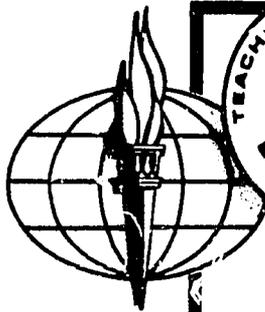


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PROCEEDINGS

**IMPROVING GRADUATE
PROGRAMS
For
DEVELOPING COUNTRY
NATIONALS**

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ACKNOWLEDGMENTS

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TABLE OF CONTENTS

	<u>Page</u>
Acknowledgments (Conference Committee)	i
Preface	
R. W. Kleis	ii
BREAK THE SMALL CAGE HABIT	
Ronald W. Roskens	1
PROFESSIONAL AND EDUCATIONAL NEEDS OF THE DEVELOPING COUNTRY STUDENT	
N. N. "Victor" Umunna	5
SOCIO-CULTURAL ADJUSTMENT NEEDS AND OFFERINGS OF THE LDC STUDENT	
Edward J. Nemeth	11
TITLE XII CONCEPT, PROGRAMS AND STATUS	
Woods Thomas	15
IANR COMMITMENTS TO INTERNATIONAL PROGRAMS	
Martin A. Massengale	24
GRADUATE COLLEGE RESPONSIBILITIES FOR STUDENT NATIONALS FROM DEVELOPING COUNTRIES	
Henry F. Holtzclaw, Jr.	27
INSTITUTIONAL RESPONSIBILITY IN TRAINING GRADUATE STUDENTS FROM DEVELOPING COUNTRIES	
Earl R. Leng	31
STUDENT PROGRAM RELEVANCE TO LDC NEEDS	
Joseph F. Metz, Jr.	34
DEPARTMENTAL RESPONSIBILITY IN DEVELOPING A GRADUATE PROGRAM TO FIT THE PROFESSIONAL NEEDS OF THE LDC NATIONAL	
Robert Gast	38
GRADUATE COMMITTEE RESPONSIBILITY IN DEVELOPING A GRADUATE PROGRAM TO FIT THE NEEDS OF THE LDC NATIONAL	
Dale G. Anderson	44
MAJOR ADVISER RESPONSIBILITY IN DEVELOPING A GRADUATE PROGRAM TO FIT THE NEEDS OF THE LDC NATIONAL	
Dale Flowerday	47
MAJOR ADVISER RESPONSIBILITY IN DEVELOPING A GRADUATE PROGRAM TO FIT THE NEEDS OF THE LDC NATIONAL	
Phillip J. Scholl	49
CASE HISTORY-#1 PROGRAM CONDUCTED AT THE INSTITUTION ONLY	
Terry J. Klopfenstein	51

	<u>Page</u>
CASE HISTORY-#2 GRADUATE RESEARCH PROJECTS OF STUDENTS FROM OVERSEAS SHOULD BE CARRIED OUT IN THEIR HOME COUNTRIES George A. Petrides	53
CASE HISTORY-#3a PROGRAM IN WHICH A DOMESTIC STUDENT CONDUCTS DISSERTATION RESEARCH IN A LESS DEVELOPED COUNTRY Paul H. Gessaman	59
CASE HISTORY-#3b PROGRAM IN WHICH A DOMESTIC STUDENT STUDIES IN A LDC Charles A. Francis	62
OPPORTUNITIES FOR YOUNG STAFF MEMBERS TO WORK WITH LDC GRADUATE STUDENTS Roy G. Arnold	64
WORK SHOP REPORTS	
Maintaining Academic Standards Russell C. Nelson	69
Cultural-Sociological Needs of the Student Peter S. Levitov	71
Institutional Benefit From International Contingents Roberto Esquenazi-Mayo	74
Educational and Professional Needs Of A LDC Donald Hanway	76
Effective Academic Advising of LDC Students Robert A. Olson	80
Evaluating LDC Applicant Credentials Earl F. Ellington	82
Making Thesis Research Relevant for the LDC National Lowell D. Satterlee	84
PROGRAM CONTENTS AND BIOGRAPHICAL SKETCHES	87

PREFACE

The International Programs Division of the IANR includes a wide variety of specific functions in furtherance of its general mission of serving the educational and technological needs of agriculture. No specific function is more essential and effective in addressing the critical and increasing world food shortfall than the training of young people interested in devoting professional careers to this problem. In no other way can we have a more direct or significant impact in alleviating starvation and malnutrition and, indeed, in serving our common interest of world peace and stability.

This staff development workshop on "Improving Graduate Programs for Developing Country Nationals" was the second in a continuing series planned by the University of Nebraska in furtherance of its participation in the "famine prevention" objectives of Title XII programs. It was highly successful and obviously stimulating to all participants. The program presentations were without exception directly relevant and constructive. The participation of approximately 100 key staff members and the active discussion sessions are evidence of genuine interest in increasing effectiveness in this important area. ✓

The University of Nebraska Title XII Strengthening Grant is entitled "Food Production Systems for Marginal Rainfall Areas." This provides for developing and directing the agriculturally related resources of this institution to the paramount problem of a major portion of the developing world and in a setting common to Nebraska in terms of climatic conditions. One of the major areas of emphasis within this grant program is human resource development. This workshop, like its predecessor, "The Role of Women in International Agricultural Development," addressed the development of human resources for greater effectiveness both on campus and in developing countries. It is consistent with our program thrust, the priorities of developing countries and the legislative intent for Title XII programs.

The summaries of presentations which follow are well-stated and correlated. There are several significant common characteristics which I would list and note here:

1. U.S. Institutions are not the only source of high quality advanced training in agriculture; but they are the highly regarded source, and demands from Developing Countries will continue to increase.
2. Standards of real quality must not be compromised.
3. There was general recognition that traditional institutional procedures and quality are not synonymous.
4. Numerous suggestions of program content and procedural innovation were put forth.

5. Administrative support and endorsement for increased effort and initiative were overt.
6. Individual staff career and institutional program considerations should not be based upon history but upon present and future circumstances.
7. Training developing country nationals is an opportunity to serve professional, institutional and national self-interests.
8. Nothing we do is more important to alleviating human suffering and serving the cause of peace.
9. Socio-cultural diversity and related stresses need much increased attention for increased effectiveness in our work with students from other countries.
10. Increased social and personal interactions with students from other countries can provide mutual benefit in terms of broadened understanding by staff, students, and the public.

Let us follow up on this productive workshop by seeking to develop mechanisms of increased effectiveness in training developing country nationals and permitting their influence on our development of broader understandings and capabilities. As suggested by President Roskens (see page) let's further break the "small cage habit."

R. W. Kleis, Dean and Director
and Title XII Officer
University of Nebraska

✓

BREAK THE SMALL CAGE HABIT

Ronald Roskens
President
University of Nebraska

A great English biologist was visiting the St. Louis Zoo some 15 or 20 years ago. Marlin Perkins, who was then curator of the zoo, was showing this distinguished biologist around the facilities and at one point they stopped at a newly remodeled section housing the zoo's bears. As they paused and were looking over the new area, the British visitor's attention focused upon one particular bear who was pacing back and forth over a path of perhaps 10 feet within a 30 foot enclosure. After a few moments of observation, the British scientist asked Mr. Perkins, "Could you explain something to me? Why is that bear confining itself to such a small portion of this magnificent new facility?" "It's very simple," Perkins answered. "Until the last six months or so that bear was confined to a cage of that size and its entire experience, therefore, has been pacing about that distance."

Leaving the moral to this story aside for just a few moments, I want to explore with you a number of themes which parallel the issues which this group has been addressing.

In Nebraska we can say, without a doubt, that we have some appreciation of the events and circumstances which transpire beyond the boundaries of our state. At the same time, however, honesty would compel us to confess that we remain today far more provincial than we should as we enter the decade of the eighties. This does not mean that the task of broadening our horizons is a simple one, and I am reminded of the British statesman Lord Palmerston, who once said of the Schleswig-Holstein question, which precipitated the war between Prussia and Austria, that "only three men ever understood it. The first was Prince Albert, who is dead; the second was a Danish minister who has gone mad; and the third was myself, and now I've forgotten."

Matters do indeed often become so complex that they are difficult, if not impossible, to deal with. Similarly, universities may also grow to the point where they are difficult to fathom, and missions become confused. At the same time, however, one factor which allows for control remains, that being that the prime resource of this and any university remains its faculty.

Returning then to my initial point, the horizons with which we must deal, we are all aware that the University of Nebraska has provided, through its faculty, technical assistance to a large number of foreign nations for many years. In addition, the University has educated numerous foreign individuals, both abroad and as students enrolled in courses on our campuses. While it is neither necessary nor desirable to attempt to recite all of the facts in these areas, efforts such as those conducted by the University in Turkey, Columbia, Sierra Leone, Liberia, Morocco, and Tunisia stand out. Indeed, through our faculty, the University has expanded the intellectual and environmental horizons of our people by participating in the affairs of

these nations and by bringing their citizens to this state to study. In particular, the existence of our University-wide Committee on International Education provides a basis upon which to extend our efforts and our perspectives.

This does not, however, mean that our record is sufficient. While the foundation may be solid, we must continue to build. There is much to be done, internally through a values reorientation on the part of a number of faculty. And, on an external basis by expressing to our constituencies, in ways which they will understand, the importance of the kinds of work which we have been discussing.

Consider for a moment a few of the things which might be done. Efforts are needed in terms of the reconciliation of international program efforts with internal program efforts. There is, both within the Institute and other segments of the University, a tension between the domestic mission and our international profile. As a result, we have not been able to muster a total commitment on the part of our faculty to the importance of extending ourselves beyond the horizons, be they the boundaries of this State, to say nothing of the borders of the cities within which we might happen to live or the campus upon which we work. As a first contribution then, I would express my hope that we can be candid in our realization that we are not all "on board" when speaking of the importance of international efforts. And that in seeking to reduce that tension in the next few months and years, our first task will be to admit that it does indeed exist.

A second element that comes into focus when we address the question of tensions or impediments to international education, particularly when it involves the actual extension of faculty into other areas of the world, is the tendency to regard such efforts as a "service" activity. Each of us is aware that, unfortunately, when we assess or weigh the relative values of each part of our tri-part mission, one portion of that mission always comes last. Whether we call it extension or public service, such activities are downgraded, and there is a troubling but almost inevitable tendency to place international education within that category.

