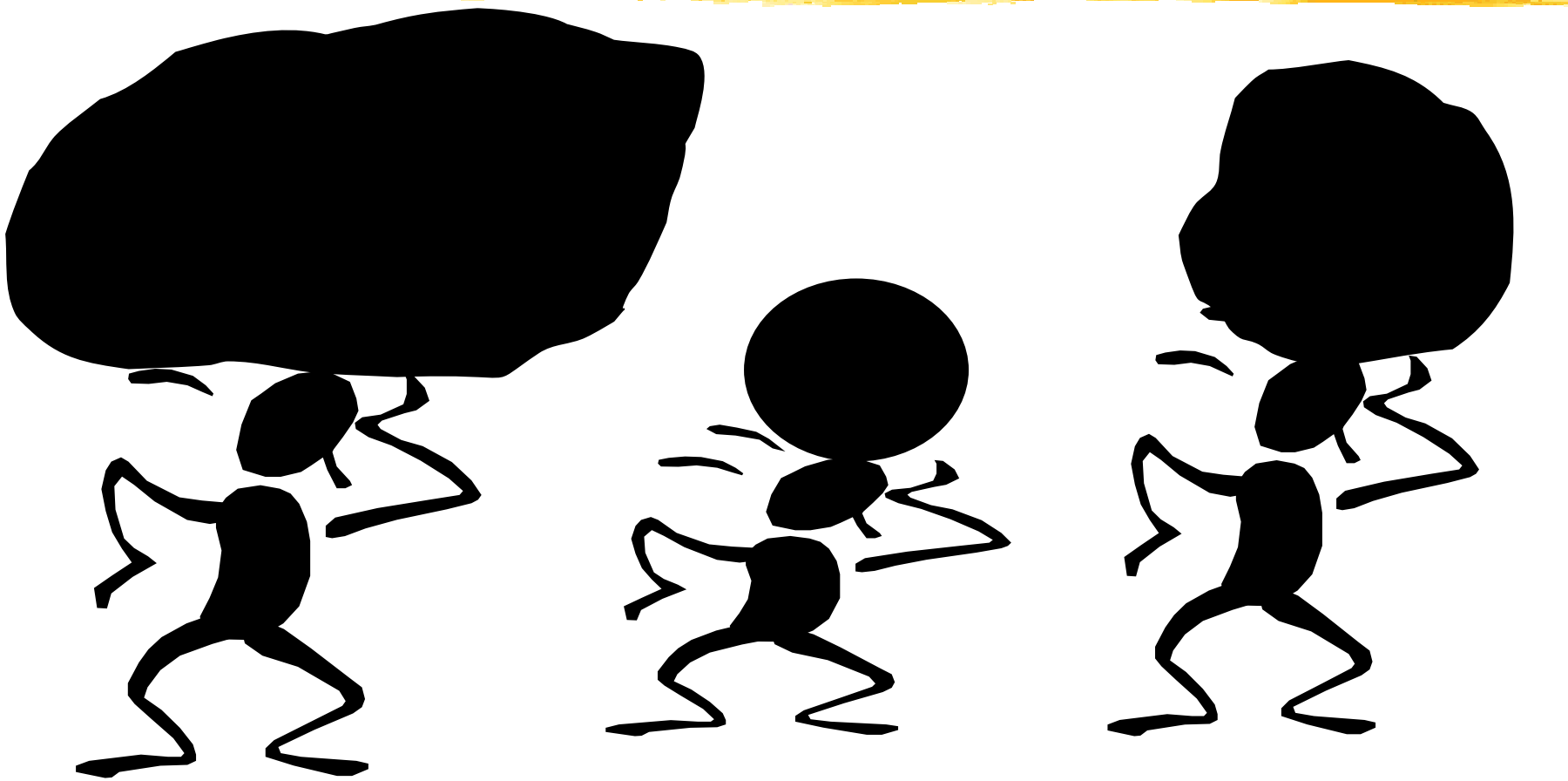
- Publication medium depends on type of audience

Publications-many types

- Reports
- Fliers
- Extension bulletins
- Journals
- E.t.c.



