

THE NSAC STYLE MANUAL

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INTRODUCTION

This manual is designed to aid you, the student, in successfully completing the several types of papers given as assignments in courses at Nova Scotia Agricultural College. The text that follows will cover the types of papers generally written in the B.Sc. Agr. program. Techniques and formats used in these kinds of writing will be explained, as will some of the strategies often employed in research and writing. The NSAC Style Manual also contains some course-specific assignment materials and advice. The text is intended as supplement and complement to the information obtained from your instructor(s) and other course materials. This Style Manual is available online and also may be purchased at the Bookstore or checked out for use within MacRae Library from the Reserve desk.

Another guide you may find useful is the MacRae Library Handbook, which is available online. This guide discusses the main features of the NSAC library.

WHAT TYPES OF PAPERS WILL I BE WRITING?

Generally speaking, students at Nova Scotia Agricultural College are expected to write three types of papers: reports, reviews, and essays. Instructors may use various names, such as "term paper," "term assignment," "report," "research paper," or "essay"; all apply to works that can be placed into one of three main categories:

(a) Report on Original Experiment

(b) Review Paper

(c) Original Essay

What each of these types of assignments contains can vary significantly. How the information in them is organized can also be very different. Yet, there are some similarities. In the section below, each of these three types of papers will be discussed.

(a) Report on Original Experiment

A Report on Original Experiment is one of the most common types of scholarly writing found in the sciences. When a researcher or team of researchers reports on the findings of an experiment that has been conducted, the following terms can be used to describe the type of article generated as that report: research paper, research article, research report, research publication, *or* report on original experiment. Usually a research paper or article refers to reports published in scientific journals. The term research report or publication most often refers to a stand alone document. There are some differences, however. The article published in scientific journal is shorter and more concise, whereas a research report usually contains a detailed review of existing literature on the topic under discussion, along with an extensive reference list.

There may be courses in which you write a Report on Original Experiment. The B.Sc. Agr project course report, which is undertaken in the fourth year of this program, follows a more extensive research report format. There will certainly be courses in which you will *read* Reports on Original Experiments that have been published in scholarly journals. In this manual, the term Report on Original Experiment will be used to describe both types of reports.

A Report on Original Experiment will usually contain the following, in this order:

- (1) Title Page
- (2) Table of Contents/List of Illustrations or Figures
- (3) Abstract
- (4) Introduction
- (5) Literature Review
- (6) Materials and Methods
- (7) Results
- (8) Discussion
- (9) Conclusion(s)
- (10) References *or* Citation List
- (11) Appendices (if any)

Some of the sections listed above may be combined or they may be omitted. For example, a Report on Original Experiment published in a scientific journal would obviously not have a Title Page or

a Table of Contents. The Introduction and the Literature Review sections might be combined into one section; Results and Discussion are also frequently placed together, as 'Results and Discussion.' Check with your instructor to know how *your* Report on Original Experiment should be structured. In many cases, a Title Page, a Table of Contents, and a List of Tables and/or Figures may not be required.

➤ **Important note:**

Lab Reports are a modification of a Report on Original Experiment. A Lab Report is essentially a record of procedures and the results of lab tests. Lab Reports generally include a Title Page, Introduction, Material and Methods, Results, Discussion, and Conclusions. Consult the instructor of the course in which the Lab Reports have been assigned to determine the exact format required. For example, a Citation List may be required. It is always advisable to check with the course instructor to be sure if one is needed or not.

(b) Review Paper

What is referred to here as a Review Paper might also be called a research paper, a literature review, a research essay, or any number of things. In this Manual, for the sake of clarity, we will consistently refer to this category of assignment as a Review Paper. Remember to use this Manual as a preliminary guide, and consult the instructor and the guidelines of your course for any specific assignment requirements.

A Review Paper contains exactly that: a review of the relevant (in most cases scholarly or peer-reviewed) literature on a topic. A review paper is the result of critical reading and analysis of articles, books, and other reputable sources on the selected topic. A Review Paper does not explain "what" a topic is, really, although the process of defining or explaining the topic may be a part of the introductory or explanatory material of the paper. In certain instances, in history courses, for example, you may write a review of just one article or book. Still, the general idea is the same. You are reading, analysing, interpreting and evaluating information on a particular topic and then committing that critical process to print in the form of a paper.

There are two basic types of review papers: a scientific review paper and a technical review paper. What a scientific review paper contains, primarily, is a careful and systematic discussion and analysis of the research that has been conducted and published on that topic, research uncovered through a research process, or 'literature search.' A 'problem' may also be stated. A technical review paper may not necessarily contain information taken just from scholarly journals. Information from reputable

technical or semi-scientific journals, books and credible internet sources are the primary source of information for this type of paper. Nevertheless, critical reading, thinking, and writing skills are employed in the technical review paper as well, in describing, analysing, and interpreting the 'literature' or 'sources' that have been assembled and read on the topic.

It is also possible to define a Review Paper by what it is *not*. A Review Paper is *not* equivalent to what you would find in an encyclopaedia, neither is it what might usually be found in a high school research paper. Rather, a scientific Review Paper is similar to what you might read in one of your courses, in a scholarly journal in any field of inquiry (such as botany, veterinary medicine, literature, history, ecology, animal behaviour, and genetics). Some examples of scholarly journals are Science, Nature, The Canadian Journal of Animal Science, Agronomy Journal, New Scientist, the Journal of Applied Ecology, Canadian Veterinary Journal, Soil Biology and Biochemistry, The Canadian Historical Review, Canadian Soil Science, and many, many others, in all disciplines.

A technical review paper is similar in content and style of writing to those articles found in technical journals in any field of study (such as those published in the following industries: dairy, beef, poultry, hog, landscape, golf course, field crops) except for one major stylistic difference: information is cited and referenced according to a standard format similar to that employed in scientific review papers. Some examples of these technical journals include Hoard's Dairyman, Country Guide, and American Nurseryman.

The aim of articles found in scholarly or technical journals is to contribute to some understanding of the topic or scientific problem with which they are concerned. Similarly, your goal in writing a Review Paper is to contribute to your own and others' understanding of a topic. Through careful reading and analysis of the current and reputable sources of information or research on that topic, by discussing, analyzing, and critically evaluating in print all the reliable sources you access for your Review Paper, you will, albeit in a limited or preliminary fashion, be contributing to a greater understanding of that topic by those who read *your* paper. In going through and completing the task of writing a Review Paper, the process will prepare you, hopefully, for subsequent courses in which you will write a literature review as part of your own research. It also will aid you in becoming familiar with how, in a post secondary setting, you can go about researching and writing on a specific topic in any number of fields.

How is a Review Paper organized? How does one “review” literature?

There are many ways to accomplish the task of completing a Review Paper. A few general guidelines can only be suggested here. Keep in mind that different courses will have varying requirements for writing assignments. It is up to you to find out what is required in any particular course.

⇒First: gather your sources.

Plan on using as many, if not twice as many, hours looking for information as you do in reading and writing up the information for your paper. Take advantage of the information provided on researching via the MacRae Library’s tours (your instructor, or the library staff, can provide information on tour dates and times), and also don’t be shy about asking the library staff for assistance with your research effort. Be sure, however, to allow yourself (and any staff member or faculty member you ask for help) sufficient time to do the research.

⇒Second: Organize your sources.

The information contained in the sources you select to review should be discussed in a logical order. Generally, this means either thematically or chronologically (and sometimes a bit of both). ‘Chronologically’ means from the earliest research or experiments conducted on the topic, by year, to the most recently published material.

⇒Next: State the central idea, or problem, in a thesis statement.

Just as in essay you write, in which you are the sole authority (an original or personal essay: written in first person, from the ‘I’ point of view, either explicit or implicit), a Review Paper contains a thesis statement. A thesis statement, in a sense, ‘ties’ the paper together. The purpose of the thesis is to inform the reader of the current state of the literature on that topic. **Do not be concerned if your thesis changes as you read and analyze your sources. This is normal.**

⇒Finally: Note for your reader any gap that exists in the literature—any area in which further research is needed.

A Review Paper often contains an explanation or suggestion of what, if any, gaps exist in the body of literature on a topic. This gap might have to do with the fact that further research is needed in a particular dimension of the topic. Or, it might have more to do with the need to raise other research questions related to the topic. Or, again it might be that, in reviewing the literature, it becomes clear that different methods or different approaches need to be employed in future research on this topic in order to come up with more a comprehensive understanding of the topic. In these ways, the *critical* look at what has been written on a topic makes a Review Paper a contribution—your contribution—to knowledge on the topic it addresses.