It seems then to me that we have an obligation to be straight-forward and to work for clarification of that point, to express bluntly to ourselves and to our peers that international education, whether it is provided here or elsewhere, is not a "mere service activity," that it should become part and parcel of each of our academic portfolios.

As we do so, we should keep in mind that the tensions which I have been describing are not confined to the field of education. Within the last 20 years the people of this nation have found themselves increasingly linked to international problems and international concerns. There is, for example, a great deal of concern about our trade gap. In September, exports made up less than 10% of the total output of American goods and services while in West Germany, during that same period, their figures for that same market were about 25%. Thus, while international consciousness has grown, it has not necessarily been a totally positive development, and many of our state governors, legislatures, and agencies are seriously concerned.

Thus, while I remain convinced that we must develop our international efforts, it will be imperative that we proceed with both determination and with caution.

On a more directed basis, a number of things might be done within the University itself. We must first do a better job of tailoring our graduate programs to meet the real needs of students from foreign lands, and particularly those individuals from those nations regarded as "lesser developed countries." We must continually ask ourselves if the traditional relationships between graduate students and advisors work effectively in such instances. Our academic enrichment programs could be improved, and new kinds of bonds could be created between foreign graduate students and graduate committees.

In a word, we must overcome the psychological barriers, taking a longer step in the direction of helpfulness to those who have come from lands where circumstances have been vastly different from those found here. Such steps should not, under any circumstances, be construed as a lowering of academic standards. But I do believe that some academic traditions may have become so entrenched that, creatures of habit as we are, we may not be as valuable to the graduate students from other lands as we believe we are or as we can be.

Secondly, I believe that we must find ways to enhance opportunities for our own staff members, and I am here particularly mindful of the need for our faculty and staff to develop foreign language capabilities. We simply can no longer sustain the arrogant notion that "if they want help, they have got to speak English."

This is a matter of the utmost importance to me, and I find it atrocious that in this nation there are, for example, so few individuals who are fluent in Chinese or Russian. Three years ago, when this nation set out to establish formal relations with China, fewer than 25 native Americans could be found who were fluent in the major Chinese dialects. Such a situation is intolerable, and particularly so within the academic community. How, as academicians, can we pretend that we are teaching the history and culture of any other nation without being able to understand it from the inside, something that can be accomplished only when we understand its language. We must, therefore, make opportunities available for ourselves to learn those foreign languages necessary to fit the missions that we are trying to pursue.

As an extension of this concept, I would thirdly suggest that if we are to provide our graduate and undergraduate students with meaningful opportunities in international development, marketing, agriculture, and other fields, we must make provision for and insist upon foreign language capabilities on their part. We can no longer afford to prepare individuals for foreign careers who cannot speak a foreign language, a point brought home by the fact that of the 200 individuals who were stationed in our embassy in Iran, only 4 could speak the Iranian language of Farsi.

And finally, as a further internal step, we must bolster our international library collections so that the kind of understanding which comes through knowledge short of personal contact is directly available through periodicals, monographs, and other publications which speak directly to and about the foreign lands in which we have an interest.

On an external basis, we must continue to work closely with our current international friends and strive to develop new ones. And we must continue to direct our agricultural developments and investments in ways which insure

that our friendship is backed with active supports. Secondly, we must impress upon our fellow citizens the importance of international work. We must try to promote a greater understanding of the many mutually beneficial linkages which can come about when the University of Nebraska becomes an active partner in international ventures. And thirdly, we must be continually prepared to pursue vigorously those additional opportunities for international interaction which may become available to us in the future.

As I indicated at the onset, we at the University of Nebraska have undertaken a number of international educational efforts which have been beneficial to the University, the nations with whom we have worked, and the people of this state. We have expanded the intellectual horizons of the University, the state, and the region.

At the same time, however, there are many of us who, like the unfortunate bear we observed at the outset, still have "the small cage habit," unable to recognize our freedom and our responsibility to broaden our horizons. We must, therefore, do our level best to instill in ourselves and our colleagues an active commitment to international perspectives, recognizing that the road to peace must be paved in large part with those very same kinds of efforts. For the greatest strength in a world of peace will be hungry people fed, sick people treated, and healthy, friendly people exchanging friendship and ideas--the very things which are the heart of a university.

PROFESSIONAL AND EDUCATIONAL NEEDS OF THE DEVELOPING COUNTRY STUDENT

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A profession can be defined as a vocation or occupation requiring advanced training and usually involving mental rather than manual work. A professional is therefore one engaged in, or worthy of the high standards of, a profession. Education is the process of training and developing the knowledge, skill, mind, and character, etc., especially by formal schooling, teaching, and training. The natural follow-up question to these definitions given the topic is to what extent do we meet the professional and educational needs of the developing country student?

Before attempting to comment on the important needs and problems which arise with the training of graduates from developing countries, it is useful to give statistics on the students who are studying in countries other than their own. A 1961 UNESCO survey included in the 1962 edition of "Study Abroad" revealed that over 200,000 international students (about 2 % of the estimated 11.5 million students in the U.S.) were studying in countries other than their own. At the University of Idaho, approximately 50 foreign countries are currently represented on campus. I believe that there are probably more in this University. Although this figure represents the total of all foreign students, a majority of them come from the developing countries. Our concern these two days is focused on these students, and I am indeed privileged to be involved in this Workshop.

Students from all over the world are presently registered for various degrees in the United States. This immediately implies that we are dealing with a heterogeneous group of individuals: individuals with different needs and problems. The fields in which they are involved are also varied. No one yardstick, therefore, will apply, and the problems related to their training vary not only in the different fields of study but in relation to their varied educational backgrounds.

For ease of discussion, I would like to adopt the framework of Aitken (1962) in classifying the various disciplines. According to him "The disciplines and subjects of study fall into three major groups:"

1. The first group concerns subjects, and they include philosophy, mathematics, and the pure sciences, the teaching of which is relatively uninfluenced by the environment of the institutions in which they are taught.
2. The disciplines, including subjects such as economics, history, geography, and medicine, in which the content of curricula and the context in which subject matter is presented may vary considerably from one country or one part of the world or another.

3. The subjects, including agriculture, law, and many branches of technology, in which apart from certain basic elements, the content of teaching is predominantly marked by local or regional conditions!

He further divided international students into three categories:

1. Those who are educated in the same language and similar educational systems as those used in the country where they are to study.
2. Those educated in the same language of the country in which they are to study but with dissimilar educational systems, and
3. Those who are neither competent in the language nor the pattern of education of the country in which they are to study.

It is easy to see that very few problems will be encountered with training of students in the first category. The major training problems of graduate foreign students and especially those from developing countries are with the second and third categories. Apart from the problems of language and/or differences in educational systems there is the basic problem of "inadequate preparation." Lack of good staff, lack of funds, and inadequate facilities may have characterized the first degree. Because of inadequate undergraduate work, international students may face serious problems from the first day of graduate work in the "receiving" University. The question now before the "receiving" Universities and/or faculty is how they will make the program meaningful for all graduate students from the less developed countries.

Supplementary Training

It is my view that once a university and/or faculty has agreed to accept graduate students from the less developed countries that it has also accepted the responsibilities of ensuring high quality training of graduate students regardless of their country of origin. Students in categories 2 and 3, therefore, should be registered within the first semester or two in relevant introductory courses. Or they should possibly take prerequisites. Where these do not exist and/or where the existing ones are not relevant, there is need to organize special introductory courses of 6-12 month duration in an attempt to bring them up to par with their counterparts from the developed countries.

Apart from the educational value of such courses, they afford opportunity for the students to interact and get to know one another. Through these contacts in many cases they get answers to their individual problems--whether sociocultural or academic. This improves markedly their personal adjustment to their new environment. All these help to remove barriers that are possible impediments to achieving the desired goal of high quality training.

Choice of Research Topic

It is my belief that the most important single item in any program of research is the choice of a research topic. If a great deal of thought is not given to this very important but often neglected point, the student may

become frustrated. This could result from inadequate facilities or other factors not carefully considered in selecting the research topic. Closely tied to this is the relevance of the topic chosen to the needs of their countries. This is a very difficult point. If the student is committed to work on a sponsored project, the relevance is to the organization paying for the project. Yet I strongly believe that attempts should be made to make research projects relevant to the needs of the foreign students and/or his country or region. I will, therefore, strongly suggest that students be guided closely in their choice of research topic, so that a balance is struck between available resources at the university's disposal and the specific needs of the student. The research training should, therefore, be adaptable to varied situations.

It is very relevant, in fact, to give some other views on this very important topic. Professor Hudson's view (Hudson, 1967) on this is interesting even though he was dealing strictly with agricultural training. He states that "The work that many Ph.D. students from the developing countries do in European and American universities seems to bear little relation to the sort of work they will be doing on return home. It can be argued that the subject of a Ph.D. study does not matter much, as long as it is done at the right level, but it is surely better for a man to work in a field, and with techniques, that are likely to be directly helpful to him when he returns to take up his first professional post." From this, it is but a short step to asking why a Ph.D. student should not, in fact, do part of his work under local home conditions rather than with crops that may be quite unfamiliar and that he will never have to grow.

A great deal could be said for organizing the Ph.D. studies of students from abroad in such a way that they spend a few months reading, thinking and talking about their subject and learning the techniques in a department with a world reputation in that field, followed by a year or eighteen months in their home country, carrying out field work under local conditions. During this period they might be visited by their supervisors. During a final period they would analyze their data, write up their work, and have their oral examinations. Professor Hudson's view is well-taken. I wish it could be possible, but certain limiting factors such as inadequate funds and facilities discourage the student from carrying out the project in his home country. Regardless of this, the points Hudson made are very worthy and should be noted especially when it is not possible for the student to carry out his project in his own country. Professor Hudson's views will most likely cause the supervisor and his student to give more thought to the question of choosing a relevant topic.

