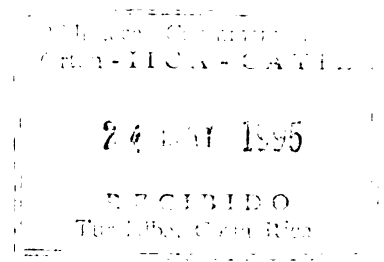


**CENTRO AGRONOMO TROPICAL DE  
INVESTIGACION Y ENSEÑANZA**



***A Proposal***

***DOCTORAL STUDIES AT CATIE***

**Dirección General  
Programa de Educación para el Desarrollo y la Conservación**

**May 1995**

**DOCTORAL STUDIES AT CATIE**

**A Proposal**

**EXECUTIVE SUMMARY**

**Turrialba  
May 1995**

# **DOCTORAL STUDIES AT CATIE**

## **EXECUTIVE SUMMARY**

### **1. Rationale:**

There is rapid change in technological developments in the tropics. These changes are having a significant impact on the utilization of natural resources. To manage these changes wisely, there is a growing need for highly-trained resource professionals including teachers and researchers throughout the tropical regions. To meet this need, education at the graduate level is mandatory.

CATIE has a long and successful productivity record in training students at the Masters level. It has produced over 1,100 Masters degree graduates over the last fifty years. These graduates have served the region and beyond well in a variety of positions in resource administration, technical transfer programs, teaching and in private organizations. This long experience in graduate education has given CATIE valuable experience and a renewed commitment to the role of higher education in the wise management of tropical agriculture and natural resources management.

In addition to its Masters program, CATIE has now become capable of offering a doctoral program in selected areas in which it has developed long experience both in research and in education. This capability coupled with a growing need for a select cadre of doctoral graduates, has led CATIE to develop this proposal for doctoral studies at CATIE.

### **2. CATIE's Existing Strength**

CATIE has a strong Masters program, as judged by recent external reviewers. The program structure coupled with the success and recognition of its graduates attest to the strength of this program. In addition, CATIE has taken important steps to enhance its faculty stability through financial incentives and contract modifications. It is also implementing a plan to increase and add depth to its faculty. Faculty from North American and European universities have judged CATIE labs to be comparable to their own institutions (although somewhat smaller). Outside recent review also has judged Orton Library to be "among the best of its kind."

### **3. Program Structure:**

To offer a high quality program equivalent to reputable universities offering PhD programs, CATIE is proposing to integrate its experience in research and graduate training with those of Colorado State University and the University of Florida in offering an innovative approach to a truly high quality doctoral studies.

The program integrates a semester of doctoral courses (taught in English) at CATIE followed by two semesters/three quarters of courses at the cooperating institution. Upon completion of this coursework, the doctoral student returns to CATIE for 2 to 3 years of original, innovative research on selected tropical topics.

Rigorous and adequate safeguards have been built into the program to ensure that our graduates are second to none (in the focus areas) with the resources of CATIE and the cooperating institutions utilized to meet that quality objective.

#### **4. Beneficiaries:**

The primary beneficiaries of the program are a small but select number of students from Latin American nations, and elsewhere holding an MS degree from reputable institutions. These students have to show a high aptitude for research and original thinking and have a desire to join universities and other institutions desiring highly educated professionals in tropical agriculture and natural resources.

#### **5. Cooperating Universities:**

As noted in this proposal, both Colorado State University (with emphasis on Tropical Forestry and Silviculture) and the University of Florida (with emphasis on Agroforestry) have expressed their agreement and strong desire in this unique cooperative venture in tropical doctoral studies. As time passes and further experience is gained, it is conceivable that CATIE may develop cooperative programs with other institutions including well-known European universities.

***DOCTORAL STUDIES AT CATIE***

***A Proposal***

***May 1995***

# **DOCTORAL STUDIES AT CATIE**

## **A Proposal**

### **1. Objectives:**

The objective of the doctoral program is to provide the educational and research opportunity for the award of the degree of Doctor of Philosophy (PhD) to qualified students in recognition of high achievement in scholarly and research activity.