A Review Paper will contain the following, in this order:

- (1) Title Page (if required by instructor)
- (2) Table of Contents (if required by instructor)
- (3) List of Figures and/or Tables (if paper contains several figures or tables, or is lengthy)
- (4) Abstract (if required by instructor)
- (5) Introduction (may or may not be identified as such with a heading)
- (6) Body of Paper, consisting of Literature Review and Discussion (Note: Do **not** use Body, Literature Review, **or** Discussion as headings in the paper; you may use other subject headings, however, if warranted)
- (7) Conclusion
- (8) References (most frequently used), Works Cited, or Citation List
- (8) Appendices (not necessarily always used)

(c) Original Essay

What is called an “Original Essay” here is an essay based on critical thinking: i.e., utilizing logic, personal experience, description, analysis, definition, comparison and contrast, and other forms of exposition and argumentation. An original essay is a paper that may or may not involve research. The Essay 1 and Essay 2 assignments in English 1000, for example, fall into this category.

An Original Essay will follow this pattern:

- (1) Introduction (may or may not be explicitly identified as such)
- (2) Body of essay (*never* used as a heading)
- (3) Conclusion (may or may not be explicitly identified as such)
- (4) References or Works Cited (if needed; follow documentation style required)

To sum up: the three categories into which most NSAC writing assignments may be placed are Report on Original Experiment, Review Paper, and Original Essay. Their differences in format, and the key elements each may contain, are detailed in the table on the next page.

(a) Report on Original Experiment	(b) Review Paper	(c) Original Essay
Title Page (if required) Table of Contents (if required) List of Figures and/or Tables (if required) Abstract Introduction Literature Review Materials and Methods Results Discussion Conclusion References or Citation List Appendices (if any)	Title Page (if required) Table of Contents(if required) List of Figures and/or Tables Abstract (if required) Introduction Body(never a heading!) Conclusion References, Works Cited, <i>or</i> Citation List Appendices (if used)	Introduction Body (never a heading!) Conclusion References/Works Cited

In the following section, each of the above items, as they and *if* they pertain to the categories (a) Report on Original Experiment, (b) Review Paper, and (c) Original Essay, will be discussed separately.

Title Page

The title page is the first page of a Report on Original Experiment or Review Paper, if it is used. A title page will have the following:

- (a) The title of the report
- (b) The name of the person or group by whom it is submitted [e.g., Submitted by: Jane Jones]
- (c) The name of the person or group to whom it is submitted
[for example: Submitted to: Professor Sanderson], together with the signature or signatures of the person or persons submitting the report, where required
- (d) The date of submission
- (e) The course number and name (and section, if appropriate)

Table of Contents

The Table of Contents functions as a guide for the reader. It is particularly useful when the report or paper is a lengthy one. The following should be observed in a Table of Contents:

- No entry should be made that does not appear as a heading or sub-section heading in the report
- It is not necessary to put all sub-section headings into the table of contents; only chief headings, of equal importance, should be included
- Always insert page numbers last; then check Table of Contents for accuracy.
- If illustrations (including tables, figures, photographs) are used, place their titles in a separate list, titled List of Tables or List of Figures, depending on which it is. Place this list immediately after the Table of Contents, on a separate page
- The final copy of the Table of Contents should always be made **after** the report has been put into its final form, in order to be sure that page numbers and titles are accurate. Word processing packages such as WordPerfect and Word can automatically generate tables of contents upon completion of the paper.

Abstract

An abstract is a brief synthesis, summary, and/or description of a report, paper, or review. An abstract provides enough information to help a potential reader assess if the article in question is related to the topic being researched--without having to go to the time and trouble of reading the entire report or article. There are generally two types of abstracts: descriptive and informative. A descriptive abstract states the objectives of the paper (or the thesis statement) and lists what is discussed in the text. An informative abstract states the thesis statement of the review paper or the research objectives of the report on original experiment and then briefly summarizes main points or the results of the experiments.

Abstracts, as a general rule, are between 150 - 300 words in length and placed on a separate page located just before the Introduction. When writing an abstract for your own report or paper, you should follow the format and conventions for abstracts in the discipline or area of study connected to your research.

An abstract for a Review Paper differs in content from one for a Report on Original Experiment. All reports on original experiments have an informative abstract which summarizes the experiment's objective, its methodology, and the results. A review paper's abstract may be either descriptive or informative. Please ask your instructor which type is required, or, indeed, if one is required at all. An example of an informative abstract can be found in Appendix A.

SUMMARY

An "Informative" Abstract for a Report on Original Experiment will contain:

- objectives
- methodology
- results
- concluding statement

An "Informative" or "Descriptive" Abstract for a Review Paper will contain:

- objectives (or a paraphrase of the thesis statement)
- summary of main ideas of paper
- concluding statement

Introduction

The purpose of an Introduction is to orient the reader. For the Introduction of a Report on an Original Experiment, a brief statement of the problem is given, along with the reasons justifying investigation. The hypothesis or set of objectives upon which the problem is based will also be outlined, with the objectives of the experiment normally appearing in the last paragraph.

The Introduction for a Review Paper states the purpose or objective of the paper. The Introduction asks and answers the question of why the review paper's subject is important and worth the attention of scholars, farmers, governments, or others. The Introduction should also indicate how the writer plans to approach the subject. Included in this statement of approach may be the main topic areas to be discussed, limitations or scope of the paper, the type of data or methodologies used in the paper, and the definitions of terms and concepts used in the review paper.

The Introduction for an "Original Essay" may or may not be identified as an Introduction; often, it is simply the first few paragraphs of the paper, with its contents cueing the reader as to the chief argument of the paper, the focus or thrust of the paper, and/or the main areas of discussion, analysis, or elaboration.

SUMMARY

The Introduction for a Report on Original Experiment will have:

- statement of problem
- rationale for study or hypothesis
- background
- objectives of experiment

The Introduction of a Review Paper will contain:

- purpose (thesis statement)
- importance/relevancy of topic
- approach to topic
- may also include limitations, type of data, definition of terms/concepts

The Introduction of an Original Essay will contain:

thesis

background information

approach

Literature Review

The Literature Review section contains an analysis and summary of key research findings or the body of thought on a topic. Depending on the type of report, essay, or article it is in, the number of sources examined in a Literature Review may vary. Generally speaking, all relevant literature published on the topic in all languages and at any time in history will be referred to in a comprehensive review paper. Although the authors will have undertaken a complete survey of the literature for an article published in a scientific journal, only the most important papers are summarized and cited, with the usual number of sources cited being between ten and twenty. To view an example of a scientific review paper similar to those you will be reading and writing throughout your program, consult the Appendices of this Manual.

In some disciplines and in some situations in your course work at NSAC, the general rule explained above—that all relevant literature on the topic, in all languages, from any point in history, needs to be cited—is amended to the following: the most salient of the literature published, and the most recent decade’s literature. Check with the instructor of your course to be sure of specific requirements.

There are some differences you will observe between what you read in scholarly journals and what you are required to produce for some of your courses at NSAC. In a Report on Original Experiment, published in a scholarly journal, for example, the Literature Review is almost always part of the Introduction. Yet, in a Report on Original Experiment prepared by you, the NSAC student, the Literature Review section will be separate from the Introduction, and will contain ten or more sources depending on the course requirements or the limitations of the topic. This type of report is more characteristic of a standard research report described above. All relevant literature is summarized and cited. A comprehensive review of all prior research is the goal, but the actual number of sources used will depend, of course, on the availability of studies on your topic.

For the Review Paper (and, for English 1000 students, the paper central to your portfolio is the Review Paper), the Literature Review is essentially the entire body of the paper. Students should

summarize, analyze, and make connections between all the relevant literature on the chosen topic by consulting twenty to thirty sources, where possible. For first year courses, an acceptable minimum is a search through the last ten years of reputable sources. Literature Review and Discussion sections are often combined, with the reports on various experiments or the literature in general being compared and contrasted with each other, in order to summarize and evaluate what is currently known about the topic.

In an Original Essay the primary source of information is generally you, the student. The “Body” of the paper may review some literature on the subject or topic at hand, but by and large an Original essay is just that—original thought. In those instances when information and knowledge has been used from other sources, these sources **must be acknowledged** through some form of documentation and citation. But, generally speaking, a Literature Review per se is not a part of this type of an Original Essay.