In this same light, the total program (course content and research) could be made relevant and meaningful to the student and the conditions he is to face on his return. This could be easily done since graduate students are usually supervised as individuals or in small groups by a professor or a researcher. It is, therefore, easy to overcome this problem through the judicious selection of courses. The work load--courses and/or research--could be so planned to enable the student to work at an appropriate pace until he is ready to "fly." Let it not be misunderstood. I am not by any means advocating that we should encourage laziness. If anything, laziness must be ruthlessly discouraged.

Method of Training

The method of training is a very important part of the overall training of graduate students from the less developed countries. When the graduate student eventually returns to his country, he may be required to work in a Ministry, in business, or teach in higher institutions. When the student is fairly certain of the area he will eventually go into, it makes it easier for the adviser who right from the beginning guides the student toward his desired goal without, however, placing academics secondary. The graduate students who pose more problem are those who on return to their countries take on academic assignments and find themselves in a very short time in positions of high responsibility. They are usually competent in their academic fields since they are well-grounded, but they may be lacking in teaching ability or organization and administration of departments and/or faculties. Where possible these students should take as electives, one or two courses in administration and education--specifically courses on teaching methods. As much as possible students should also be encouraged to participate and hold responsible positions in organizations like the Foreign Students Association, Graduate Students Committee, other student organizations or even departmental meetings if graduate students are allowed.

Report Writing

This is a very important requirement since on completion of his training, the graduate student from a less developed country by virtue of his new status will be required to write reports--technical reports and publications. There are a number of good courses in scientific writing which the student should be required to take. More often than not, the writing attitude and skills of the adviser are "inherited" by the student. It is a great pity, indeed, that the files are the last resting place for a great amount of good work that never gets published. This is sad. In these days of "publish or perish," it would be better training to encourage and teach these students how to write scientifically. They should especially be taught how to write about data interpretation and their application.

The Role of the Graduate Supervisor

There is a great variation in the approach of supervisors to graduate students. Some get so involved and offer so much supervision that the students' personal initiative is stifled. Such students rightly or wrongly then feel that the supervisor is just using them to get his work done. On the other hand, too little attention to the student may be dangerous and could lead to a costly waste of time and material. For the brilliant student, the latter type of supervision may be quite in order. For the average and less than average student, however, a happy medium should be found. In all cases the student must be allowed to use his initiative.

Field Trips and Attachments

In applied subjects like agriculture, classroom work has never been and will never be enough to "make the man," that is, to train the ideal agriculturist. It is imperative that graduate students, especially ones from the less developed countries, be exposed to field work, and as the saying goes "get their hands dirty." Unlike their American counterparts, many graduate students from the developing countries enter agriculture as a profession without having had the experience of growing up on a farm. Furthermore, their

first degree invariably is deficient in field practical training. These students are only "paper agriculturists." As much as possible they should be involved in farm work outside their degree requirements. Field trips and short practical attachments where possible are very useful tools for improving these students.

Other Points That may Influence Graduate Students From Less Developed Countries

1. The socio-cultural adjustment of the foreign graduate student is a very relevant aspect of his overall adjustment to the new environment. I need only to emphasize that within the first year and especially the first semester, it may play a big role in the overall performance of the student. Professor Ed Nemeth is to speak on this very important topic, and as such I will not belabor the point. The supervisor, the foreign student office, and the student in particular have important roles to play.
2. When and where possible, graduate students from less developed countries should be made to give seminars on certain relevant topics on their home countries. In an applied science like agriculture, a good seminar or two by foreign graduate students from various parts of Africa will definitely improve faculty understanding of the agricultural problems of Africa. When funds are available, faculty should be encouraged to visit the developing countries from where they get most of their students.

I have made some of these suggestions bearing in mind the traditional approach or stand of a well-established university to higher education. This is to "imbue the human mind with knowledge, tolerance, and vision, and to stimulate a lasting attitude of inquiring (University of Idaho, Bulletin 1978/79). "Its professors and lecturers are concerned primarily with their students as young scholars, and not as Europeans, Americans, Africans, or Asians. They will, of course, be anxious to help the foreign student to overcome any handicaps he may have, but they will probably not have the same interest in the needs and problems of the country from which he comes" (Aitken, 1962). Whereas this statement is true, it is my belief that this workshop reflects a commitment to find better ways of improving the training and relevance of the training of the foreign graduate student, especially those from the less developed countries. This Workshop is, therefore, very worthwhile and timely, and I salute the organizers.

Finally, the burden of resolving some of the problems and finding new ways of improving the quality and relevance of training for the foreign graduate student rests on the individual supervisors. For what they have been able to achieve so far, I thank them on behalf of so many of us former foreign graduate students, especially those from the less developed countries who are spread all over the world today. We relive the experiences often and think of the good "old days." To the supervisors here today, especially those of you who have at one time or the other supervised foreign graduate students, I believe you all can recount various experiences you have had with your graduate students, especially those from the less developed countries. It may have started off poor initially but with time, it blossomed into a good relationship. May I add that each time you supervise a foreign graduate student, you leave a little of yourself with him. A lot of how they do things or even behave is influenced by you. If they make it in life, the glory is to a large extent yours for all your efforts. Regardless of the odds, please always do your best for us. We do certainly appreciate them all.

REFERENCES

- Aitken, D.J. 1963. General problems of training undergraduate and postgraduate students from developing countries. In Higher Education In Agriculture Report of the 1962 Conference. OEDC Documentation in Agriculture and Ford No. 61.
- Hudson, J.P. 1967. Postgraduate training for agricultural research. In Higher Agricultural Education in African. Report of a Seminar held in Sudan at the University of Khartoum 7-15 Dec. 1965. F.A.O.

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SOCIO-CULTURAL ADJUSTMENT NEEDS AND OFFERINGS OF THE LDC STUDENT

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Eighty-four percent of the U.S. foreign student population is from the less developed countries of Asia, Africa, and South America. Their entrance to this country--a mechanical, fast-paced, antiseptic "new" world--represents months of anticipation, coupled with anxiety, raised expectations and contrasting periods of elation and fear of the unknown. Upon arrival, the student may encounter a climate more severe than he ever knew could exist: a people less approachable than at home and a physical environment designed more for expediency than comfort. His cultural knowledge about the United States is seldom from academic materials. Rather, his beliefs and information were obtained from exported T.V. crime shows, John Wayne movies, the tourist on holiday, and news accounts about U.S. world aggression. He knows that the police in the United States are brutal, money is the hallmark of success, women are loose, aggressive behavior is acceptable, and corruption is common. In addition, after a short while in the United States, he becomes convinced that the population is also violent, irreligious, racially discriminatory, and without allegiance to family or friends.

Major Academic Problems

Equipped thusly, the foreign student enters a U.S. university. Unlike at home, he usually finds a huge institution, located on an enormous plot of ground, and in some remote section of the country. The enrollment alone is staggering to him. It probably has three to four times as many students as in the largest university of his home country. If the university is typical of the U.S., it will sit on a hill, be a conglomerate of architecturally disharmonious buildings, most of which are strictly utilitarian in character, and rely strongly on the computer to "individualize" student needs. With a newly assigned number and campus map in hand, the foreign student then needs to decide upon a place to live and a course of study.

If he came to study aerospace engineering, he will most likely sign up for every aerospace engineering course offered that semester. He has no notion about prerequisites, majors or minors, support courses or electives. He will not see the "clear" relationship between engineering and mathematics or understand that aerospace engineering is just one aspect of mechanical engineering. He will definitely be confused over the need to take courses in the humanities or any other subject unrelated to aerospace engineering. The concepts of specialized course and general requirements are not a part of his academic training.

When interacting with U.S. faculty, the foreign student encounters a new breed of people. First off, women are part of that breed. He neither knows how to interact with them on a professional basis nor likes it. Obviously, if he has a woman instructor, he is being treated as a second class student.

The faculty in the United States are highly professionalized. In contrast, most foreign students come from areas of the world where the faculty are part-time with major professional responsibilities outside of the university. Their status is derived from accomplishments in the community rather than from the profession. The position is the award of, not the means to, achievement. Clearly, therefore, in the foreign student's mind, he is dealing with less than the best.

Then too, faculty demands in the foreign student's home country are different from the U.S. environment. We are an academic society that emphasizes an active learner role: research, problem solving, and empirical undertakings. Thus, our library collections are greater than our buildings can hold; our laboratories are well-equipped; and our teaching methods frequently require student participation. In contrast, the foreign student in the U.S. generally comes from a society that emphasizes a passive learner role: ability to memorize and imitate. Thus, library collections are small and unused, laboratories are limited, and teaching methods frequently emphasize transmission of knowledge.

In the U.S., education is viewed as a life-long process. In many foreign student's societies, it is viewed as a preparation for life. The job of their university, therefore, is to equip the student with all necessary information. Research, if taught, relies more on an intuitive approach than a scientific approach. Documentation is seldom necessary or desirable. The student is an elite member of his society representing only 3 to 10 percent of his age group. He is the authority. In contrast, in the United States the university student represents 25 to 35 percent of his age group. He is an "embryo" without status nor authority. The U.S. student is taught to "look it up." Many of our foreign students have been taught to "know it."

Yet, the foreign student will initially have difficulty obtaining high examination scores since he is unaccustomed to many testing techniques. His previous teachers probably relied heavily on essay and oral examinations, whereas in the United States he encounters heavy reliance on objective testing (multiple choice, matching, true/false and the like). He will do well if the test asks for recall or synthesis of data. He will do less well if the test asks for analysis or solution.

In regard to the learning process itself, the United States follows a tradition of placing the responsibility for learning on the instructor. If an entire class fails a course, it is the teacher's fault. To avoid such an occurrence, we establish rules and procedures such as attendance requirements, pop quizzes, review sessions, etc. But our foreign student frequently has trouble with these regulations and activities. Many come from traditions that place the responsibility for learning on the student. To him, a final course grade should reflect nothing other than a final examination grade. It is his problem if he is late for a lecture or misses a class. It is beyond the comprehension of the student that a professor would not allow a student to take the final examination just because of absenteeism.

In the same thought pattern, our university structure has developed a "closed" structure; that is, all necessary student conditions are met within the confines of the university campus. We provide the student with room, board, medical care, entertainment, hygienic needs, and, in many cases, even his alcoholic beverages. The U.S. student need not leave his campus during

his entire university career. In contrast, most foreign students come from "open" educational structures; that is, personal and even many academic needs are sought in the community. The student under this tradition feeds for himself both academically and personally. Although it would appear that our "closed" system should make it easier for the foreign student, it can be a difficult set of expectations to follow. Operation outside of the system is not conducive to academic achievement because the system perpetuates itself by punishing those who try.