### **2. Institutional Requirements:**

To offer a high quality doctoral program, CATIE proposes to develop institutional requirements that are similar to those offered at accredited universities in the United States. These requirements address:

Credit requirements

Transfer of courses from the masters program or other institutions

Time limit

Foreign language requirements

Appointment of major professor and the Doctoral Oversight Committee (DOC)

Qualifying examination

Preparation of Study Plan

Preliminary examination

Advancement to candidacy

Final defense

Dissertation (doctoral thesis)

CATIE Doctoral students are expected to perform original and fundamental research and to exhibit individual responsibility in planning and conducting their program of study. The student carries the responsibility for meeting all institutional requirements.

#### **(a) Credit Requirements:**

For the doctoral degree, many universities in the United States require a minimum of 48 semester credits or equivalent for the doctoral degree (beyond the masters degree). This is the model CATIE proposes to initially utilize in the development of its doctoral degree program.

Some universities allow the bachelors degree graduates to directly enter the doctoral program. CATIE does not propose to permit this option for the award of the doctoral degree.

CATIE plans to carefully select doctoral students based on, among other factors, the individual's ability to carry out fundamental and original research and must show this ability through a masters program research and preferably additional prior research and publication activities.

CATIE plans to designate certain courses to be doctoral level courses to enhance and supply the advanced information needed by doctoral students. In addition, CATIE plans to develop cooperative relationships with Colorado State University and the University of Florida where the courses designated on study plans are taken by the doctoral students within a specific time frame (see Memoranda of Agreement with the University of Florida and Colorado State University at the back of this proposal).

In summary, a CATIE's doctoral student will meet the following **minimum** requirements:

1. Must have a masters degree from a recognized institution.
2. Must meet other institutional requirements set by CATIE.
3. Must complete a minimum of 23-28 semester credits of graduate courses.
4. Must take additional courses should deficiencies be identified in the students educational background.
5. Must complete a doctoral research requirement worth 18-25 semester credits.

**(b) Transfer of Courses:**

It is clear that all courses that appear on the student's Study Plan which have been taken at Colorado State University or the University of Florida, will be transferred to CATIE's doctoral program. The Study Plan, which is an official document, is a semi-contractual agreement between CATIE, the cooperating institution and the student. All courses noted on the Study Plan, regardless of the institution where the course has been taken, is considered a requirement of the doctoral studies for the particular student.

**(c) Time Limit:**

There will be a time limit during which all requirements of the CATIE doctoral program are to be satisfied. No course shall be more than eight years (8) old at the time of graduation. Graduation must occur five (5) years after a student has successfully taken the preliminary examination and has officially been admitted to the Candidacy (a doctoral student becomes an official Doctoral Candidate after passing the preliminary examination). These time limits are not easily changed and can be extended only with making a successful petition to the CATIE Graduate Council (Director of the Graduate School serves as the Chairman of the Graduate Council).

**(d) Study Plan:**

Study Plan at CATIE is a very important official document specifying the course requirements for each doctoral student. It is prepared only after extensive discussion between the major professor and the student considering the student's career objectives and CATIE's doctoral study opportunities, including the opportunities available at the cooperating U.S. institution.

Once the Study Plan is drafted between the major advisor and the student, it is submitted to the other members of the Student's Doctoral Oversight Committee (including the affiliate member at the cooperating U.S. institution). Suggested changes to the Study Plan are implemented before it is made official. The final Study Plan is signed by the student followed by the signatures of the major advisor and all members of DOC and the Director of the Graduate School at CATIE. A copy is made available to the student and the major advisor with the original retained in the Graduate School at CATIE.

Changes to the Study Plan (for legitimate reasons) is made only with the approval of the major advisor and the Director of the Graduate School at CATIE with a special form filed and signed by the student, the major advisor and the Director of the Graduate School at CATIE. The original of this form is retained at the Graduate School at CATIE.

**(e) Foreign Language Requirement:**

Due to the international character of CATIE and the cooperative nature of doctoral studies with U.S. universities, fluency in English (in addition to Spanish) will be required of all CATIE doctoral degree applicants. A minimum TOEFL score of 550 will be mandatory.

**(f) Awarding of Doctoral Degree to CATIE Staff:**

As general policy, doctoral degrees will not be awarded to the members of CATIE staff unless the Graduate Council has carefully considered the request and decided to make an unusual exception. This is designed to avoid "in-breeding" and maintaining diversity among the faculty.