SUMMARY

The Literature Review in a Report on Original Experiment will contain:

- summary of literature pertaining to topic
- summary of key papers OR extensive review of existing literature (similar to that of a review paper)
- may have a heading of Literature Review, or an equivalent
- citation of all information/sources

The Literature Review in a Review Paper will have:

- summary of literature pertaining to topic
- extensive search of literature
- doesn't use the title/heading Literature Review
- considerable use of headings, in order to provide clear direction to reader
- citation of all information/sources

Materials and Methods

As indicated earlier in this Manual, The Materials and Methods section belongs only in a Report on Original Experiment. The following information about the experiment(s) appears in this section: materials, techniques, experiment design, and procedures. While apparatus and/or equipment are *not* listed, what is discussed and explained are the steps involved in the procedure that was followed in the

experiment(s). Care must be taken to ensure that all details necessary to conducting the experiment(s) are included. Anyone reading the materials and methods should have enough information to be able to repeat the experiment. For an example of a Materials and Methods section, see page 58 of this Manual. Finally, please note that first person (I, we) and second person (you) are not generally used in scientific papers, but there may be different expectations for a lab report. Within some of the life and biological sciences, as well as in humanities and social sciences disciplines' writings, the first person may be used. It's best to consult your instructor to know what is appropriate. Since the materials and methods section is a presentation of what you did to conduct the experiment, citations are generally not found here. Sometimes a researcher may invent a particular piece of equipment or develop a patentable technique; in this case, the inventor or researcher will be recognized by a citation.

SUMMARY

The Materials and Methods section in a Report on Original Experiment will have:

- a heading "Materials and Methods" as appropriate
- materials used and techniques employed
- the experimental design
- procedures followed in order to provide clear direction to reader, and allow for replication
- citation of all sources pertinent to section

Results

The Results section will have in it the findings of the experiment conducted. It is, therefore, found only in a Report on Original Experiment. This section is also often combined with the Discussion. Tables, figures, graphs, diagrams, and photographs often appear in this section.

It is necessary to distinguish between a table and a figure. Table refers to columns of numbers and words; a figure is every other type of illustration, such as graphs, photographs, diagrams, and line drawings. Tables and figures are used to present the results of the experiment and are always accompanied by a concise interpretation of their meaning. Never include any figure or table without also providing an explanation (interpretation) for the information contained in that figure or table.

All tables and figures must be clearly labelled and titled in your reports. Refer to the table or figure in the text by either its table number or figure number (such as, See Table 1....). Be sure, also, to

include a List of Tables or Figures after the Table of Contents if you do use any tables or figures. See Appendix C of this Manual for information on the Guggenheim Notation Method for labelling table headings and graph axes as well as a list of points for constructing tables and figures.

SUMMARY

The Results section in a Report on an Original Experiment will contain:

- findings of experiment conducted
- often the Discussion section as well
- tables, figures, graphs, etc. to elaborate on findings

Discussion

In a Report on an Original Experiment, the Discussion section shows how the results provide a solution to the problem stated in the Introduction. These results are compared to those in the sources discussed in the Literature Review. The researcher(s) will often discuss what factors affected the results of the experiment---for example, discussing the impact of the weather on crop yield in an experiment involving crop yield. Researchers may provide a rationale why the results differ from those of other studies. It should be noted that in many cases in a Report on an Original Experiment, Results and Discussion are frequently combined. Less often the discussion section will be found as part of the Conclusion(s).

In the Review Paper, the Discussion is typically part of the Literature Review. By presenting the findings of various research studies (or technical reports) in a logical and organized manner, the interpretation of the results can be discussed in such a way as to allow the reader to assess the current state of knowledge existing on that topic. Explaining how studies differ in their findings (and why they do), then, is an essential part of this part of the paper. The weaknesses or limitations of a body of research or of a body of thought need to be brought forth in this section of the paper.

Original essays certainly contain discussion, per se. Discussion is simply a part of the body of the paper. But in an essay there is **never** a section labelled: Discussion. Original Essays are evaluated on the *strengths* of their arguments, and not on the opinions or positions presented; consequently, you should not be concerned if, in a humanities or social sciences course, your position differs considerably from anyone else's. In the "body" of your essay, present and justify your argument/viewpoint through a complete and well-organized discussion of the points you raise as part of your overall thesis.

The secret to writing a good Discussion section, or to discussing any information in an essay, is organization. Be careful not to ramble or to “pad” your paper with unnecessary or irrelevant pieces of information. Be careful, too, that you don’t accidentally contradict yourself or weaken your argument. Think and write critically. Information presented previously, in the Literature Review (if applicable) should be used to verify and substantiate the findings presented in this part of your paper.

SUMMARY

The Discussion section in a Report on an Original Experiment will contain:

- solution to the problem stated in the introduction
- results compared to those publications discussed in literature review
- frequently the results section combined with it

The Discussion section in a Review Paper will contain:

- findings of various research or studies
- explanations of how and why studies differ in their findings
- limitations of a body of research or of a body of thought

Conclusion

The Conclusion summarizes the main ideas presented in the report or paper and offers insights into their interpretation. Even if a Conclusion is not labelled as such (and it generally won’t be, for example, in most original essays) a conclusion appears in every report, paper and essay. A conclusion may end with a list of specific recommendations by the writer concerning the need for further research and/or debate on the topic, but other than this, no new or never previously discussed information should **ever** appear in the Conclusion or the concluding paragraphs of any essay.

In the Conclusion section of a Report on Original Experiment, the objectives of the study are restated, the major findings are summarized, and concluding statements are made. All conclusions must be substantiated by the results of the experiment. Recommendations for further research or changes in current production practices or policy may be suggested as part of the Conclusion as well, depending on the topic being covered.

In the Review paper or in the Original Essay, the purpose of the Conclusion is to summarize what has been discussed in the paper. With scientific or technical topics a summary of the main points of the paper is appropriate, followed by presentation of concluding statements. When a book, books, or articles

have been reviewed, you should conclude by evaluating and providing a synthesis of what you have read. Where strengths and weaknesses of various approaches to a problem have been examined, you should make a conclusion concerning the relative merits of the approaches.

SUMMARY

The Conclusion section of a Report on Original Experiment will contain:

- restated objectives of study
- summarization of major findings
- concluding statements
- recommendations for further research or changes in production/management practices, policy, etc.

The Conclusion of a Review Paper will contain:

- a summary of what has been discussed in the paper
- presentation of concluding statements

The Conclusion of an Original Essay will contain:

- a summary/ synthesis of what has been covered in the essay
- evaluation of what has been read or discussed
- if strengths and weaknesses of various approaches examined, a conclusion concerning the relative merits of such approaches

References, Works Cited, or Citation List

The final and perhaps most important item in your paper is the list of sources you have used. There are many documentation styles, and many different titles for the list of sources cited in a paper. These titles include References, Citation List, or Works Cited. Whatever the name or title of your list (and this is determined by the documentation style you are using), the purpose of this item is to provide a complete and accurate citation of every source used in your Report on Original Experiment, Review Paper, or Original Essay. See the sections “Citing and Documenting Sources,” “Doing Research and Taking Notes,” and “Using Name-And-Year Text Citations” for further guidance.

A bibliography, by contrast, is a list of all sources you have found in your research efforts, and which may possibly be of use to you as you proceed through the research and preparation stages of writing your paper. In certain writing handbooks, such as the *Little, Brown Handbook* (4th Canadian edition, 2001; pp. 572-75), this document is referred to as a “working bibliography.” It is advisable to compile the sources you have found, along with informational notes attached to each source item, in a bibliography. Use this bibliography as you read and determine which of the many sources you have located are actually appropriate to be included in your paper.

Scientific papers do not customarily have a bibliography or make reference to the idea of a working bibliography. Still, it may prove helpful to begin your research by collecting your sources in a file, journal or on notecards as a working bibliography until you know which ones you will actually be using for your paper. For English 1000 students, both a tentative and a final bibliography is required for the Review Paper assignment given in the course; for other courses, please consult your instructor for what is required in this realm.

CITING AND DOCUMENTING SOURCES

Whenever you use information (often called “sources”) obtained elsewhere—in other words, not something you have come up with yourself—you need to indicate where you have obtained that information. This is the process known as documenting and citing.

Many documentation styles exist to serve the various disciplines. In addition, most scholarly journals have their own set of guidelines and rules governing how sources are to be cited in the articles they publish within their pages. The two things all documentation styles have in common are completeness and accuracy. You must cite sources within your paper in some fashion, in order for the reader to know where specific pieces of information, facts, figures, statistics, etc., that were used in the paper originated. You must then completely and accurately document those sources in your Works Cited, Citation List, or References at the end of your paper, in order to make it clear where you have obtained the sources cited in your paper.