Socio-Cultural Adjustment Problems

Aside from academic difficulties and differences, the foreign student in the United States is adjusting to a new culture. It has already been noted that his "entrance information" about the United States, although grounded in reality, is distorted. He has selected knowledge--and, most likely, that knowledge will tend to get him in more trouble when trying to interact with a student colleague or faculty member than if he lacked the knowledge. He is young. He is without kin, friends, and a familiar environment. He is alone. He has lost his identity. He must adjust to new food, new forms of entertainment, new ways of responding to people, and to a new life style. Even if his native language is English, he will most likely have trouble in communication and self-expression. His actions are often misunderstood because cultural clues to behavior have changed. He is confused when it comes to interacting with authority figures. The U.S. manner seems so casual with emphasis on equality. Yet, when he tries to treat an authority figure as a colleague, he finds he has alienated that figure.

Especially if he is Black or Oriental, he will encounter a form of prejudice unknown to him. He will be stared at, laughed at, and worse of all, ignored. He will most likely find people outwardly friendly, but he will have difficulty in understanding their coolness when he wishes to pursue the friendship. He finds U.S. citizens aggressive. Yet, when he tries to copy that aggression, he is rebuffed as he does not understand the norms and regulations that govern aggressive behavior in the United States; nor does he understand when aggressive behavior is acceptable, idealized, or rejected.

Customs are different in the United States than at home. Values are different. U.S. citizens define the "good," the "bad," the "right," and the "wrong" differently. Truth, for example, is relative under one set of circumstances and absolute under other sets. Sometimes truth is tentative. Other times it is definite. At any rate, truth frequently does not have the same meaning as it does under the same set of circumstances at home.

We are a letter-of-the-law people, but many foreign students come from societies that are spirit-of-the-law people. We place our trust in institutions ... in memos and other forms of the written word. Most of our foreign students place their trust in other humans. Institutions owe no allegiance. People do.

Think a minute about our behavior when it comes to traffic control. If we were to travel down a lonely street at 3 a.m. and come to a red traffic light, we would stop and wait the three minutes until the light turned green again. Even if we could see clearly that no cross traffic was about to approach, we would permit the mechanical light to control our behavior. The

foreign student might also stop, and look both ways, but he would proceed driving. He is not civil disobedient, but neither is he controlled by the letter of the law.

Our society disdains hierarchical rank so we minimize differences between each other. To many foreign students, this is a display of weakness and observing of manipulation. Thus, we often find our foreign student trying to "get away with things" or trying to go "through the back door." We say that he is taking advantage, but he says he is facing the reality of the situation. If you open the back door, it would be foolish for him not to walk through. Hierarchy and rank are important in society. They are forms of social control. He will respect them, but he needs to understand them. He is an honest fellow, but the concept of honesty may be defined differently from culture to culture.

Finally, a word about cultural shock. After about three months in the United States (just in time for his first set of mid-term examinations), the average foreign student experiences "culture shock." Simply put: following all the initial adjustments; trying his best to adapt to the new academic system and a new culture; and after only partial success and lots of failure, the foreign student breaks down both physically and mentally. He becomes depressed. He is frustrated. He yearns for the familiar. He is lonely. He often snaps back at his new culture in hate, anguish, and rejection. His mind nor body can take any more adjustment. Culture shock is serious, and it is a malady of anyone who attempts to live in a foreign culture. If we make a judgement about the character of our foreign student at this time, we will be making a serious mistake. He has had to contend with a lot of differences with the constant innuendo that our way is better. Culture shock is an inescapable illness, and our foreign student does not feel very good while going through it.

In a few weeks the student recuperates from "culture shock." He is then ready to begin anew, but after about six more months, this malady will return. Again, the same symptoms appear. Upon recuperation, culture shock will be arrested for almost nine months this time, then almost a year. Each time, the symptoms will be milder but they will reappear periodically.

Conclusion

This is a thumbnail sketch of the plight of the foreign student in the United States. He continues to come here primarily because of his country's continued interest in education as a means to socio-economic development. Because the U.S. university age population has tended to stabilize, there is a relative availability of space in U.S. universities. Thus, the U.S. is a good choice for many foreign nationals. It is perhaps not the most prestigious choice; but it is available, and it offers reliable programming.

To assist his transition and growth while in the United States perhaps the most humane thing we can do is to be aware of the foreign student's plight. Where possible, we should explain the U.S. approach and reasoning and instruct him in the academic skills necessary for academic achievement in the U.S. We always recognize the obstacle of a different language, but we seldom recognize the more serious obstacle of a different culture.

TITLE XII CONCEPT, PROGRAMS AND STATUS

Woods Thomas
Director of International Programs
Purdue University
Former Title XII Director

Thank you very much for the introduction. I am happy to be here. I was pleased when I got up this morning to note that the president-elect has really appreciated your support and arranged a little summer weather for you again. That's a good start. I found out last night when Bob Kleis picked me up at the airport that I was supposed to start the workshop off this morning. I've just been at Washington State at Pullman making a similar presentation, so I thought I could pull an Earl Butz and change the title and give the same speech again; but he's better than I am, so I'll have to give a little different speech. What I thought I might do within the title that has been assigned to me is to be a bit of a stage-setter for the major thrust of your workshop today and tomorrow. I would say in that respect that I was really pleased to see you zeroing in on this question of the quality of educational graduate programs for our students from abroad for reasons that I will hopefully get into this morning a bit. I think relevancy of education is an extremely important issue. I would suggest that it is a highly relevant kind of issue to deal with. Let me try to do about three different things in the next half hour.

I would like to try to describe Title XII in terms of the agricultural development constraints and needs of the poor countries around the world. I will also try to relate this concept of what Title XII is really all about to on-going activities under the Title XII program. And then I'll give my personal evaluation about how that program is going and what its current status might be.

To begin with, I think it is important for us to keep in mind that Title XII is an amendment to our Foreign Assistance Act. The significance of this is that as we become more and more involved in the programs under Title XII, that it's very difficult to escape the bottom line and that is that those things which universities do really must be directed in one way or another toward the problems of agriculture, food, and nutrition in the developing nations. I don't mean to imply that all of the work needs to be done within these nations. Quite the contrary--but at least the focus of what we do under Title XII needs to keep in mind and be conscious of the fact that it is a part of our foreign assistance program and that the funds which Congress makes available for these activities are based on that particular purpose. I think we want to keep this in mind as we talk about Title XII.

Secondly, I would argue that under the Title XII amendment (and I am sure most of you have read that at one time or another) that the activities which are authorized by that legislation really are not some kind of a random

selection of things which might be good or interesting to do, either by universities, by AID, the USDA or whatever. The programs and activities which are authorized under Title XII are based very much on what we have learned through time in one way or another of the very fundamental and very difficult constraints to agricultural development in poor countries. Let me re-emphasize that the authorized Title XII activities are not a number of random things that would be interesting and good to do, but they are tied very closely to what the poor countries around the world must actually do if they are going to develop productive agriculture and do something about the very difficult poverty and other development questions they face.

In addition, the programs authorized under Title XII have a very close relationship not only to that set of basic problems but also to the kinds of things in which the United States has a distinct comparative advantage in performing. The United States in this context means us: Nebraska, Purdue, Cornell, etc., because that's what Title XII really speaks to.

I think these two points are worth keeping in mind. Now let's look at a few fundamental constraints to agricultural development and progress in the LDCs around the world. Keep in mind what we all know--that the modernization of agriculture, the development of the rural sector, is indeed a very complex problem and that we don't understand that complexity in its entirety. What we do know about the agricultural rural development situation in most of the developing countries is that there are some very simple constraints that we need to help them deal with. These are the three, four or five things that constitute the major thrust of the authorizations in the Title XII Program. One of these is a very simple thing that we all know but sometimes forget or ignore. That is that in virtually all of the developing nations the one basic constraint to increased productivity is a sheer lack of the availability of technology--the kind of technology which is truly capable of increasing productivity of agriculture resources in these countries. This is the message that Ted Schultz put in his little book 16 or 18 years ago--a message that many of our development agencies, not just U.S. but multi-national as well, simply have never completely understood. That is, if agriculture in these poor countries is really going to go anywhere, there must be found ways of shifting those productions upward. And that takes technology, and as we all know, this requires research.

Few, if any of the LDCs have anywhere near the kind of indigenous research capacity required to put a technological base under their own agriculture. Think of the countries where you have been or worked in. For the most part, despite disclaimers to the contrary, that kind of human institutional capacity in these countries simply is not in place. They do not have the kind of indigenous research capacity in agriculture and related sciences to put in that kind of a technical base under agriculture. That's one point. It's a simple thing, but it's the one factor that much of our development assistance efforts in the past have tended to ignore.

A second point, and this bears directly upon the topic of your workshop, is that in almost all of the developing countries there is a tremendous lack of the kind of human capital in the right quantities that is required to

transform these traditional agricultures into modern, highly productive agriculture. Related to this, in few of these nations, if any, do we find the kind of institutional capacity to train, educate, and to form the human capital that these nations need now and will continue to need in greater quantities and greater numbers in the future. I would emphasize that this is a second, very significant basic constraint.

And third, despite rather massive efforts over the last twenty or twenty five years, most of the developing countries still do not have adequate means of providing farm level decisionmakers and others in the agriculture sector with the technology and the related kinds of information which they need to improve their productivity, their incomes, their state of well-being. We normally think of this in terms of an extension function and institutional capacities. Along with this, many of these countries lack other kinds of services from the public sector and the private sector. These are requisites to increased agricultural output, resource productivity, and incomes in these countries.