**(g) Appointment of Major Professor and Committee:**

A major professor, who is a full member of the Graduate Faculty at CATIE, is appointed as early as possible. This selection will be consistent with the student's professional interest and CATIE's doctoral research capabilities. In addition, a faculty member at the cooperating U.S. university will be designated as co-advisor who will also be a member of the student's Doctoral Oversight Committee.



The Doctoral Oversight Committee (DOC) is composed of at least four (4) members. The major advisor is from the student's primary interest area with the second member from the cooperating U.S. university who is the co-advisor. The third is selected from a "support area" such as statistics, etc. The fourth member will be selected based on the student's study plan and to insure diversity in the make-up of the DOC.

Major professor is the chairman of the DOC and the doctoral student's primary contact during doctoral studies. The members of DOC must all hold doctoral degrees. Although the chairman of DOC will be a full member of CATIE Graduate Faculty, other members may be either full or Associate Members of the Graduate Faculty.

**(h) Qualifying Examination:**

A qualifying examination will be given to every CATIE doctoral student to assess the background of the student in both major and supporting fields. The purpose of this examination is to provide a basis for the preparation of the student's Study Plan and to identify any course deficiencies that the student must take in addition to doctoral course requirements. This examination is given by the major advisor or CATIE's Graduate School in cooperation with the student's DOC.

**(i) Preliminary Examination:**

This examination is scheduled after the doctoral student has completed most or all of his/her coursework. It is designed to assess the student's ability to synthesize the various bodies of knowledge that has been taken during the coursework and determine his/her readiness to carry out the doctoral research requirements. The examination could be written and/or oral with questions supplied by all members of DOC. This is a significant examination and may take several hours or several days. It could be "closed book" or "open book" or both determined by DOC.

If the student fails this examination, he/she may be given a second chance within three months. If the second try is failed, the student is dropped from the doctoral program at CATIE.

Upon successful completion of the Preliminary Examination, the student is officially admitted to Doctoral Candidacy (with a special form officially signed and filed with the Graduate School). The student now can concentrate fully on the research requirement under the guidance of his major advisor.

**(j) Doctoral Research Plan:**

A Doctoral Research Plan is prepared as soon as possible upon return of the student from the cooperating institution. Initial preparation of the Research Plan will occur, while the student is taking courses at the Cooperating U.S. institution, laying the principal framework for the study with cooperation of the co-advisor.

Much of this preparation is carried out by the student in close coordination with the major advisor. Once the student and the major advisor have finalized the Research Plan, it is presented to DOC and others who may be interested in attending this public presentation.

The purpose of this presentation is to receive suggestions for modification to the Research Plan which would enhance the Plan. Input received from this public presentation is carefully considered by the student and the major advisor and, if appropriate, incorporated into the Plan.

At this time, the student is ready to move forward with the study laying the ground for data collection and other aspects of the doctoral research in accordance with the Research Plan.

**(k) Final Defense Examination:**

This examination is held after the doctoral dissertation is in final draft form and prepared in accordance with the format developed by the CATIE Graduate School. This mandates that the document has been refined between the student and the major advisor. In addition, it is also required that the candidate supply a copy of the draft to each member of DOC at this time and allow adequate time for the members to review the document (generally about a week) with all suggestions considered and possibly incorporated. The student meets individually with each member of his DOC and receives suggestion for improvement.

The doctoral dissertation is then revised incorporating the suggestions by the DOC members (with the consent of the major advisor) in developing the final draft of the dissertation. At this time, the date for the final defense examination is set and publicized so that interested members of the faculty and students may attend.

During the Final Defense examination, the student is asked to present his dissertation research. This should have the quality of a presentation given at an international conference. This is an important opportunity for the doctoral student to make a significant professional presentation. The presentation, therefore, shall be prepared with excellent audio-visual support and have a logical, scientific flow. It is recommended that the doctoral student have a "dry run" with the major advisor before making this public presentation.

DOC members then begin questioning the candidate. Questions generally deal with the doctoral dissertation (methodology, data collection, data analysis, conclusions, etc.) in order to assess the depth of understanding of the candidate. Questions, other than those directly related to the dissertations may also be asked.

Once the questioning is completed, the doctoral candidate is requested to leave the room so that deliberations by DOC could take place. There is no time limit on these deliberations. Generally, it could take from a few minutes to half an hour.

Once DOC reaches its conclusion (as to pass or not pass the candidate), the Candidate is called back to the room so that the chairman of the meeting (major advisor) could inform the candidate of the committee's decision.