There are several types of ways to provide source information, both within the paper itself and in the list that follows the paper, which is generally titled References, Works Cited, or Citation List. Typically, within the paper itself you provide either a numerical or an abbreviated notation (such as the name year citation - author’s last name and the year of publication). These give the reader enough information in order to connect that citation with the complete source documentation found in the

References/Citation List/Works Cited list at the end of the paper. Note: in certain humanities and social science disciplines, you may use footnotes or endnotes. Consult with your instructor and the particular style guide (such as the MLA or APA guides) for assistance in using footnotes or endnotes.

The guidelines given here for citing and documenting print and electronic sources have been based on information obtained from several sources, most particularly from a number of scientific scholarly journals often used by both students and faculty at the Nova Scotia Agricultural College. What is suggested for use in your courses at NSAC is a documentation style patterned after the style in use for the Canadian Journal of Soil Science, the Canadian Journal of Plant Science, and the Canadian Journal of Animal Science. These journals jointly publish an "Operations Manual" outlining the style and format requirements for those who wish to submit their articles ('Reports on Original Experiments' or 'Review Papers') for consideration (to be considered for publication). This documentation style is similar, though not identical, to the Council of Science Editors (CSE) style (formerly the Council of Biology Editors).

A sample References list appears below this paragraph. Note the arrangements and format of the various elements (author names, publication year, title, etc.) of the citation.

References

Bryan, W.B., Prigge, E.C, Flaherty, D.J. and D'Souza, G.E. 1997. Buffer grazing for a twelve month cow-calf production system. Pages 2995-2996 *In Proc. Int. Grassland Congr., 18th*, Winnipeg, MB, Canada. 8-19 June 1997. Vol. 2. Can. Forage Council, Calgary, AB.

Rayburn, E.B. 1994. Forage quality of intensive rotationally grazed pastures 1988-1990. West Virginia Univ. Extension Serv. Morgantown, WV.

Winterston, A. W. 1999. Some rotational grazing considerations in Nova Scotia. *Can. J. Plant Sci.* 61:702-705.

Note the fact that the sources are in alphabetical order, single-spaced, but double-spaced between entries. In certain journals, such as the *Agronomy Journal*, a 'hanging indent' (subsequent lines after first indented), such as is seen here, is used.

Let's look at what is cited in a source by examining an article cited in our sample References list (note: this particular example has been fabricated).

Winterston, A. W. 1999. Some rotational grazing considerations in Nova Scotia. *Can. J. Plant Sci.* 61:702-705.

The author's last name is given first, followed by the initials for first and middle name. The publication year is then given. This is followed by the title of the article, and note that only the first word and any proper nouns (such as place names, like Nova Scotia) are capitalized in the title. The journal name comes next, followed by the volume (issue number, too, if it exists - for journals that start with page number at one for each issue, an issue number is mandatory) and the page numbers of the article.

If using the name-and-year system, the above source might appear in a paper in the following way:

Managing sward height, according to research conducted by Winterston (1999) is the key factor in successful rotational grazing.

In the References list, then, the full citation would appear as it does in the above References list.

To sum up: the following information, in this order, with this punctuation, needs to appear in the Citation List/References/Works Cited at the end of your paper [and please note that the information in brackets like these is a tip for you to follow, in terms of formatting—it doesn't appear in your citation!]:

Author's last name, author's initial(s). Year of publication. Title [first word capitalized; the remainder, except for proper nouns, lower-case]. Journal name [look up the accepted abbreviation for the title] volume number: page numbers.

Here is an example of this documentation style and format followed, with a *book* source that has three authors:

Lagoni L. M., Butler, E.C. and Hetts, S. A. 1994. *The human-animal bond and grief*. W.B. Saunders Co., Toronto, ON.

You will note that, with books, the press name is given following the title, and then the place of publication.

All items in your References/ Citation List must be organized in alphabetical order, using the primary author's last name. Items with no known author are alphabetized under [Anonymous].

Information on the format for citing online sources is found on page 20 - 22

When information is obtained from one of the search tools such as the EBSCO Host databases and a copy of the original article cannot be obtained or cannot be read in the original because it is in a language you cannot read, just indicate the original primary source of publication in the reference. See the entry for St-Hilaire in the sample list on the next page for an example.

It is critical that you observe the proper conventions of source citation. Not doing so could lead to the paper, report, or essay being given a very low mark or being rejected due to plagiarism. Each discipline, indeed each scholarly journal, adheres to its own documentation style; investigate what is needed for the discipline/journal for which you are writing, or consult your instructor. A sample citation list is provided below. It provides examples of the documentation style for types of information often referenced in the agricultural sciences.

[Note: The information in [brackets] *and italics* following each sample citation in this Citation List is for instructional purposes only and would *not* appear in an actual Citation List.]

CITATION LIST

[Anonymous]. 2005 January 14. Canada: grains and oilseeds outlook. [Online]. Market Division Analysis Online, Agriculture and Agri-Food Canada. Available: <http://www.agr.gc.ca/> [2005 Feb. 01].

[a newsletter available on line and the author is unknown]

Aich, P., Wilson, H., Rawlyk, N., Jalal, S., Kaushik, R.S., Begg, A.A., Potter, A.A., Babiuk, L.A., Abrahamsen, M.S. and Griebel, P.J. 2005. Microarray analysis of gene expression following preparation of sterile intestinal “loops” in calves. *Canadian Journal of Animal Science* 85(1): 13 - 22.

[journal article read in print or electronically]

Alberta Agriculture, Food and Rural Development. 2004. Timothy yield comparisons. [Online] Alberta, Canada. Available: [www1.agri.gov.ab.ca/\\$department/deptdocs.nsf/all/for4109?opendocument](http://www1.agri.gov.ab.ca/$department/deptdocs.nsf/all/for4109?opendocument) [2004 Sep.10]

[an example of a publication where the publisher is listed as the author]

Ayer, B. and Sheppard, M. 2003 December. Annual Report: The Nature Trust of New Brunswick Inc. / La Fondation pour la protection des sites naturels du Nouveau-Brunswick, Inc. [Online]. Available: <http://www.naturetrust.nb.ca/documents/annual-report-2003.pdf> [2005 Feb. 02].

[Annual report / government document available online]

Beazley, S.L., and Beesley, K.B. 1996a. Geographic information systems (GIS) and agriculture: a bibliography. Research Paper No. 18. Rural Research Centre, Nova Scotia Agricultural College, Truro, NS.

[print publication]

Beazley, S.L. and Beesley, K.B. 1996b. Monitoring changes in agriculture using computer-assisted cartography IV: farm structure. Research Paper No. 17. Rural Research Centre, Nova Scotia Agricultural College, Truro, NS.

[print publication with the same author and date as in previous example. The use of a and b distinguishes the two in the text.]

Canadian Council on Animal Care. 1993. A guide to the care and use of experimental animals. Vol. 1, 2nd ed. E.D. Olfert, B.M. Cross and A.A. McWilliam, eds. CCAC, Ottawa, ON.

[governmental publication with two volumes and editors]

Catling, P.M. 2001. A never ending role for biosystematics in the protection of vascular plant biodiversity in Canada. Pages 3 - 27 *In* J. B. Phipps and P.M. Catling, eds. Bioconservation and systematics. Proceedings of the Canadian Botanical Association conference symposium in London, Ontario, June 2000. Canadian Botanical Association.

[an article found in a conference proceedings publication]

Cheadle, B. 2005 January 20. Prime minister makes progress on Japanese beef ban. [Online]. Chronicle-Herald (Halifax). Available: <http://www.library.newscan.com/> [2005 Feb.01].

[newspaper article available online]

Environment Canada, 2004. Daily Data Report for August and October 2004. [Online] Environment Canada, Ottawa, ON. Available: www.climate.weatheroffice.ec.gc.ca. [2006 Aug. 11]

[government website that is updated daily]

Fraser, D., Phillips, P.A., Thompson, B.K., Pajor, E.A., Weary, D.M. and Braithwaite, L.A. 1995. Behavioral aspects of piglet survival and growth. Pages 287-312 *In* M.A. Varley, ed. 1995. The neonatal pig: development and survival. CAB International, Wallingford, UK.

[a chapter in a book]

Guiroy, P.J., Fox, D.G., Beermann, D.H., and Ketchen, D.J. 1998. Effects of feeding bakery waste on performance and meat quality in beef steers. *J. Anim. Sci.* 76 (suppl. 2): 83.

[a journal article found in a supplemental issue]

Hager, A. G. 1998. Waterhemp - a contemporary riddle for corn and soybean producers. [Online] Illinois Fertilizer Conference Proceedings. 1998 Jan. 26 -28. Available: <http://frec.cropsi.uiuc.edu/1998/index.htm> [2004 Aug.14]

[article published in a conference proceedings available online]

Knaggs, P.J. 2002. Yield physiology, quality and soil water dynamics of a semidwarf and a tall oat (*Avena sativa* L.) cultivar. M.Sc. Thesis, University of Manitoba, Winnipeg, MB.