Taking those three or four points, let me try to relate these to the Title XII amendment. In the writing of the Title XII amendment five years ago, there was a very definite attempt to make the authorization in that amendment speak to these fundamental constraints and a few others that I've mentioned. So the Title XII amendment, among other things, is congressional guidance. Maybe that will change with the new Congress. But it is congressional guidance to our national development agency, AID, to do a couple of things. One of these is to revamp the kinds of programs which AID has been maintaining in agricultural development abroad for the last 10, 12 or 15 years. There was very strong feeling in a number of different quarters that our U.S. bilateral assistance program in agriculture abroad was not made up of the fundamental high pay off kinds of activities which it ought to be made up of. The Title XII amendment grew out of this, and there was in this Title XII amendment some congressional direction to AID to switch their priorities and do things which would speak to those basic constraints in foreign agriculture. It was also very straight guidance, I think, from Congress to AID, to utilize our universities in these programs to a far greater extent than it had been using us in recent years. The reason for this is straightforward. If we are going to work on the kinds of research institutional development activities, educational development activities, extension development, human capital formation and the likes in these countries, our real expertise in this nation is at Lincoln, Nebraska, or West Lafayette, Indiana, and Ithaca, New York. In addition, our AID programs in agriculture, as many of you know, had not been utilizing that talent and that expertise nearly as extensively as it did in the 50s and early 60s. There had been a major downturn in that particular aspect. The Title XII Amendment, and this hits us right where we live, is also a direct congressional mandate to our agriculture-oriented universities in this country to do one thing. That is to make the development of agriculture in the poor countries not only a legitimate mission of our universities, but one of our priority missions. In the vernacular, Title XII puts the monkey squarely on our back, and I think that all of us have a little bit of concern as to whether or not we're going to be up to that massive task because we're talking about working in agriculture

in two-thirds of the world. That takes a lot of commitment, a lot of people, and a lot of doing. But, if the Title XII Amendment is fully implemented, and it's moving in that direction in my judgement, the monkey is going to be squarely on the backs of the universities. That's a major opportunity; it's a major challenge.

There are a couple of things which the Title XII Amendment conceptionally and in an authorization sense really did. Let me speak briefly to the program content of the Title XII Amendment and that which it has generated. It is important for us in the universities to know and to remember that Title XII encompasses everything that the United States does regarding food and nutrition and agricultural development in the LDCs. That, in effect, is the whole schmear of everything we do with the poor countries. It includes, for example, the U.S. support to the International Agricultural Research Centers. It includes, of course, the support for research and the support for training and the support for in-country development assistance programs. So keep in mind that the Title XII program is not just the collaborative research program that some of us are involved in. It's not just a single country development project. Title XII is the United States bilateral assistance program for agriculture, rather broadly defunct. And this turns out to be something like 70% in monetary terms of our total developmental assistance program which we conduct on a bilateral basis, a one-to-one basis, excluding our contributions to the World Bank, the UN, etc. This bilateral program in agriculture comes out to be close to 70% of that total effort. And that, in my judgement is as it should be, for if the LDCs are going to move broadly in terms of economic development, and social progress the main engine for these kinds of changes in these countries is going to have to be agriculture. Over the last 30 to 40 years, a number of countries have tried other routes to that industrialization, and I think it's now reasonably well-established that these kinds of thrusts tend to run out of gas rather quickly. The future of the economics and the societies of these countries rests squarely, in my judgement, in terms of what they are going to be able to do with or without our help in terms of modernizing their agriculture.

Second, in a programmatic sense, Title XII does put increased emphasis on institutional development programs, assistance by universities and others in working with these countries in helping to strengthen, develop, and change in many cases their internal capacity to educate people in agriculture and in related areas. This is an attempt to speak to that one constraint that I mentioned earlier. In the long pull there is no way that these countries are going to go very far until they develop that internal ability to educate the numbers and the kinds of people that they need to develop and run a modern and highly productive agriculture. Similarly, it's an attempt to speak to the question of the endogenous capacity to conduct research. In the longer pull, I would argue that we know enough about the productivity of investments in agricultural research to know that the only long run solution is to have that scientific capacity internal to a country. That's what we have learned in our own situation: that's why we have the Nebraska Agricultural Experiment Station that zeros right down where the problems exist. These are the ones that are highly productive and have important pay offs. Similarly, in extension, a great deal needs to be done in terms of working with these countries to the degree that we might in helping them find some way to provide

that bridge between knowledge and technology on the one hand and the problems which farmers face day-by-day on the other hand. I'm not suggesting that we ought to pick up our land grant colleges and plant them there: they probably won't grow any better in that exact form than some of your Nebraska hybrids will grow in the Amazon for some of the same reasons. Institutions, like technology, tend to be site specific. But what we do need to do, if we're wise enough and if we're good enough, is to work with people in these countries. We need to devise unique ways institutionally, whatever they might be, whereby these essential functions will be provided to agriculture. As most of you know, in almost all the rest of the world the responsibility for agricultural research does not rest with national universities or other universities. For the most part it rests with national ministries of agriculture. Some of us worry about that because we tend to think of our own system, our own experience. In some of the work that we have done abroad, through the years, we've spent a lot of time spinning wheels in terms of trying to create marriages between research systems in these countries and universities, or extension systems and universities. A few of those shotgun marriages work very well. But what we did discover is that if you find a way to get the functions performed and performed well, and if you find a way to integrate them some way, that's what really matters. That's what it takes to get the job done. So there are some windmills we shouldn't tilt and others we probably ought to. As I was saying, in a programmatic sense, Title XII is placing considerably more interest, considerably more emphasis on the development of institutions in these countries. Equally on the research side, through BIFAD (the Board of International Food and Agriculture Development), and Title XII, there has been a genuine attempt over the last three or four years to increase our U.S. investments on research that has a bearing, direct or indirect, on the hard core problems of agriculture and food and nutrition in the developing nations. Some progress has now been made in these. The collaborative research support program, which I expect most of you are familiar with, is an innovative effort that has potential payoff. It's a new idea--a new approach--and it's very difficult to manage, as Bob Kleis and others will attest to, I'm sure. But it does have tremendous potential if we can pull it off. The International Agricultural Research Centers have been supported well by the United States through our Title XII bilateral programs with 25% of the core budgets of the International Centers provided somewhat on a formula basis. This now amounts to approximately 40 million dollars a year from the U.S. It looks like these Centers are heading for an overall budget of about 200 million of which the U.S. will put in about 50 million. There are some questions about this, and we may want to talk about whether or not with limited research funds one really ought to continue to pick up more and more of the international center budgets as opposed to doing other kinds of research activities. Then again, that's not all clear, but I think it's worth discussing. In addition, there is an increased emphasis for AID and Title XII to mount more in-country research activities in collaboration with scientists and institutions in these countries.

Now, I should put a footnote to this to be completely honest, and this is that the understanding and support for international agricultural research is not very high in most of the development agencies that I am familiar with.

A syndrome has run through those organizations almost since their birth whether we talk about FAO or AID or UNDP or World Bank or what have you. And this syndrome is that enough is already known, that we have the technology that's easily transferable to these countries. The problem is that farmers are indolent, they're ignorant, they're lazy, and you know this turns out to be sheer nonsense. The fact is that we do not have for very many situations the kinds of technology and related types of information that are well adapted and highly productive in these countries. Some direct technology transfer is possible, but in my judgement, it's a relatively small fraction of the total. The problem is that people who make decisions about what we do with our very limited resources for these purposes really do not understand. I'm not being critical of them: I'm being critical of us. We haven't helped them to understand the significance and the payoffs from the right kinds of investments in research. I speak from the viewpoint this morning of our international work. In my judgement, that's only a small part of a more general problem, as our Ag Experiment Station directors and others, I think, will attest. Particularly in the Congress there is not, in my judgement, any indepth understanding of the relationship between research investments and the modernization and the maintenance of a highly productive agriculture either at home or abroad.

Third, there has been programatically over the last three or four years decreased emphasis in the AID Title XII agriculture program on what I call capital transfers: for example, check writing, buying fertilizer for these countries, capital transfer and physical capital investments. When I went to Washington about three and a half years ago, I was amazed when I began to look at the way we were spending our very limited bilateral agricultural development funds. And they are very limited. I would guess that our total bilateral funds on an annual basis are about equivalent to what it costs to run this university for two years, maybe a year and a half. That's about 600 million a year. Will you settle for that? That's not very much money, you see. And yet, what we found out when we began to look at this was that AID was spending close to 70% of these limited resources in share capital transfer kinds of programs, fertilizer purchases, putting up the capital to create banks for farm credit, farm to market roads, rural electrification systems, and irrigation projects. That's where it was mostly going. While I am not standing up here to argue the capital investment isn't necessary, my point is that about everything we have learned about development clearly indicates imperically and conceptionally that the high payoff investments are a knowledge in people and not in fertilizer. And second, there are many other sources for these countries to get the kind of capital investment funds which they need. This is why we created the World Bank and the Interamerican Development Bank and the African Bank and the Asian Bank and the private sector. They're the money lenders, and yet we found that our bilateral ag development assistance program was essentially in the banking business. This is one of the very important things that BIFAD has been working on, and the data are now suggesting that it's been reasonably effective in getting these programs tilted and changed. The figures are always a little bit illusive, and ag economicsts play games with them as you all know. As nearly as we can tell, however, capital

transfer is down from 70% to well below 50% and is still declining. Those funds, in my judgement, are now being used for much more productive purposes.

Similarly, AID was off on a kick (and I don't mean to sound too critical, for there are some very good reasons for some of these things) of supporting a lot of short-run, head-on development activities in these countries. And it was a kick that I personally was very much concerned about, for they were coming very close to becoming an international welfare program. Their criterion for approving projects and expenditures were so closely tied to the short run transfer of AID development funds to income for poor people that it was close to becoming a welfare program instead of a development program. That's a very significant kind of difference. I think real progress has been made in that respect, and I think all of us who are concerned about these problems owe a gratitude to our colleagues who have worked hard and dedicatedly on the Board for International Food and Agriculture Development. They have made a major contribution.