If the Candidate passes (by a vote of the majority, including the major advisor), a special form is completed and signed by all members of the DOC. This form is then submitted to the Director of Graduate School, who approves the form by signing it.

(1) **Technical Papers from Dissertation:**

At many North American universities, it is optional that a number of papers be prepared in lieu of a single holistic dissertation. Logically delineated, two to five papers are submitted to international journals from a single dissertation. In this case, the format of the particular journal is followed for each manuscript. The sequence of authorship is decided by the major advisor and the doctoral student. It is important that each manuscript be judged as "publishable" by DOC.

In addition to the manuscripts, appendices are incorporated to the back of the dissertation providing further details. All elements (front pages, manuscripts, appendices, etc.) are put into a single document comprising the dissertation. This is one option CATIE proposes to adopt.

3. **CATIE's Proposed Model:**

Under this model, applicants are rigorously screened with only the most qualified students allowed entry into CATIE's doctoral program.

Once the students are selected, they are expected to begin taking courses specifically designed for doctoral students at CATIE, immediately after the Easter week holidays. It is planned that three 3-credit courses will be offered which will be required of all doctoral students. These courses will be taught only in English to begin developing the student's ability to take courses in English while learning advanced information important in their doctoral studies.

In addition, each student will be enrolled in three credits of Doctoral Dissertation designed to work with the major advisor in developing a draft doctoral dissertation research proposal. Upon completion of this CATIE semester, students are sent to the cooperating institution in the United States for additional coursework at the start of the fall semester for the U.S. institutions. Large selection of courses offered at Colorado State University and the University of Florida permits "tailor-making" each study plan.

It is anticipated that doctoral students will be required to spend 9-12 months at the cooperating institution taking the courses specified in their Study Plan under the supervision of the co-advisor.

Once students have completed the coursework, they return to CATIE to finalize their Research Plan (under the direction of CATIE's most respected scientists) and carry out data collection and other tasks associated with their research requirements.

#### **4. Graduate Faculty System:**

It is planned that a system of Graduate Faculty appointments be initiated at CATIE. This system designates:

- (a) Full Member, CATIE Graduate Faculty
- (b) Associate Member, CATIE Graduate Faculty

The Full Members are selected based on a record of accomplishment and recognition among international peers. They hold doctoral degrees and are generally the more experienced, productive scientists who have distinguished themselves professionally.

Full Members have an extensive list of publications and books and have led and organized international conferences. They have successfully completed a number of graduate students and have done well in advising and supervising those students.

Associate Members also have doctoral degrees but are generally the younger and the less experienced members of the Graduate Faculty. Associate Members show great promise to "bloom" into highly respected senior scientists. Nevertheless, upon appointment to the Associate Membership, they have a list of publications and are engaged in supervising masters degree graduate students.

Only Full Members are allowed to serve as major advisors for the doctoral students. Associate Members of the Graduate Faculty may serve as a member of DOC but can not, by policy, serve as the major advisor for doctoral students (can not chair DOC). An Associate Member may be nominated by the Dean of the College at the Cooperating U.S. Institution or by at least three Full Members of the Graduate Faculty. Nominations are submitted to the CATIE Graduate Council for consideration.

#### **5. CATIE Graduate Council:**

This will be a policy-making body for graduate studies at CATIE. It considers policy matters pertaining to both masters and the doctoral degree programs at CATIE. The Head of the Graduate School serves as the Chairman of the Council and administers policies adopted by the Council.

The Council will be made up of elected members of the CATIE Graduate Faculty and operates on a set of bylaws. All policy matters on graduate studies, petitions for exceptions to established policies, Graduate Faculty Appointments are brought before the Council for action. The Council, from time to time, may appoint special committees to address certain issues before bringing their recommendations to the Council.

The membership of the Council should be representative of the areas of CATIE that participate in graduate studies. A membership of 10 (including the Director of Graduate School) is envisioned.

## **6. Other Doctoral Studies Models:**

It is important to note that the proven North American Model proposed in this document is intended as a starting point for CATIE's doctoral studies. It is conceivable that a European model (in cooperation with well-known European universities) could be also offered by CATIE in the years ahead. When such opportunities develop for CATIE, they will be carefully considered by the CATIE Graduate Council and CATIE administration. If high quality can be assured, they will be proposed as additional options to earn a CATIE doctoral degree.