[a master's thesis]

- McIsaac, D. 1997 November 5. Growing wild lowbush blueberries in Nova Scotia. [Online.] Wild Lowbush Blueberry Factsheet. Nova Scotia Department of Agriculture and Marketing. Horticulture Section, Truro. Available: <http://agri.gov.ns.ca/pt/hort/wildblue/grow.html> [2006 Aug.11].
[a fact sheet available on the internet in html format]
- National Academy of Sciences - National Research Council. 1988. Nutrient requirements of swine. 9th ed. National Academy Press, Washington, D.C.
[a publication with an edition number]
- Neave, P., Kirkwood, V., and Dumanski, J. 1995. Review and assessment of available indicators for evaluating sustainable land management. Technical Bulletin 1995-7E. Centre for Land and Biological Resources Research. Research Branch, Agriculture and Agri-Food Canada, Ottawa, ON.
[a print publication with a catalog number]
- Nicholson, W. 1998. Microeconomic theory: basic principles and extensions. 7th ed. Dryden Press, Orlando, TX.
[a book]
- Novelli, S. 2003 July 11. Canada: sea buckthorn. [Online]. Bi-weekly Bulletin 16(13). Market Division Analysis Online, Agriculture and Agri-Food Canada, Available: http://www.agr.gc.ca/mad-dam/e/bulletine/v16e/v16n13_e.htm [2005 Aug.14].
[government bulletin available online]
- Pellegrino, L., Tirelli, A. and Masotti, F. 1992. Detection of Co milk in non-bovine cheese by HPLC of whey proteins. Note 2: Application to ewe's milk cheeses. Sci. Tecn Latt.-cas. 43: 297 - 310. [in Italian, English abstract]
[journal article published in Italian with the English abstract used as the source]
- St-Hilaire, A., Brun G., Courtenay, S.C., Ouarda, T.B.M.J., Boghen, A.D. and Bobee, B. 2004. Multivariate analysis of water quality in the Richibucto drainage basin (New Brunswick, Canada). [Online]. Journal of the American Water Resources Association 40(3):691-703. [abstract taken from an online database]
- Smitley, D. and McCullough, D. 2003 March 19. What can homeowners do to protect tree from the emerald ash borer. [Online]. Michigan State University Extension. Available: <http://www.emeraldashborer.info/Files/smitleyinsecticides.pdf>. [2003 Aug.14].
[a publication available on line - pdf format]
- Spigelman, M.S. 1975. Race et religion: les Acadiens et la hiérarchie catholique irlandaise du Nouveau-Brunswick. Revue d'Histoire de l'Amérique Française 29(1): 69-87.
[journal article in French]
- Williams, R.B. 1996. Volunteer leaders' perceptions of 4-H in New Brunswick. Paper presented at AIC Conference, Saskatoon, Saskatchewan, July, 1996.
[the text of a presentation given at a conference]

DOING RESEARCH AND TAKING NOTES

In any paper (except one assigned to be written solely from your own experience, or in an in-class setting, for a course such as English 1000, Composition), research is a vital part of the writing process.

How is research begun? The first step is simply to think about either what you're going to write about, if you have the option to choose, or to ponder the topic you've been assigned. Scheduling a tour of the library is another option, for students wishing to become familiar with MacRae Library resources in order to use those resources in their research.

There are four main types of sources you will likely access at the library and use.

- (1) reference material;
- (2) books (monographs, textbooks, or collections of articles published);
- (3) periodicals or journals, containing scientific reports, articles, and review articles; and
- (4) Internet/online sources—including books, scholarly journals, CD-ROMs, government reports, and unique items.

Once you have identified what types of sources are available to you, a method needs to be adopted to organize the information you'll shortly begin to collect. Taking notes is probably the most important component of writing a paper. Writing reports and papers is a lot less stressful if a reliable technique is developed for taking notes while conducting your research. There is no one "right" way to research a topic, or to take notes; some use a notepad, others use a journal, others keep computer note files, still others use note cards. Whatever system you choose, the basic procedure is the same:

- (1) Obtain an overview of your subject through general reading, lecture notes, discussion with others, and some exploratory research.
- (2) Narrow down or focus your subject to a manageable topic, and then compose an outline for the paper – one in which you divide the topic into subsections. Some examples of outlines are found on pages 41- 43 of this text. (Note: There are many stages to the writing process that precede even a tentative outline. See your instructor or your other course materials for guidance in getting started.)

- (3) Begin your note taking by reading and researching with the subsections you have devised. When you locate material that appears to fit into a specific subsection, write/type the subsection title at the top of your journal page/computer file/note card and then make the relevant entry. **Be sure to record accurately and completely the complete source of the information for each entry you make.** (See sections on citing and documenting.) If anything of what you have noted is a direct quote—something written exactly as in the original source, and not put into your own words, or paraphrased—be sure to put “quotation marks” around that direct quote. If you are paraphrasing, do so carefully to avoid any accidental plagiarism. Use these note cards/journal pages/computer file pages to begin to prepare your documentation (citation list/works cited/references).
- (4) Be prepared to change your subsections or to alter their location in the paper as you do your reading and research. Add, drop, re-arrange, or re-title subsections as you explore and digest available information.
- (5) After you have researched your topic as thoroughly as possible, read through your notes. Ponder their contents. Discard any repetitive or irrelevant information. Pursue any strands of thought that might lead you in a more fruitful direction. Organize the ideas and then start writing.

The method of arranging material on a journal page, in a computer file, or on note cards varies according to individual preference. Adopt a method that feels natural and then stick with it. Here is one method to organize the information, using the guidelines given above:

Subsection Topic

Author(s). Date. Title of Book. Edition. Publishing Company, Place of Publication [City, Province or State abbreviation].

Summary/Paraphrase/Direct Quotation/Quotation and Summary Card

Page number (and chapter/subsection heading/title in source, if applicable)

The example below is a “Direct Quotation” card:

<p>Climate and Lambing</p> <p>Smith, J, and Jones, P. 1998. Climate conditions. Truro Press Inc., Truro, NS.</p> <p>"The weather in Nova Scotia is very unpredictable. It is important to be prepared ."</p> <p>Page 35</p>

Here is an example of a Paraphrase card:

<p>Climate and Lambing</p> <p>Smith, J, and Jones, P. 1998. Climate conditions. Truro Press Inc., Truro, NS.</p> <p>Due to the uncertain nature of Nova Scotia weather, preparation for any type of condition is essential</p> <p>Pg. 35</p>
--

If you use a journal to collect and organize your source information, it may have to be dissembled in order to organize the information for the paper. Alternatively, you might simply “check off” pages as they are incorporated into the draft of your paper. If ‘loose-leaf’ sheets of paper in a binder are used, then the title of each subsection can be placed at the top of the page, and the pages moved around in the binder or laid out on your desk in order to visually organize. Information can then be categorized according to subsection, with relevant information written under the appropriate heading.

A computer is now the most commonly used tool for organizing information. The same principles apply. Some cautions are in order, however. First and foremost, be sure to keep information from different sources from being confused by putting information from different sources onto separate pages (heed page divides!), and also by placing an artificial dividing line (such as a row of *****) between where the information from one source ends and another begins. Beside each summary or paraphrase, put in the complete citation, which can go with that information as you ‘cut and paste’ to create your paper, essay, or report.

⇒ Two Important Tips:

- (1) Make sure all information needed for a complete citation is obtained the first time you access the source. It is a nuisance to have to return to the library to retrieve missing information.
- (2) Be sure to distinguish in your notes between material that is a direct quote and information that you have paraphrased.

USING NAME - AND-YEAR TEXT CITATIONS

Once you begin to write your paper, you need to make sure that the information you use at any point in the paper itself is properly acknowledged. The standard style of most scientific journals and of CSE incorporates the use of a name-and-year system, or a number assigned to each source as it appears in a paper, in order to acknowledge in the paper itself where an author has been quoted, or where a source of information has been used in a specific part of the text of your paper. This author's last name and publication year, or the number, then corresponds to the complete citation listed in the References

Using the name-and-year system, then, you would insert the author's name, followed by the date of publication of the source. See the following example:

One of the factors known to limit the usefulness and the quantity of manure that can be applied to cropland is the nitrogen content of the manure (Cooper 2006; Siegal et al. 2005).

You can also use the author or authors' names in the text itself, as the subject of the sentence, in which case the parentheses contain only the year of publication.

Mason and Rath (1998) found that including a quadratic term did not give a better fit of data than a straight line.