Fourth, programatically there has been a sharp increase in the involvement of U.S. universities. I know my university is more deeply involved; I expect this one is. I spent a couple of days at Pullman this week, as I mentioned. They're far more deeply involved than they have been in many years. This university involvement is generally good. Also the Title XII amendment did recognize that by asking the universities to take on these major kinds of world-wide responsibilities that there was no way that this could be done unless the universities were sure that they could continue to meet their very substantial, irrevocable domestic responsibilities to U.S. agriculture. So, in the programatic and the fiscal sense, there has been an attempt to try to "strengthen" universities so that they might take on both very significant responsibilities. The strengthening grant is made available to universities to help in some small way to do this. Equally some of the grant and contract formats were materially changed from tradition to allow universities the kind of flexibility to perform both internationally and domestically and to do it well. The grant format, for example, for the research support program (at least from my viewpoint as an International Director at Purdue) is a good model in the sense that it is a five-year grant. It is reviewed every year, and it's rolled forward so universities are always dealing with a four- to five-year planning horizon. In addition, there is two-year money up front so our people are dealing with quite certain funding for two years. Again, that's rolled forward each year, so we're in pretty good shape in terms of these kinds of monies. It's much better than we've ever had from AID before, and I suspect much better basically than some of our other outside grant structures in that it does give some longevity, some long termness, to them.

Let me make some observations, and maybe we can come back to them. About the status of Title XII--where is it in this process? My observation is that the whole Title XII concept is gradually gaining fairly broad based acceptance: in the Congress, in the State Department, in AID, in our AID field missions, and with LDCs.

Second, we have the mechanisms that the Congress set up to manage and promulgate Title XII: the Board for International Food and Ag Development,

the Joint Research Committee, our Title XII institutional representatives, and the like. These are pretty well institutionalized at this time. One of the signals that I'd pick up now is that when something comes up, our colleagues in AID ask the question, "Come, what will BIFAD think about that?" That's a good sign. At least they know it's there, and they're working with it.

My third observation is that AID programs, the traditional ones, have been jilted and are being jilted in many of the right directions, as I have indicated earlier. While we still have a long way to go, in my judgement, they're certainly headed in the right direction.

The support money for research is most inadequate. I don't know exactly what the figures are now, but out of the total AID ag development budget something like 2% goes to research. That's not very much dough, given the technical and related problems in these countries.

My final observation speaks precisely to your workshop here. I think our programs for investing in the human capital formation of people from the developing countries is totally inadequate. Just ponder for a moment the number of well-trained agricultural scientists that modernizing African agriculture will require. Think about that. And consider the needs of Latin America and parts of Asia. I have argued personally and BIFAD has argued corporately with AID that they have completely underestimated the returns from investing through formal educational programs. AID has not recognized the substantial payoff in the long-term from these kinds of activities.

I would like to emphasize one final observation. This massive training job is not going to happen without people. We're not going to have effective national agricultural research systems in these countries unless we train a tremendous number of ag research people. We're not going to have effective higher education systems in these countries unless we train a lot of people. If one looks at the kinds of countries which have progressed agriculturally in the last 30 years, every single one of them has found some way or another to invest in that human capital--to develop that human capital. All the rhetoric about all other kinds of things doesn't mean very much until we face up to that problem.

As a final word here, let me say two things. One, that as I have roamed around the world for a long time, I have picked up a considerable amount of criticism here and there about the way in which U.S. universities have trained agricultural scientists from the developing countries. My judgement or my observation comes in two parts:

1. Our universities have done a remarkably good job despite what critics say. When I travel through the Latin American countries and look at the competent people throughout those systems now, I recognize that they were all trained at Nebraska, or Michigan

State or Purdue, or Cornell. It's been a remarkable kind of input.

2. Now having said that, I would also argue that there are ways in which we can do it yet better, but there's always room for improvement. That's what you're going to be talking about this week in this workshop on "Improving Graduate Programs for Developing Country Nationals."

IANR COMMITMENTS TO INTERNATIONAL PROGRAMS

Martin A. Massengale
Professor of Agronomy
Vice Chancellor
Institute of Agriculture and Natural Resources
University of Nebraska

It is a pleasure for me to be here today and to participate in this conference on improving our programming for developing country nationals. I personally feel a strong commitment to international programs, and I commend all of you for being here and participating in this important event.

First of all, I would like to say that to me the title of this workshop does not imply that our programs are deficient. The title does imply, however, that improvements in our programs can be made. I would hope that all Institute programs are ever improving to meet the changing needs of our society. We can be justly proud of our participation in the development and growth of students from other lands just as we can be proud of many foreign students who have studied here.

This morning you heard about the professional, educational, and socio-cultural adjustment needs of our international students. This afternoon and tomorrow your program will focus on our responsibilities to provide for those needs.

Various components of the Institute of Agriculture and Natural Resources are and have long been involved in programming with international modifications. That is as it should be. In recent years and particularly since the establishment of our International Programs Division, our involvement has been increasing in many areas. That, too, is as it should be.

Weather conditions around the world, various economic policies, the growing need and dependence on international trade, and the increasing degree of interdependence among nations are factors that affect all of us and perhaps more so in 1980 than ever before in our history. There can be little doubt that these factors will continue to play a significant role in our world society as we move toward the 21st century.

Forecasting the future is at best a hazardous undertaking. But all indications are that the interdependence among countries will continue to increase. As with any public agency, the Institute and the entire University of Nebraska family has an obligation to examine and attempt to understand the ramifications of the direction and magnitude of potential change.

There is, for instance, a great deal of debate and uncertainty about our ability to feed substantially more people in the remaining two decades of this century and the centuries beyond. There is no doubt that the size, deployment, and age composition of the world population have important implications on the future demand for food. The United Nations median estimate of world population in 1980 is 4.37 billion people with 5.28 billion projected by 1990 and 6.25 billion in the year 2000. These numbers reflect an increase of nearly 50 percent in two decades. United Nations' estimates further suggest that an increasing share of the world's people will be living in the developing countries.

Some who have studied world population trends and food potentials are not very optimistic. Of course, this is not new. More recent studies, such as The Global 2000 Report, depict disastrous conditions that are likely to develop if changes are not made. Other studies indicate that there is potential for improvement and that future food deficits might not be as severe as some believe IF some changes are made.

As Under Secretary of Agriculture Dale Hathaway said just last month, "The period ahead looks grim for many developing countries. It is clear that in order to meet the projected demand the developing countries will either have to increase their food production by at least 75 percent over the next 20 years or find ways to import immense quantities of food."

The growth of agricultural trade particularly in the last two decades has been spectacular. Agricultural trade has become significant not only to our farmers with the produce of one out of every four acres going abroad but also to our nation's balance of payments and certainly to the people of importing countries. There is every indication that the patterns of trade we are seeing will continue. The recent signing of the U.S.-China Grain Agreement is but one example of an expanding world trade system.

We all know that there are some challenges to trade expansion including political, social, economic, and technological challenges. There have been declines in per capita food production in many developing nations; many developing nations lack funds to purchase food supplies on an open market; and there is a potential worldwide increase in protectionism.

It would appear, then, that more emphasis must be given in the developing countries to increasing domestic production and to move toward self-sufficiency. Most often mentioned of the basic requirements for the attainment of that self-sufficiency in food production are an increase through higher yields, an expansion of the agricultural land base, and the reduction of crop losses due to pests and spoilage. Those three goals are not new to anyone here today. They are goals that fit the agricultural requirements of Nebraska as well as the developing countries of the world.

They are goals that have been successfully met although there is still room for improvement in our country. Our agricultural prowess is, indeed, the envy of the world. But we as a nation cannot afford an isolationist attitude. We are part of the world community.

Closing the gap between world food production and food needs is a critical requirement of the future. The world, Nebraska included, simply cannot afford the polarization and tension this gap creates. There can be no lasting peace unless people are fed at reasonable levels. As our history texts remind us, hunger is the stuff out of which revolution is born. Consider if you will that an estimated one billion people in the world suffer from some degree of malnutrition, that as many as one-half million people may be dying annually from starvation, that millions of people are afflicted by diseases that may be diet-related, and add to that the probability that we will be confronted in just two more decades with feeding 50 percent more people than are now living on earth.

Food supply is already a crisis situation in many nations. There well could materialize in the next few decades a world food crisis that could make the energy crisis of today insignificant.

The development of solutions to food production problems around the world demands a tremendous investment in human capital. Increased production in the developing countries requires the educational development of their citizens. A shortage of well-trained experts in the area of food and agricultural sciences is a potential time bomb. Unless there is an adequate number of these experts throughout the world, our total food and agricultural system is threatened. That is why we have an International Programs Division in IANR. That is why we are involved in research, teaching and service activities that have implications beyond the Missouri River on the east and the Colorado and Wyoming borders on the west.

I won't take time to go into detail about the numerous research and service projects our staff is involved in on the international level. You are here today to discuss improvements in the training of future leaders for many of the world's nations. The concerns I mentioned earlier need the leadership that can only be provided by trained men and women. This conference is designed to help each of you become even better than you already are at helping students from other lands develop their own capabilities.

Many of the international men and women who are on our campus today will be agricultural leaders in their own countries tomorrow. The Institute of Agriculture and Natural Resources, as well as other units of our University and other universities, have an obligation to provide the best possible educational environment that we can. As you heard this morning, the needs of students from other countries are perhaps a bit more complex than the needs of our own Nebraska students. But they are needs that must be met if the students of today are to become effective as the leaders of tomorrow.

IANR does, indeed, have a commitment to international programs. In my opinion the training of international students coupled with research and service programs will have a significant bearing on the future of mankind.

GRADUATE COLLEGE RESPONSIBILITIES FOR STUDENT NATIONALS
FROM DEVELOPING COUNTRIES

Henry F. Holtzclaw, Jr.
Dean for Graduate Studies
University of Nebraska-Lincoln

The University of Nebraska-Lincoln has 427 foreign graduate students from 55 countries in the fall semester, 1980-81. This represents 12% of our 3520 graduate students. The total number of foreign students, undergraduate and graduate, is 767, representing 3 1/3% of the 23,000 student total at the University of Nebraska-Lincoln. Some of the foreign students, though not all, of course, are from developing countries.

