

The Research Proposal

(* = entire section is required)

FS 521, Natural Resources Research Planning

Sources. The foundation for this document was the 2003 request for applications issued by the USDA-CSREES National Research Initiative Competitive Grants Program (NRICGP)¹. The proposal format used by the NRICGP is typical of many national competitive grants programs, including the National Science Foundation. I edited the NRICGP document to create this document, which describes the default format you should use for your proposal. Additional information comes from Davis (2005).²

I. TITLE PAGE*

The title page should include the (1) proposal title, (2) names and addresses of investigators, (3) organization to which the proposal is being submitted, and (4) date of submission.

II. ABSTRACT*

The abstract should be a self contained, concise description of the proposed research, including the (1) rationale and significance of the research; (2) goals, supporting objectives, and hypotheses to be tested; (3) methods used to meet the objectives; and (4) expected results. The importance of a concise, interesting, and informative abstract cannot be overemphasized. The abstract should be 500 words or less.

III. TABLE OF CONTENTS*

IV. PROJECT DESCRIPTION (15 page maximum)*

The project description should contain the following sections in any order. *Tip: Use the first page of the proposal to grab the attention of the reader, define the problem, and demonstrate the importance of your research.*

A. Introduction

1. Background. What are the key concepts and facts that the reader must know to fully understand the rest of the proposal and judge the value of the proposed research? The background should describe the (1) conceptual and theoretical basis of your research; (2) status of research in the field, including significant publications; (3) preliminary results if available; (4) remaining information gaps, including those that your research will address; (5) key assumptions; and (6) methods that make your research possible if they are not widely known or well understood. Be sure that the background is *relevant* to your stated goals, objectives, hypotheses, and methods. *Tip: Start each paragraph or section with a short declarative sentence that summarizes the main point that you will make in the following text.*

2. Hypotheses. The hypotheses are the unproven statements (propositions) that you will test. These hypotheses may address specific questions you intend to answer, or problems you will solve. The objectives (see below) describe what you will do to determine whether the hypotheses are true. *Tip: List the hypotheses in numbered or bulleted form to clearly set them apart from the rest of the introduction.*

¹ National Research Initiative Competitive Grants Program. 2003. Request for applications. U.S. Department of Agriculture Cooperative State Research, Education, and Extension Service.

² Davis, M. 2005. Chapter 5: The proposal. *In: Scientific papers and presentations.* Academic Press, San Diego, CA. 356p.

3. Goals and objectives. *Goals* are the long-term ends toward which the research is directed, but are not expected to be fully achieved by the proposed research. *Objectives* are the achievable, outcome-based aims of your research, and should be presented as concise statements that describe what you plan to accomplish by your research activities. The objectives describe what you will do to determine whether your hypotheses are true (see above). **Tip:** *List the goals and objectives in numbered or bulleted form to clearly set them apart from the rest of the introduction.*

4. Rationale and significance. Statements of rationale and significance should be included throughout the proposal (where appropriate), and then summarized in this section. The *rationale* includes the (1) reasons for focusing on your stated goals, objectives, and hypotheses and (2) reasons for choosing the materials and methods you propose to use. The *significance* includes both the applied and basic significance of your research—that is, how will the world be different after your research is completed? Why is the research important? Any novel ideas or contributions that the proposed project offers should also be discussed.

B. Experimental Plan. The experimental plan describes how the goals will be advanced, objectives will be accomplished, and hypotheses will be tested.

1. Methods. The methods section will vary depending on the type of research or project you propose (e.g., field research, laboratory study, computer simulation, case study, etc.), but in general, should describe the techniques you will use in sufficient detail to allow the reader to judge whether the project will achieve the stated objectives. This may include a description of your study area, type of equipment or software you will use, laboratory procedures, statistical methods, and experimental design (e.g., variables to be measured, randomization scheme, and replication). **Tip:** *Use one section for each objective and list the objective as the section's heading.*

The methods section must describe the:

- Proposed experiments or investigations.
- Materials and techniques that you will use, including their feasibility.
- Statistical techniques and other methods used to analyze the data.

2. Expected results and interpretations.

This section must describe the:

- The results that will lead you to conclude that the hypotheses are proved or disproved.
- Scope of inference (i.e., to what extent are the results applicable to other locations, times, or situations?).
- Pitfalls that may be encountered.
- Limitations to proposed methods.

3. Timeline (i.e., times during which the key elements of the experiments or investigations will be conducted).

V. REFERENCES TO PROJECT DESCRIPTION.* All references should be complete (including titles and co-authors), and should conform to an acceptable journal format. References are not considered in the page-limitation for the Project Description.

VI. BUDGET. The budget should summarize (in table or spreadsheet form) the budget needed to accomplish your research, including (1) labor costs and benefits (i.e., other personnel expenses or OPE), (2) expendable materials and equipment, (3) travel, (4) computer costs, (5) publication costs, and (6) overhead or indirect costs.

VII. FACILITIES AND EQUIPMENT. Facilities and major items of equipment that are available for use or assignment to the proposed project during the requested period of support should be described. In addition, items of nonexpendable equipment necessary to conduct and successfully conclude the proposed project should be listed (including dollar amounts), and, if funds are requested for their acquisition, justified on a separate page and attached to the budget.

VIII. APPENDICES TO PROJECT DESCRIPTION. Each project description is expected to be complete, however, additions to the Project Description (appendices) are allowed if they are directly germane to the proposed research and are strictly limited to a total of 2 of the following: (1) Reprints (papers that have been published in peer-reviewed journals), (2) Preprints (manuscripts in press for a peer-reviewed journal, must be accompanied by letter of acceptance from the publishing journal).