(Please note: in the humanities and social sciences, it is more common to include page numbers all the time in the text citations; check with your instructor and the documentation style guide you are following to know whether you should include page numbers or not.)

When there are three or more authors, the abbreviation "et al." (taken from the Latin *et alia*. "and others") is used. Such a citation would read, for example, Smith et al. (2006), or (Smith et al. 2006). Please note that et al. is always followed by a period because al. is an abbreviation. Please also be aware that in the Citation List/References, source authors, no matter how many, should all be listed and et al. should not be used.

You also need to be able to cite sources correctly where you are using information contained in one source which actually originated in another source. Say the source *you* accessed - one represented by Brown (1997) in the example below- contained the information you needed, but that information actually originated with Jones (1995). In other words, Brown (1997) cited Jones (1995) in his paper and listed her in his citation list. Essentially, you are actually using the Jones information rather than the Brown information. In this case, you need to acknowledge the original source of information. You need to do this even though it (Jones) has not been read in the original form/text. Since you have not read the original, you must credit Brown as the secondary source of the original quote. A correct name-and-year citation would be as follows:

There are many ways to get to China (Jones 2005 in Brown 2006).

OR

Jones (2005 in Brown 2006) has demonstrated that there are many ways to get to China.

The Citation List must, in this case, give the complete reference for both Brown (2006) and Jones (2005). As much as possible, however, most instructors prefer that students consult and use the original source.

WHAT IS PARAPHRASING?

Direct quotes—that is, something that has been copied word for word from a source of information, are rarely used in scientific writing. Instead, indirect quotes are used. This means that the information used in an essay has been paraphrased. Paraphrasing involves putting a piece of information into your own words.

How might you paraphrase a source?

- (1) Change the structure of the sentences.
- (2) Change words adjectives and verbs.
- (3) Eliminate unnecessary information.
- (4) Read information and then attempt to write the meaning that the author intended without referring to original. Then double check to ensure the wording reflects the author's original intent.

Remember: All paraphrased information must still be cited. Also, make sure your wording has not changed the author's original intended meaning.

The use of direct quotes is more common in original essays. This is especially the case for literary essays (essays written for literature courses). But in any assignment, be judicious in your use of direct quotes. Use quotation marks to designate quotes shorter than three lines. For longer direct quotes, separate the quote from the text, and double indent the quote into a block quote (see example on the next page).

Self Study Paraphrasing Exercise

The following direct quote is found on page 54 of the Style Manual in E.P. McNaughton, R.O. Ball and R.M Friendship's article entitled: The Effects of Feeding a Chocolate Product on Growth Performance and Meat Quality of Finishing Swine. This article was published in the Canadian Journal of Animal Science, volume 77 pages 1 to 8.

Direct Quote:

Feeding a waste chocolate confectionary product (up to 30%) as part of a balanced diet did not affect average daily gain, feed intake or feed efficiency of finishing pigs.

A common problem students experience with paraphrasing is being able to change the text sufficiently. Essentially, the idea, concept or fact must remain the same, but the wording must sound like the writing of the person who is doing the paraphrasing. Each of you have your own recognizable style of writing. When

you do not paraphrase adequately, then, your writing becomes disjointed and even incoherent because the author's style of writing and your own do not match. Imagine a review paper that is written using information from twenty sources and that is poorly paraphrased. The reader will lurch from one sentence to the next not seeing how the ideas flow together or interconnect.

Consider the following attempt to paraphrase the above quote:

Feeding waste chocolate (up to 30%) as part of a balanced diet did not affect average daily gain, feed intake or feed efficiency of finishing pigs.

There isn't any citation and the wording has hardly changed. This would not be considered a paraphrase of the original and would, indeed, be considered to have been plagiarized.

Consider this next attempt:

When up to 30% of a finishing pig diet consisted of chocolate, average daily gain, feed intake and feed efficiency were not affected (MacNaughton et al. 1997).

This time the passage is accurately cited, and an effort has been made to change the sentence structure but has not yet been adequately paraphrased. Consider why?

Here are some suggestions on how to paraphrase this passage:

Look at the passage, consider its intent carefully, and then write what you think it says without looking at the original wording. Then, check to ensure the meaning is preserved. One option is to list the main words or ideas and then to compose sentences around these words.

For example, the following key phrases could be used:

waste chocolate, 30% of balanced diet, no effect on average daily gain, feed efficiency and feed consumption, finishing pigs.

Then, a new sentence is created by using the key words. Even the key words may be modified.

The inclusion of up to thirty percent waste chocolate in a finishing ration did not influence average daily gain, feed efficiency or feed consumption in swine (McNaughton et al.1997).

Another way to begin to paraphrase is to take the original passage and underline all the words that can be changed. You can then brainstorm or look in the thesaurus for other words or phrases which mean the same thing. Changing the verbs and adjectives is a good place to start. Sometimes, the verbs in the sentence can be converted to a nouns; for example did not affect could be changed to the effect on the diet was

“Feeding a waste chocolate confectionary product (up to 30%) as part of a balanced diet did not affect average daily gain, feed intake or feed efficiency of finishing pigs.”

Examples of how the underlined words might be changed:

Feeding - fed

waste - byproduct

confectionary product – bakery waste

as part of a balanced diet - a component of a nutritious diet, an ingredient in a swine finisher diet, balanced ration.

did not affect - was not changed, did not influence

intake - consumption

Now think about other ways to organize the sentence. Do you need all the words to maintain the meaning? Some writers are incredibly long winded. You may be able to cut the passage in half and still say the same thing. You can also add a word or two such as making the authors of the passage the subject of the sentence.

Below is another way to paraphrase the original passage. The meaning has remained the same, but the words and structure of the sentence are different. Please note that there are some words you cannot change. These words include standard technical terms for a particular discipline such as “average daily gain,” or names of people or places. But because everyone has a different writing style, your paraphrased passage will look different even though you retain these standard technical terms.

Another Example:

In a experiment by McNaughton et al. (1997), they determined that a finishing diet when composed of up to 30% chocolate byproducts did not influence average daily gain, feed consumption or feed efficiency in swine.

Bibliographical Reference

McNaughton, E.P., Ball, R.O. and Friendship, R.M. 1997. The effects of feeding a chocolate product on growth performance and meat quality of finishing swine. *Can. J. Anim. Sci.* 77: 1- 8.

Keep in the mind the following when paraphrasing:

- . Retain the exact meaning of the original passage. Don't misquote the author.
- Double check paraphrasing to ensure wording is changed sufficiently from the original.
- Always cite the quoted passage with the name-year format.
- Include the bibliographical reference in the citation list

Now try paraphrasing and citing the following passage from page 44 in the Style Manual in the space provided below. Write the bibliographical reference as well. There are some samples of this paraphrased passage on the next page.

Honey is a saturated or super saturated solution of sugars and is said to have osmotic properties (ie. water-withdrawing). Water molecules strongly react with the sugars in honey leaving little water available for microorganisms. The bacteria that cause infections are unable to survive because they become dehydrated.

Remember to:

- 1) Be sure you understand what the passage is saying.
- 2) Underline the words that can be changed; circle words that can be switched to nouns or verbs.
- 3) Accurately cite the author(s)

Sample:

McCarthy (1995) indicates that honey is believed to have water-withdrawing or osmotic capabilities due to its high concentration of sugars. Infection-causing bacteria become desiccated and die because most of the available water is bonded to the sugars in the honey and is not accessible.

OR

Infectious bacteria will die of dehydration when placed in a honey solution. Honey is considered to have water-withdrawing or osmotic capabilities because it is a saturated or supersaturated solution of sugar. As a consequence, the water in the environment becomes strongly attracted to the sugar molecules in honey resulting in arid environment for microorganisms to live (McCarthy 1995).

OR

Because infection-causing bacteria cannot live in arid environments, any medium in which water is not available is unfavourable for the growth of bacteria. Honey is such an environment. The sugars in honey react with and then lock up the water molecules, making it impossible for the bacteria to thrive (McCarthy 1995).

Bibliographical Reference:

McCarthy, J. 1995. The antibacterial effects of honey: medical fact of fiction? *American Bee Journal* 135(5):341-342.

WHAT IS PLAGIARISM?

Copying or borrowing someone else's work without giving credit or acknowledging the source is plagiarism. There are several types or forms of plagiarism:

- To copy, word for word, from a book, article, or online source, omitting quotation marks and any mention of the original author(s).
- Using another writer's ideas and trying to pass them off as one's own. This is a more subtle form of plagiarism, but plagiarism all the same; exact words used by the original writer may not be copied, but the essence of what he/she wrote is. In other words, the information is not cited. Therefore, it is plagiarism.
- Copying from or using part or whole of an unpublished term paper, essay, or report, obtained from an online or other source (a previous year's student, for example). The fact that one is not copying from printed, published sources does not absolve one from the charge of plagiarism. A student may be justly accused and convicted of plagiarism if it is proved that the material existed previously in some other form and was used without acknowledgment.