For graduate students, numbers from the various countries, listed in order of decreasing numbers, are:

Taiwan	100	Australia	4	Algeria	1
Iran	50	Bangladesh	4	Botswana	1
Nigeria	38	Ethiopia	4	Gambia	1
Iraq	25	France	4	Honduras	1
India	22	Lebanon	4	Italy	1
Hong Kong	15	Mexico	4	Jordan	1
Korea	14	Sudan	4	Lesotho	1
Libya	14	Afghanistan	3	Malawi	1
Japan	9	Chile	3	Netherlands	1
Canada	8	Dominican		Rhodesia	1
Malaysia	8	Republic	3	Spain	1
Saudi Arabia	8	Indonesia	3	Sri Lanka	1
Tanzania	8	Egypt	2	Tunisia	1
Thailand	8	Bolivia	2	Sweden	1
Philippines	6	Kuwait	2	Uruguay	1
Brazil	5	Morocco	2	Yeman Arab	1
Germany	5	Peru	2	Zaire	1
Kenya	5	Sierra Leone	2	Unknown	1
Pakistan	5	Turkey	2		

By departments or degree areas, the numbers of graduate students, again listed in order of decreasing numbers, are:

Agronomy	38	Electrical Engineering	8	Geology	2
*Business Admin	33	Chemical Engineering	7	Philosophy	2
Computer Science	29	Modern Lang and Lit	6	Adult Education	1
Chemistry	27	Human Nutri and Food Serv Mngt	5	*Community and Human Res	1
Economics	24	Life Sciences	5	Elementary Education	1
Civil Engineering	23	Educational Administra	4	Health, Physical Education and Recreation	1
Animal Science	22	Home Economics	3	History and Philosophy of Education	1
Mechanical Engineering	21	Human Develop and the Family	3	Journalism	1
Industrial and Mngt Systems Engineering	20	Plant Pathology	3	Mechanized Agriculture	1
Agricultural Economics	19	Sociology	3	Music	1
English	13	*Administration, Curric and Instruction	2	Psychology	1
Agricultural Engineering	12	Dentistry	2	Speech Pathology and Audiology	1
Architecture	12	Education	2	Textiles, Cloth, and Design	1
Mathematics	11	Educational Psychology	2	Vocational Education	1
Physics	11	*Engineering	2	Undeclared	5
Horticulture	10	Engineering Mechanics	2		
Political Science	10	Entomology	2		
Food Science and Tech	9				

*Doctoral Degree area; additional foreign students are in departments of these areas in Masters Degree programs.

Most, it may be noted, are in the Sciences. Very few are in the Social Sciences or the Humanities.

Responsibilities of the Graduate College to students of developing nations are basically the same as for all other students, both foreign and domestic, except that the need for our time in the Graduate Office is often greater for foreign students than for domestic students. We expect this and are happy to spend that extra time. When special problems develop, we work with the student on an individual basis. A very significant part of our time in the Graduate Office is devoted to talking to individual students who come in with problems.

The Graduate Office responsibilities include:

1. Admission of graduate students, including checking of credentials, transcripts, English capability, and financial requirements.
2. Counselling.
3. Monitoring graduate programs and requirements.
4. Fellowships and Assistantships.
5. Certification and granting of graduate degrees.

In all of these responsibilities for foreign students we work closely with Peter Levitov and Linda Becker in the International Educational Services Office of the University.

The MIAC Program represents a case in which, for developing countries, we have, in consort with other Universities in our area (Iowa State University, University of Missouri, and Kansas State University), discussed the possibility of some of the students doing their Ph.D. research in their home countries. This has the obvious advantage that the students, who are principally in Agriculture in this program, can do their research under the climatic and soil conditions of their country. The students would be in the United States at the degree-granting institution for all of their course work and for all other Ph.D. requirements, including the comprehensive examination, other than dissertation research. Academic standards must remain high. Providing a "cheap" degree renders no service to either the student or the University. Strong research supervision and availability of completely adequate research equipment and facilities, library materials, computer time, etc., must be assured. Research supervision would involve a combination of supervision of professors in the home country of the student and U.S. professors from the MIAC institutions, including each student's own research adviser, who would travel to the other country at prescribed intervals. In some cases we believe this will be feasible. Perhaps even the final oral examination in certain select cases may be administered in the student's home country, although we believe a preferred plan is for the

student to return to the United States for a month or six weeks or even one semester after the research is essentially completed. This latter plan provides the student with concentrated direct contact with his research adviser and other faculty and with library resources and research equipment at the degree-granting institution during the final writing stages of the research dissertation.

These matters are under continuing constructive discussion, and programs are underway or contemplated for students from such countries as Tunisia, Morocco, and Sri Lanka. I mentioned the MIAC program as one specific example of our efforts to consider special innovative ways of handling degree programs for students from developing countries while maintaining the complete integrity and academic standards of our graduate programs.

A main responsibility in our work with student nationals of developing countries, but in fact actually with all students, is to be sensitive to the problems of these students and to be willing and happy to take the time to help them meet and solve those problems.

INSTITUTIONAL RESPONSIBILITY IN TRAINING GRADUATE STUDENTS
FROM DEVELOPING COUNTRIES

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"Institutional responsibility" in this context is an interesting topic, the more so because the preceding speaker, a Graduate School Dean, might be considered to have covered the entire scope of institutional responsibility in his presentation. I will concentrate my emphasis on institutional factors other than the Graduate School (College) per se.

To me, the graduate training of developing country (DC) nations should differ only in particular, and not in general emphasis, from that of other graduate students. More problems arise from attempts to treat the DC student as a widely different person than when he or she is regarded as another individual member of a general group. True, this DC individual probably does differ from the U.S.-trained student in some significant respects. Very likely, the DC student will have had stronger training in some areas and much less in others than the average U.S. student. Often, English language competence is a problem. In many cases, the reason the DC student is coming to a U.S. university for training is rather different from the rationale which would have brought the U.S. student to graduate work.

The most important initial institutional responsibility, however, is to de-emphasize the differences and to quickly bring the DC student into a well-oriented, comfortable situation as a normal graduate student.

This process begins with selection of the student and his admission to graduate work. This is a crucial process and one in which responsibility to the student and to the institution itself is very high.

I believe that specially-trained admissions officers, familiar at least with the general differences between U.S. and other educational institutions, are imperative. Such admissions personnel need to work in close harmony with academic department heads, professors who may be recruiting or will receive DC graduate students, and international program administrators who have major roles in bringing DC graduate students into the U.S. system.

The key feature is the need for unbiased, professionally sound evaluation of the DC student's credentials and preparation for graduate work. The admissions decision is a difficult task and one in which it is easy to lean toward either laxity or undue severity.

Interacting strongly with this process will be--and should be--the recipient department and major professor. We could spend hours here

on "horror stories" or "good examples" of departments and/or professors (not at Nebraska, of course!), ranging from those who admit DC students more or less indiscriminately to those who won't take a student from the developing world. Central to this problem often lies the matter of "quotas," designed to "maintain balance" in a department's graduate training program, or even that of a given laboratory or professor.

I have had a good deal of sad experience with attempts to control the proportion of foreign to domestic graduate students, and so on, and I regard all of these I have seen as disasters to good educational procedure. Some departments or professors may well need heavy proportions of DC students; for others, the need for such students may be rare.

At this point, I'd like to advance a piece of philosophy for what it may be worth. The graduate training process is a complex interaction between the needs of the student and the capabilities of the department and its staff to meet his training needs. Certainly, departments and staff needs, too, and the student has capabilities which, properly used, can enhance the department's stature and capabilities. But, a student-oriented overall program is more likely to produce satisfactory results than is an attempt to structure rigid, institutional frameworks that a student may or may not fit.

This leads me to believe that departments and professors who expect to be involved in graduate training of DC students certainly need some personal and ongoing involvement with developing-country problems.

Before elaborating on this, I'd like to treat the vexing question of English language competence. There is no way around the fact that our classes are conducted in English. Reports and theses are written in English, and the student isn't going to do well unless he has reasonable competence in the language. It also is a fact that a high proportion of today's DC students have not had good preparation in English before coming to the U.S., and thus are severely disadvantaged in their graduate studies until this deficiency is corrected.

After many years of experience in dealing with this problem, my conclusion is that any U.S. university expecting to have significant numbers of DC students must make available concentrated, effective instruction in spoken and written English if it is to give the DC students a fair chance at success. This is an institutional responsibility which does differ from the responsibility to U.S. students, but I see no acceptable alternative to it.

Finally, there is the choice of appropriate courses and training programs. This is a very broad topic with all kinds of ramifications. Many examples of good and bad fit to the student's true needs could be given. Suffice it to say, the institution--particularly the department and major professors--has a fundamental responsibility to the student to bring him at the conclusion of his graduate training as near as possible to the proper objective for which he undertook graduate study. In most cases, this may well be some sort of compromise between the specific

objectives of the student, the U.S. staff, and the student's home government or institution. But the principle should be that the training should lead toward such an objective, and the institution should endeavor to insure that appropriate actions are taken to bring this about.

In regard to the eight U.S. institutions participating in INTSORMIL activities, I have given some thought to the question of INTSORMIL's institutional responsibility. We haven't done much along this line yet, but it is a question we must face. Later speakers in this conference will cover a host of topics related to this kind of concern --where the student will do his research, what the research should be, how does it fit the overall program, and so on. To repeat, the principle is to match the students' needs to the institutional capabilities. If we do this, we won't go far wrong. This will call for both close planning and a good degree of flexibility--both by the student and the training institution.

I have every confidence that the system works and that through our collective efforts our institutions will meet their responsibilities to DC students and others as well.

STUDENT PROGRAM RELEVANCE TO LDC NEEDS

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Cornell University

The U.S. university system serves the needs of this country for educating many people in many fields of study: people prepared to take their place in a highly developed, relatively sophisticated society in which science and technological developments are at the most advanced stages. How well are these U.S. universities prepared to educate the student from a developing country where traditional practices tracing back a thousand or more years are still common and where limited resources restrict economic growth and development? How relevant are the program offerings to the needs and expectations of the students who come from these developing countries? What can be done, should be done, or has been done to provide relevance?

The U.S. universities have made significant contributions in the past through assisting developing countries in institution building projects that have resulted in the establishment and growth of colleges and universities in these countries. Most countries claim one or more quality undergraduate institutions. Graduate education programs continue to expand, and the number of institutions offering masters or doctoral programs increase each year. The programs are considered relevant to the country because courses reflect the domestic situations including social organizations, economic structure, physical resources, climate, plants and animals, and the problems of the people of the country. To the extent possible, it is highly desirable to educate students from these countries in their own institutions, or at universities within their region. Programs are relevant, and the cost of education is much lower than in the developed countries.