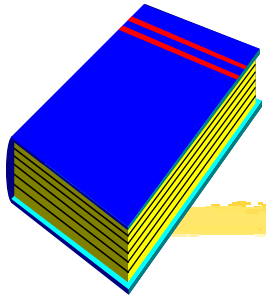
Publication Burden



Author Editor Reviewer

1. Author's Burden

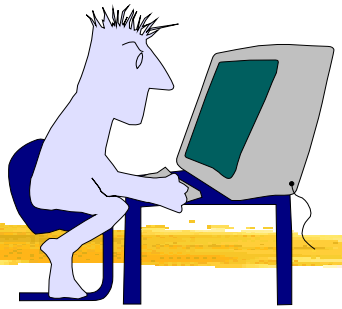
- Well thought and executed studies
  - Research issues clearly defined
  - Testable hypothesis
  - Appropriate methodology, data collection and analysis



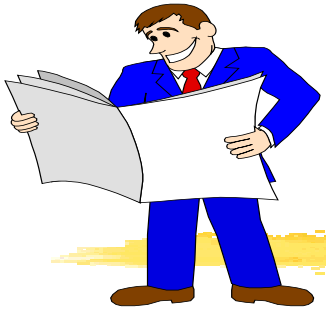
2. Author's Write-up

- Synthesis of Research findings
- Develop arguments to support your findings
- Organise your presentation
- Do you accept or reject the hypothesis?
- Write up a concise abstract
- Which journal?
- Have you followed the guidelines?
- Have the co-authors & others pre-reviewed the publication????

Editor's Concern

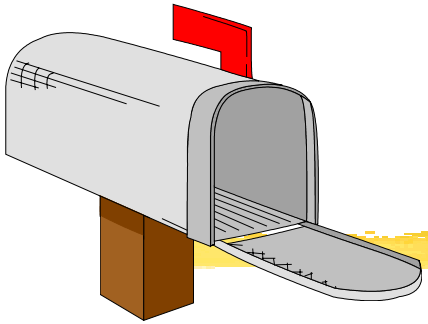


- Is the content within the scope of the journal?
- Is there in-depth investigation and analysis?
- Is it a routine investigation or novel to excite the journal readers?
- How is the write-up?
- Format?
- If promising, who are the appropriate reviewers?



Reviewer's concern

- Is it novel Science or routine work?
- What are the claims, evidence and arguments?
- What recommendations to the editor and author?

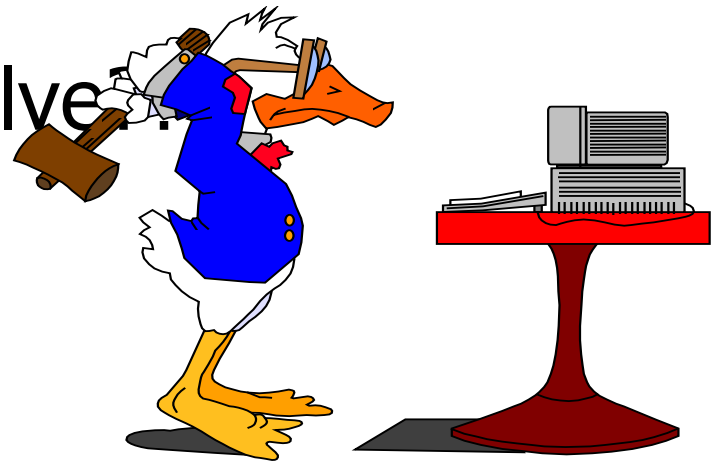


Editor's concerns

- What do the reviewers recommend?
- Has the paper been well reviewed??
- What is my own opinion about the paper?
- Would the paper appeal / repel readers
  i.e.does it market the Journal?
- What to tell the author?

Author's Frustration

- Undue delay in paper review
- "Poor review"
- Should I revise paper or submit to another journal or shelve it?
- Delay in publication



Editor's frustration

- Author's failure to follow guidelines
- Poor write-up, including reference citations
- Delay in review process
- Delayed response from authors
- Authors do not proof read galley proofs
- Delay in printing
- Seeing mistakes after publication

Recommendation

- Don’t give up!
- Practice makes perfect
- Use reviewers’ comments to strengthen the paper
- Send manuscripts to both local and international journals

The art and ups and downs of scientific publication

Adipala Ekwamu
Crop Science Department,
Makerere University

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Entangling the web

Understanding the underlying mechanisms

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Publications – many types

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- Journals
- Etc.