When the information used is insufficiently paraphrased, yet properly cited, it cannot be considered plagiarism. Yet, stylistically, a problem still exists. The problem is that the wording is still recognizable as the author's. This will have direct implications on the coherency and overall readability of the essay and ultimately your mark. You cannot copy word for word from a source even if you *have* acknowledged the author, unless you use the information as a "quotation." In other words, you must indicate in your use of that material where the direct quotation begins and ends by enclosing it within quotation marks.

The Implications of Plagiarism

Most instructors respond to plagiarism by giving the student a failing mark, or by asking that the work be done again and giving no mark for the work until it is resubmitted. In extreme cases, such as when an essay has been purchased from the internet, the student will fail the course or will be expelled from the institution. The NSAC Student Handbook outlines the penalties associated with plagiarism.

When to Cite

If, at any point in a paper you use information from **any** published or electronic source you must provide an appropriate citation and include the reference in the Citation List/Works Cited/References (whatever you're using). If a bibliography is required, all items should be on that bibliography. Figuring out which ideas and facts that must be given citation and those that do not need citation may give you trouble at first. For example, obvious, well-established facts (gravity, atomic weight, animal anatomy, for example) do not need to be cited, but facts and knowledge only recently ascertained/proven, which may still be regarded as hypothetical or debatable, *do* need to be cited. One way to assess when to cite and when not to cite is to observe, in reading scholarly works, how published writers make these distinctions. If in doubt, ask your instructor for advice. If it is inconvenient to ask, cite. It is better to cite too much than too little or not at all. No paper is acceptable without appropriate and adequate documentation and citation of sources unless it is a paper obviously intended to have no sources cited, such as an in-class essay writing assignment.

CITING UNPUBLISHED DATA OR UNPUBLISHED INFORMATION

Unpublished material may consist of personal communication (conversation, telephone calls), letters, memos, typescripts, manuscripts, and reports written for circulation only within an organization rather than for a wider public. These types of information are customarily obtained from the speaker, author or organization in a relatively informal way.

If you need to cite such unpublished sources in your paper, describe in detail in the text of your paper where and when exactly the information was obtained. Because such material has not been published and is not available to the public, such references must not be listed in the Citation List/References. The only exception to this rule is within the humanities and social sciences where certain of these kinds of sources *might* be found in the Works Cited or in a footnote or endnote. Ask your instructor for guidance if you are uncertain about how to handle these types of sources in your paper.

For example:

In a letter dated October 13, 2005, addressed to the author of this paper, Dr. J. R. Smith, Crop Specialist at Agriculture Canada Research Station, Kentville, Nova Scotia, explained that... (personal communication)

In a conversation with the author of this paper In November, 2006, Ms. Jane Doe, Regional Agricultural Specialist, Carleton County Office, New Brunswick Department of Agriculture and Rural Development indicated that... (personal communication)

Tables from unpublished sources should likewise have their source indicated, followed by the word "unpublished" in brackets. Again, do not include these sources in the Citation List in a scientific report.

NUMBERS AND ABBREVIATIONS

The use of numerals and the abbreviation of units of measurements are both permitted in scientific and technical writing. Names of periodicals, however, should be abbreviated in their standard, conventional forms. Learn these forms by examining the bibliographies of your sources, or better still consult the BIOSIS data base list available from the NSAC reference librarian.

In scientific writing, use numerals whenever a number is followed by a unit of measurement, e.g. 1 g. Otherwise, use words for numbers one through nine and numerals for larger numbers except when item begins a sentence.

MEASUREMENTS

Measurements must be reported in the International System of Units (SI), unless otherwise specified by the instructor. Corresponding English units or conversion factors may be shown in parenthesis after each metric unit when it is first used in the article.

MATHEMATICAL EQUATIONS

Use slant-rule fractions (e.g., x/y) in the text itself, but when the equation is separated from the text use horizontal-rule fractions (e.g. $\frac{x}{y}$). Show the necessary aggregation by using parenthesis, brackets, and braces. Use the sequence $[()]$ except where conventional notation demands otherwise.

In horizontal-rule fractions, be sure to align the rules (e.g. $\frac{x}{y} \times \frac{x}{y}$) with the main signs of the equation or formula. In complex equations, use horizontal rules for the main fractions and slant rules in numerators, denominators, and exponents (e.g. $\frac{x}{1/y}$)

Use fractional (e.g. $x^{1/2}$) and negative exponents (e.g. $x^{-1/2}$) where convenient, instead of the radical sign \sqrt{x} and fractions (e.g. $\frac{1}{x^{1/2}}$). The following example illustrates conversion with the fractional exponent and also the saving in space which may be made with the use of the diagonal.

$$\begin{array}{l} \cos \frac{1}{x} \\ \hline \frac{b}{a+x} \end{array} \text{ should be written } \frac{\cos (1/x)}{(a+b/x)^{1/2}} \quad (1)$$

For exponentials with lengthy or complicated exponents the symbol exp should be used in the body of the text.

Thus,

$\exp(a^2 + b^2)^{1/2}$ is preferable to $e^{(a^2+b^2)}$. In an equation separated from the text, use $e^{(a^2+b^2)}$

The larger size of symbols permitted by this usage also makes reading easier.

Use a hyphen with spaces on both sides for the minus sign but omit the space after the hyphen when the sign represents a minus quantity (e.g. $6x - 1$). If equations are numbered, place the numbers in brackets at the right margin of the text. See example above. Refer to them in the text as equation (1), etc.

SPECIES NAMES

In 1753 the Swedish botanist Linnaeus established a two name (binomial) classification system to name organisms. The binomial name of a species consists of a genus name which is always spelled with a capital such as Hordeum and a specific name (or epithet) which is not capitalized such as vulgare. Together, therefore, the two names make Hordeum vulgare, the scientific name for barley. Both Latin names must be underlined or italicized. In addition, the name of the person who first publishes the species name with a definition or description or the organism follows the scientific name. It is not, however, part of the binomial name and therefore is not underlined. The author of the binomial names for barley Hordeum vulgare L. or Hordeum destichon L. is Linnaeus. The names of the more famous authors are often abbreviated: for example, Linnaeus = L.

Citing the author's name ensures the following:

- (1) It is possible to distinguish between two or more different species with the same scientific name.
- (2) It is possible to find out not only who published the original description of the species, but also an indication of the quality of his/her work and the origin of the first specimen.

Because of current advances in the classification system, species have been changed from one genus to another. For example, some pathogen species were changed from Fusarium to Gibberella. It is customary to place in parentheses the name of the original author, e.g. Enallagma cyathigerum (Charpentier). Sometimes the author of the new combination is cited as well after the parenthesis. This practice is commonly used in botany.

The common name followed by the scientific name must be given the first time the species is mentioned. Thereafter it may be referred to by either the common name only or by the abbreviated

binomial name, for example, E. cyathigenum. Please discuss with your instructor what format he or she wishes. Instructors will penalize students for not including the binomial name in essays.

PAPER FORMAT

1. Use unlined white paper of standard size.
2. Write or print on one side of the paper only (It is acceptable, however, for rough drafts in English 1000 to be submitted on “recycled” or previously printed paper, provided it is clear what is the draft and what is to be ignored (draw, in ink, a large ‘X’ across the side that is to be ignored).
3. The report should be typed, word processed, or written legibly in blue or black ink.
4. Double space between each line and set adequate (one inch is fine) margins.
5. The title of the report/paper/essay must be a clear and concise description of the paper’s contents.
6. In a Report on Original Experiment, and in a Review Paper (where an abstract is required), Page 1 of the paper is considered to be the Abstract page, **and not the Title Page nor the Table of Contents pages**. Page numbers can be placed centred at the bottom of the page, or in the top right hand corner.
7. All illustrations (tables, graphs, photographs, etc.) should be cited when taken from a source, or labelled as from an unpublished source (i.e., author-generated); all illustrations must be titled; they need to be assigned a figure number or table number; they need to be in a List of Figures and/or Tables.
8. Units must be clearly marked on graphs and tables.
9. All illustrations need to be discussed in the report /paper and placed so that they follow, as closely as possible, the part of the text in which they are discussed.
10. Consult the course outline for the acceptable way to submit the report or paper.

APPENDIX A

OUTLINES AND ABSTRACTS

General Outline

McCarthy, J. 1995. The antibacterial effects of honey: medical fact or fiction? *American Bee Journal* 135(5):341-2.