## **7. CATIE's Existing Strength**

It is realized that a doctoral program must have a good foundation with a strong Master's program already in place. In addition, it is requisite that the institution have a reasonable degree of stability in its faculty and funding and have facilities (labs, etc.) that are comparable to doctoral granting institutions in those areas that the doctoral studies are to be taken.

### **(a) Masters Program Strength:**

To demonstrate the strength of this program, it is relevant to examine recent outside review comments. A report filed by the Danish International Assistance Office dated April 1994, it is stated that..."The Masters program is a high-level postgraduate study program which is unique in the region, and our many interviews with graduates, students and institutions show that it is highly regarded." Another recent report filed by Chemonics International for the USAID dated July 1, 1994 states that..."CATIE operates the premier postgraduate agricultural school in Latin America..". This report further states that "CATIE is probably the most important source of M.Sc. level professionals in Central America.". Recent observation (March 1995) by Professor A. Moslemi of the University of Idaho, who is a Director of a large Graduate Program at that institution, noted a "strong program" when referred to CATIE's Masters studies.

### **(b) Faculty Stability and Related Matters:**

CATIE administration has taken a number of steps to (a) significantly enhance financial incentives (salary adjustments, dependant subsidies, educational subsidies and retirement funds, etc.); (b) reward productive service by awarding long-term contracts to its faculty (including indefinite contracts); and (c) increase its core budget to support those long-term faculty contracts. In addition, CATIE's plan to significantly increase its faculty strength is well on target (details are available from the Director General's office).

**(c) Strength in Facilities**

CATIE facilities (labs, library, field facilities, etc.) are strong and well maintained. For example, several faculty from North American and European universities who come to CATIE every year on their sabbatical leaves, have been requested to compare CATIE laboratories with those in their own institutions. Often the comment is that the labs are comparable, although somewhat smaller than those in their own institutions. CATIE library is probably the best of its kind in tropical literature and has the capability to access other libraries world-wide. The April 1994 report by the Danish International Assistance Office, referred to earlier, states that..."A major asset for the (graduate) Programme Area is the Orton Memorial Library, which is of paramount importance to researchers. It is among the best of its kind..." .

**Comparison of M.Sc. Programs  
University of Idaho's CFWR, and CATIE**

Description	University of Idaho College of Forestry, Wildlife & Range Sciences (CFWR)	CATIE Graduate School
1. Admission Process	Formal Application Official Transcripts needed B.S. required Letter of application required GRE* 2 letters of recommendation Major professor accepts student	Formal Application Official Transcripts needed University degree required Letter of application required CATIE entrance examination 3 letters of reference Major professor assigned by EDECO
2. Percent Accepted	20-50(2)	30(3)
3. Percent Funded	~ 50%	~ 60%
4. Study Plan Required	Yes	Yes
5. Percent Retention	98	99
6. Duration of Study	1.5 - 2 years	2 years
7. Course Credits Required	20 - 25 Semester hours	40 Quarter hours; ~ 26 Semester hours
8. Non-thesis option available	Yes	No
9. Credits given to thesis	~ 6 - 10	30 - 32 quarter credits (Student spends one full year on thesis)
10. Prelim. examination prior to thesis work	No	Yes, at end of first year
11. Time needed to Complete Thesis	0.75 - 1.0 Year	One Year
12. Advisory Committee Required	Yes	Yes

13. N° of Advisory Committee Members	3	3 - 5
14. Min. GPA Needed for Graduation	3(4)	80% (B-)
15. Course Evaluation by Students	Yes (Annual)	Yes (Quarterly)
16. Student status as Research Assistant	~ 60%	100%
17. Graduates well accepted by employers	Yes	Yes
18. Date M.S. initiated	1917	1946
19. N° of Graduates since initiation	> 3,200	> 1,100
20. Ph.D. Started	1953	1996(?)

- 
1. GRE required in one of five departments.
  2. Varies based on program area.
  3. Data for 1994.
  4. Based on 4.0 point scale.
- 

\* NOTE: The University of Idaho's forestry, wildlife, range management, fisheries, and recreation program is one of the oldest and most respected programs in the United States. Forestry instruction dates back to 1898. Department established in 1909; School in 1917; College in 1953. It has one of the largest enrollments (> 215 any given year) in North America.