Scientific Writing

- Goal of scientific research is publication
- Bad writing dooms “good science”
- Organisation more important than literary skill
- Simplicity and clarity – “The best English is that which gives the sense in the fewest short words.”
- Majority of scientists are NOT native English speakers

Oral Presentation

- Usually at a meeting and often short
- Not a primary publication
- Stress only key points
- Use 35mm slides to supplement oral presentation
- Limited slides to approximately one per minute of presentation

Slides and Overheads

- One point per slide
- Large type size; no more than 6 – 9 lines
- Use a sans-serif typeface, not serif
- Contrast text and background
- Do not get too fancy, keep it simple

Poster presentation

- ✓ Most common meeting presentation form
- ✓ Not a primary publication
- ✓ Present highlights, put details in a handout
- ✓ Key points as bullets and phrases, minimize text, limit and simplify figures and tables
- ✓ 24pt type minimum for text, larger for headers and titles
- ✓ Design to fit space available
- ✓ Should be self-explanatory

CBE Scientific Paper Definition

An acceptable primary scientific publication must be the first disclosure containing sufficient information to enable peers (1) To assess observations (2) To repeat experiments, and (3) To evaluate intellectual processes; moreover, it must be susceptible to sensory perception, available to the scientific community without restriction, and available for regular screening by one or more of the major recognised secondary services, e.g. *Biological Abstracts or Index Medicus*

Who is an Author?

- Should be decided before the work begins
- Should be intimately involved in the work
- Should participate in at least two of :
  - Experiment design
  - Experiment execution
  - Data analysis
  - Manuscript preparation
- Must accept intellectual responsibility for the work

Institutional Addresses

- List addresses in same order as authors
- List addresses of institutions where the work was done
- Use superscripts to correlate authors and institutions
- List present addresses in a footnote, if different
- Corresponding author's full mailing address must be given – include postal code

Originality

“Submission of a paper (other than a review) to a journal normally implies that it presents the results of original research or some new ideas not previously published, that it is not under consideration for publication elsewhere, and that, if accepted, it will not be published elsewhere, either in English or in any other language, without the consent of the editors.” (General notes on the preparation of scientific papers, The Royal Society, London).

ASM Primary Publication

A scientific paper or its substance published in a conference report, symposium proceeding, or technical bulletin, posted on a host computer which there is access via the internet, or made available through any other retrievable source, including CD-ROM and other electronic forms, is unacceptable for submission to an ASM journal on grounds of prior publication. A manuscript whose substance was included in a thesis or dissertation posted on a host computer to which there is access via internet is unacceptable for submission to an ASM Journal on the grounds of prior publication.

The Title

- The most read part of the paper
- Key to database access and retrieval
- Shorter is usually better
- A label not a sentence or a question
- Be specific
- No abbreviations or jargon
- No series designations

The Abstract

- Not more than 250 words
- Type as a single paragraph
- Usually written completely in the past tense
- Contains only information found in the paper
- No figures or tables
- No literature references
- No abbreviations

Abstract II

- Summarise all major points in the paper
  - Objectives and scope
  - General methods
  - Results
  - Conclusions and significance
- Usually the last part of the paper written
- Often published by itself in secondary literature
- Used for orientation by editors and reviewers

The Logic of IMRAD

- Introduction – What question (problem) was studied?
- Materials and methods – how was the problem studied?
- Results – what were the findings?
- Discussion – what do the findings mean?

The Introduction

- Provides background on research topic
- Contains a literature review that orients the reader, but which is rarely exhaustive
- Identify approach and justify it if necessary
- Identify objectives of research
- Identify the hypothesis being tested
- Indicate the significance of the research
- Identify preliminary reports of the results already published

Materials

- Use subheaders to guide the reader
- Do **not** include results here
- Provide complete materials list
- Check journal policy on release of materials to other researchers
- Deposit critical materials and sequences in internationally accessible locations

Method

- Give detailed methodology in general order used in Results, but group like techniques
- If protocol or materials already published, then summarize general approach in 1 – 2 sentences
- “How?” and “How much?” precisely answered
- Justify precision of more than 2 significant digits
- Evidence for repetition and repeatability
- Identify statistical tests and data analysis protocols

The Results

- No materials; no methods
- Very little or (preferably) no discussion
- Usually written in the past tense
- First paragraph is often an overview
- Subheaders often helpful
- Individual pieces of data in text
- Repetitive pieces of data in tables or figures
- Present information in only one form
- Often the shortest section of the paper

But I have so much data !