Honey has been found to have antibacterial properties, which have direct applications in modern medicine.

- Treatment of burn wounds and skin ulcers with honey has been found effective in reducing pain and enhancing healing.
- The antibacterial quality of honey is a result of its osmotic effects and the presence of hydrogen peroxide.
- Honey can be used to treat infant gastroenteritis and stomach ulcers.
- Honey can be used to store skin grafts.
- Honey's antibacterial properties vary based on type, level of hydrogen peroxide, extent of processing and contamination.

Detailed Outline

McCarthy, J. 1995. The antibacterial effects of honey: medical fact or fiction? *American Bee Journal* 135(5):341-2.

Honey has been found to have antibacterial properties, which have direct applications in modern medicine.

- Treatment of burn wounds and skin ulcers with honey has been found effective in reducing pain and enhancing healing.
 - a study of burn victims indicated that after 15 days, 87% of the honey-treated wounds healed whereas only 10% of the control group healed using conventional methods
 - provides a barrier to fluid loss and bacterial invasion
 - contains enzymes which help the healing process
 - absorbs pus and reduces pain
 - a study shows honey was effective in treating gangrene, tropical ulcers, bed sores and diabetic ulcers.

- The antibacterial quality of honey is a result of its osmotic effects and the presence of hydrogen peroxide.
 - osmotic properties reduces water available to bacteria
 - presence of hydrogen peroxide produces free radicals which kill bacteria

- Honey can be used to treat infant gastroenteritis and stomach ulcers.
 - a study using honey to treat bacterial gastroenteritis shortened duration of diarrhoea
 - another study found honey inhibited growth of bacteria that causes stomach ulcers

- Honey can be used to store skin grafts.
 - skin grafts stored successfully for 12 weeks

- Honey's antibacterial properties vary based on
 - type of honey
 - level of hydrogen peroxide,
 - extent of processing and
 - contamination with drugs and pesticides

ABSTRACT

McCarthy, J. 1995. The antibacterial effects of honey: medical fact or fiction? *American Bee Journal* 135(5):341-2.

Honey's antibacterial properties may have direct applications in modern medicine. It has been used as a treatment for burns, wounds, infant gastroenteritis, skin ulcers and stomach ulcers. In one study of burn victims, honey resulted in a heal rate of 87% in honey-treated wounds, with wounds healed in 15 days, compared to 10% heal rate in the conventionally treated group. Honey is considered effective because it inhibits bacterial growth, provides a barrier to invasion, contains enzymes that help the healing process, and absorbs pus. Another study found that honey was effective in treating gangrene, tropical ulcers, bed sores and diabetic ulcers. When used as a treatment for bacterial gastroenteritis, honey shortened the duration of diarrhea by a mean of 35.13 hours. In another study it inhibited the bacteria that causes stomach ulcers. Honey has also been used successfully as a medium for the storage of skin grafts.

The antibacterial effects of honey are attributed to two factors: its osmotic properties, and the presence of hydrogen peroxide. The osmotic effects of a super saturated solution of sugar reduces the water available to bacteria. The decomposition of hydrogen peroxide in the honey produces free radicals, which kill bacteria.

More study needs to be undertaken before honey can be used more widely for medical purposes. Concern has been expressed about the difficulty of obtaining honey with consistent antibacterial properties. Its antibacterial effectiveness is a function of the type of honey used, the level of hydrogen peroxide available, the extent of processing, and the amount of contamination from drugs and pesticides. Nevertheless, honey exhibits great potential for use in modern medicine.

APPENDIX B

SAMPLES: AN ORIGINAL ESSAY, A REVIEW ARTICLE, and a REPORT ON ORIGINAL EXPERIMENT

(Not available electronically).

APPENDIX C

THE GUGGENHEIM NOTATION

THE GUGGENHEIM NOTATION

The Guggenheim notation has been adapted by the International Union of Pure and Applied Chemistry (IUPAC) as the preferred method of labelling table headings and graph axes.

In presenting tables of quantities with units, the numerical values are listed without their units, and a column heading is used to specify the units. This is done by writing the name or symbol of the quantity or property (e.g., volume, mass, temperature) followed by a slash and then by the symbol for the units (e.g., ml, g, kg, °C). You may use either the 'slash unit' representation or 'the unit in brackets' format. Avoid presenting a lot of zeros by using any of the following formats: for example 0.00163 g can be represented as follows:

<u>Mass/mg</u>	<u>Mass (mg)</u>	<u>Mass/10⁻³ g</u>	<u>Mass (10⁻³ g)</u>
1.63	1.63	1.63	1.63

FORMATS FOR TABLES AND FIGURES

Listed below are rules for the presentation of data or information in either tables or figures. Remember that the term, table, refers to data or information presented in rows and columns. The major advantage to presenting data in tabular form is that it allows you to present precise data. The term, figure, is used to refer to any other way to present information such as line graphs, pie charts, bar graphs, photographs, and diagrams

Points to remember when preparing tables:

1. Always introduce the table in the narrative; comment on the important ideas.
2. Situate the table very close to the place where it is discussed (incorporate into text) and try to keep the table confined to one page.
3. Is the data in the table supplemental information? If so, the appendix would be a better place to put it.
4. Identify every table with a title and table number. The notation, Table #, is used to identify the table in the narrative and in the List of Tables contained at the front of the report.

5. The title goes at the top of the table; keep it short (12 words). The title can follow either one of the following rules: a) All the first letters of the words in the title are capitalized except pronouns and articles; b) All the first letters of the words are not capitalized except for proper names and the first word. Consistency is important.
6. The data: use decimals, not fractions.
7. Extra explanatory information? Use footnotes - lower case letters are often used.
8. Each column in the table should have a heading with appropriate units. Do not be repetitive by including the units with the numerical data
9. Each row in the table should have a heading.
10. Avoid vertical lines; use horizontal lines.

The examples given on the next page illustrate the above style.

The title is not capitalized:

Table 1: Comparison of vitamin C content in apple juice samples with product claims.

Sample brand	Mean concentration (mg/5.00mL)	Mean concentration (mg/5.00mL)	Standard deviation (mg/5mL)	Product claims (mg/100 mL)
Our Best	1.82	36.4	1.06	35
Graves	1.98	39.6	1.42	31
Allens	1.55	31	0.09	35

The title is capitalized:

Table 2. Results for Gravimetric Analysis of Chloride Content of Seawater

	<u>Replicate 1</u>	<u>Replicate 2</u>	<u>Replicate 3</u>
Mass of crucible + filter (g)	29.356	26.867	31.437
Mass of crucible, filter, precipitate (g)	29.563	27.097	31.639
Mass of AgCl precipitate (g)	0.207	0.230	0.202
Chloride content (% m/v)	1.02	1.14	0.999
Mean chloride content (% m/v)	1.05		

Points to remember when presenting figures:

1. Always introduce the figure in the narrative; comment on the important ideas.
2. Situate the graph very close to the place where it is discussed (incorporate into text).
3. Identify every figure by providing a title and figure number. The notation, Figure #, is used to identify the figure in the narrative and in the List of Tables contained at the front of the report..
4. The title goes at the bottom of the graph; keep it short (12 words).
5. Extra explanatory information is placed directly following the title.
6. The independent variable is placed on the x (horizontal) axis. The independent variable is the one the experimenter controls or pre-exists, for example, time, sex, age, place of birth, and concentration.
7. Dependent variable is placed on the y (vertical) axis. The dependent variable is the one that is measured as a result of the experiment, for example, height, weight, growth, mortality, and opinion.

The example given below illustrates the above style.

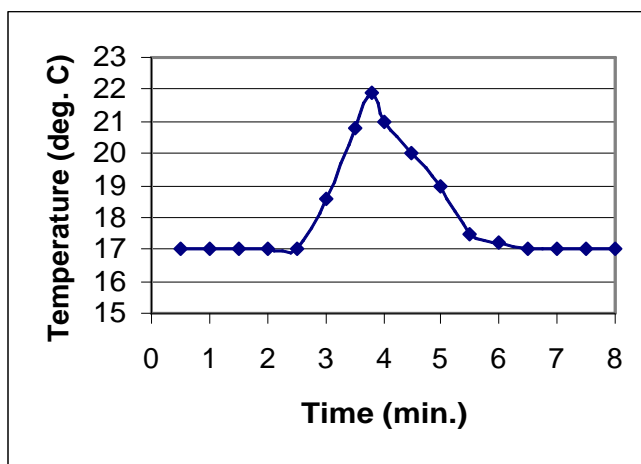


Figure 1. Heat of dissolution for magnesium sulfate