- The journal does not want your lab notebook !
- “The compulsion to include everything, leaving nothing out does not prove that one has unlimited information; it proves that one lacks discrimination.” S. Aaronson (1977)
- “The fool collects facts; the wise man selects them.” J. W. Powell (1888)
- “If you are out to describe truth, leave elegance to the tailor.” A. Einstein.

Text, Table or Graph?

- Text for simple or nonsignificant changes
- Tables or graphs for essential repetitive data
- Tables for precision when exact results are critical
- Graphs when trends and tendencies are more important than exact values
- Present data in only one of text, table, or graph

The Discussion

- Often the hardest section to write
- Does not recapitulate the results
- Varies considerably in length
- Shows significance of work, often in the concluding paragraph
- “Finally, good writing, like good music, has a fitting climax. Many a paper loses much of its effect because the clear stream of the Discussion ends in a swampy delta.” Anderson and Thistle (1947)

References Cited

- List all significant published references
- All references in the text must be in the reference section
- All references in the references section must be called from the text
- Check every reference against the original publication
- Follow the journal's format very carefully

When to do What

- Start writing while work is still in progress
- Identify the objectives
- Work from an outline
- A command order;
  - Materials and Methods
  - Results (with Tables and Figures)
  - Introduction and Discussion
  - Abstract

Do Not Ever…

- Publish the same information twice
- Use the work of others without attribution
- Violate confidentiality agreements

Selecting a Journal

- Appropriate content
- Correct audience
- Language
- Prestige and impact
- Frequency and speed of publication
- Circulation

Cover letter – Original Manuscript

- Always include one
- Specify journal and indicate why
- Identify corresponding author and give e-mail, phone, fax and regular mail addresses
- Suggest editor and/or reviewer(s)
- Request relief from page charges, if necessary
- Any particulars, e.g., revision of an earlier manuscript

The Review Process

- Usually run completely by volunteers
- Usually two or three anonymous reviewers
- Length depends on the journal
  - 30 day minimum
  - 60 – 75 day average
  - 90 + days contact the editor

Editor's Concern

- Is the content within the scope of the journal ?
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Review Criteria- Format

- Adheres to journal format ?
- Appropriate organization?
- Appropriate figures and tables?
- Appropriate overall length?
- Appropriate nomenclature?
- References accounted for and in proper form
- Style is adequate?

Review Format

- Adopt viewpoint of author's ally
- Substantiate major criticisms, especially with respect to novelty
- First section – summarize content and provide overall evaluation
- Second section – numbered list of specific points
- Recommended accept/reject/modify only in confidential comments to the editor

Reviewer's Concern

- How significant is the research question?
- To what extent is the work novel and original?
- Appropriate experimental designs, adequate experimental techniques?
- Data properly interpreted?
- Conclusions supported by data?
- Relevant discussion?
- Adequate references?
- What recommendations to the editor and author?

Editorial Decision

- Guided by the reviewers
- Solely that of the editor
- Three basic responses
  - Accept
  - Modify
  - Reject

Response to Reject Letter

- Evaluate reviews and identify the problem(s)
- Revise and resubmit to same journal
- Revise and resubmit elsewhere
- Do not lose hope or your temper
- Common at *AEM* (60 – 70%)

Do Not tell the Editor

- Everything looked okay to me
- One of the reviewers agreed with me so I did not change anything
- The reviewer(s) who disagreed with me knows nothing about…
- You should accept this article because you published one that was worse than this last year

I was surprised to note the reviewers recommendations that both manuscripts must be revised and then submitted from scratch for another lengthy review process! Also, it is apparent to me that most of the reviewers were unfamiliar with the method of statistical analysis that we chose to utilize and you have published weaker papers than mine.

Thus, I regret to inform you that my manuscript is being withdrawn and will be submitted elsewhere

What is Copyright

- Applies equally to both electronic and printed matter
- Is a legal barrier to duplicate publication
- Is divisible and answerable
- Lasts for the life of the longest author plus 50 years
- Must have permission from copyright owner if using copyrighted matter in your paper
- Is owned equally by the authors
- Is usually transferred to the publisher for scientific papers