Selected students, however, will continue to go abroad for advanced education. This provides an educational infusion from the outside for those who will become professors at universities in their home country. Studying in a developed country does provide an opportunity to explore advanced scientific methodologies and technologies. The U.S. universities will have a continuing role in the education process of students from many countries. Contributing to the development of human resources is one of the most useful contributions we can offer to these nations. The relevance of programs offered will be one factor in the decisions of students and sponsoring organizations in selecting universities for graduate education.

The principal objective of an M.S. or Ph.D. program is to provide an individual with a sound basic education in a discipline so that the individual has a knowledge of the discipline, including principles, tools and techniques for research, and the interpretation of research results and problem

solution. These degrees are research oriented and are primarily for those whose future careers are to be research scientists or educators. Other graduate programs are professionally oriented.

Some inherent problems exist in preparing students who will be returning to developing countries. U.S. scientists rely on expensive, sophisticated equipment which requires skilled technicians to operate and maintain, and often special facilities including air conditioning and vibration-free buildings. These are not always available in the LDCs and may prove to be a major frustration for a new scientist who has been trained to perform research with complex instrumentation.

Another problem is the diversity of expectations of the graduate program. The student has a set of expectations, the sponsoring organization may have another set, and the student's advisor and the university may have other expectations. How can these be brought together into a common set of expectations, including relevance of the program to the future career of the student?

A number of things have been done at various institutions to improve the relevance of graduate programs for students from developing countries. These include modifying course content to include examples from countries other than the U.S., establishing new courses with special emphasis on the LDCs, encouraging professors to gain experience abroad so that they understand more thoroughly the needs of students from other countries, and providing opportunities for students to do thesis research in their own country or a country with similar situations.

The first requirement is a commitment by an institution to make change. This includes a commitment by faculty and administration. Faculty must be prepared to modify courses or set up new ones, to take advantage of opportunities to gain experience abroad, and to recognize the special needs of students from abroad. Administrators must be prepared to acknowledge the international program with appropriate financial and other support. New courses cannot come from simply adding to the present load of faculty. Adjustments must be made as appropriate. Institutional support for a coordinating mechanism for international programs is another example of administrative support.

Courses at U.S. universities draw upon examples within the country and may be totally irrelevant to countries in the tropics. There are differences in climate, soils, crops, livestock, availability of inputs, marketing systems, general economic and social conditions, and other factors. Special courses to focus on the situation and problems of developing countries are of great benefit to students from abroad and also U.S. students who have interest in international careers.

In 1978 the National Association for Foreign Affairs (NAFSA) made a study of "The Relevance of U.S. Graduate Programs to Foreign Students from Developing Countries." They sent questionnaires to 93 graduate schools in the U.S. and received responses from 44 universities and 124 faculty

members, including engineering, physical sciences, social sciences, and professional schools including agriculture. One question related to changes in course content to make the courses more relevant. About one-third of the faculty responded that some changes had been made. One expressed concern was that full professional education must be provided and that courses not be watered down.

A number of U.S. institutions, including the College of Agriculture and Life Sciences at Cornell, offer special courses dealing with the tropics. Interdisciplinary courses are also important for students from abroad. These courses provide an opportunity for students to examine problems from the perspective of several disciplines and to recognize that complete problems require inputs from scientists from more than one discipline. These courses demonstrate how a team approach is a valuable method for problem solving.

Students from other countries can be encouraged to prepare papers required in various courses on subjects pertaining to their own country. Some students carry data from home or have access to data that can be analyzed and used for course papers.

The chairman of a student's special graduate committee has a major influence on the course programs for the student and on the relevance of the program. Faculty with experience in a LDC and a knowledge of the special problems, institutional organization and operation, facilities, cultural and economic situation are in a more favorable position to provide guidance to students in setting up a relevant program of study. Many of the faculty with experience abroad are tenured faculty who participated in the institution's development programs of the 50s, 60s and early 70s. The number of faculty with experience in LDCs has declined through retirement. An institution with an international commitment needs to encourage young faculty to get experience in developing countries, even if these are only short-term visits. The Title XII Strengthening Grant provides such opportunities.

Relevant research can be provided for many students through arrangements for graduate students to do their thesis research in their own country, or at another location with similar climatic and other factors.

In the NAFSA study referred to earlier, 40% of the faculty responding indicated that they had allowed some of their Ph.D. candidates to do thesis research abroad. The proportion was lowest among the engineering (14%) and physical scientists (12%) and the highest among the social sciences (51%). Average time abroad was six to twelve months. The greatest concerns were with problems of communication between the faculty member and the student and the high cost.

Experience at our institution has shown that it is important to make arrangements with a scientist abroad to be available for consultation with a graduate student and that the student have a linkage with an institution and have access to appropriate facilities as required by the nature of the research. The problem investigated should have relevance to the home country.

The scientist abroad should be involved in the initial planning of the project to assure continued interest and availability for consultation. The major professor should plan to visit the student at least once during the course of the research if this is at all possible.

Thesis research abroad is more costly because of the travel and generally because about an extra year of graduate study is involved. But the payoff has been high for many individuals who quickly developed strong research programs at home following the completion of the degree requirements. U.S. students with international career interests have also participated and benefited from thesis research abroad.

Some disciplines have modified the thesis research abroad program. They may require that part of the research be done in the lab at the home institution and part in the field. The concern was that a student needs adequate training and experience in the laboratory to be well-grounded in the discipline.

One of the questions posed earlier related to how well students anticipated their goals and expectations and how the expectations of the graduate program for the student, faculty member and sponsoring agency can be brought to a common understanding and agreement. One of the questions included in the NAFSA report related to how well the students conveyed their special academic interests. About two-thirds of the faculty said they did to a degree, but in general there is a need for improvement. Once again, faculty experience abroad could be of great help in assisting in this articulation during the early stages of a graduate program.

The final test for relevance may be a measurement of the performance of individuals in the years following their graduate study. How well prepared were they to take on their new responsibilities at home? What contributions have they made to their countries? This may also be a measure of the calibre of the individual and the quality of the graduate program, but the relevance of the education can also claim part of the success.

DEPARTMENTAL RESPONSIBILITY IN
DEVELOPING A GRADUATE PROGRAM TO FIT THE
PROFESSIONAL NEEDS OF THE LDC NATIONAL

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Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln

The Department Head or Chairman has the following two separate roles to play in developing a graduate program to fit the needs of LDC students:

1. A role as a member of the graduate faculty.
2. A role as unit administrator.

While these two roles are hopefully not in conflict, they are distinctly different.

I believe that the importance of this difference is pointed out by a story I heard about a past president of a major university who in addressing the faculty made a reference to "the role of the faculty in the university." He was quickly reminded that the faculty are the university. I agree in principle with this position except that I would broaden it to indicate that "the faculty and students" are the university.

I would hope, however, that the faculty would recognize that many administrators of academic programs do have a dual role--as a fellow faculty member and as an administrator.

I would like to first discuss the role of the department head as a fellow faculty member. In this regard we need to keep in mind that there are certain areas of the graduate program that are indeed faculty matters and that the unit administrator's input into these areas is as a faculty member--not as an administrator with final authority.

Some of the more important areas or aspects of any graduate program that I would classify as being faculty matters are:

1. Establishing and maintaining high academic standards including admission standards, curriculum requirements, and research requirements for the M.S. and Ph.D. degrees.
2. Maintaining high standards for all students through the screening of students for admittance into the graduate program, approving of advisory committees and serving on M.S. and Ph.D. advisory committees.

I do not want to dwell on the responsibilities of the faculty member in improving graduate programs for LDC students, for this either has been or will be discussed by others in terms of the role of the graduate committee chairman and the role of the advisor. I would, however, like to take the liberty as a member of the graduate faculty to emphasize one point concerning foreign graduate student education that I feel strongly about.

I feel strongly that the same M.S. and Ph.D. standards should be maintained for foreign and domestic students in terms of their learning and applying the basic principles of the scientific process. That is, they should have to apply principles of:

1. Observation.
2. Developing an hypothesis on the basis of that observation.
3. Testing that hypothesis, using well-designed experimental procedures.
4. Drawing definitive conclusions concerning the validity of the hypothesis on the basis of the experimental results.

I am concerned that there is a tendency on the part of some advisers to feel that students from developing countries should not be expected to adhere to the rigors of the scientific process. Rather, they may tend to let them carry out a previously designed experiment or part of a larger experiment with the hope that they will pick up an appreciation for the scientific principles from association or experience. Or perhaps they feel that it is sufficient for the student to learn the experimental procedures and an appreciation for the hard work involved in conducting research. Others may allow the student to avoid the discipline of developing a testable hypothesis by allowing them to conduct a "survey study" in hopes that the results will lead to some definitive conclusions.

Let me be quick to point out that I am not recommending that students from developing countries should necessarily do the same kinds of research for their M.S. and Ph.D. thesis problems as domestic students. I recognize that they will be faced with more applied, and in the case of agronomy, field-related problems within their own countries than will many of our domestic students. Accordingly we should give them as much practical experience as possible in actually conducting research dealing with those kinds of problems.

However, this does not preclude requiring that they approach research in these areas using the basic scientific principles outlined above. It is equally important that these principles be used in applied as in basic research since it is very difficult to make a definitive contribution in the applied research areas due to the large number of variables involved, many of which are difficult to control. Any experiment that is designed and carried out should have the potential of excluding at least one possible variable.

While we may hopefully give students from developing countries the kind of experience that they can use back home, it is impossible to anticipate the exact problems they will encounter. This makes it even more important that we educate them as scientists, able to address in a logical manner any problem they might encounter.

Now I would like to discuss the possible ways the Department Head or Chairman can--in the role as an administrator rather than in the role as a member of the graduate faculty--help develop graduate programs for LDC nationals. Lest I be misunderstood or my remarks appear to be too negative, please keep in mind that we do have a strong graduate program for foreign students in the Department of Agronomy. We have about 44 students from over 15 different countries, many of which are developing countries.

I would first like to define what I feel are the basic responsibilities of a department head or chairman and then see where helping develop the graduate programs for students from LDCs fits in with these responsibilities.

The department head has a wide range of responsibilities which I would group into the following four categories:

1. Working with faculty in establishing the goals and objectives of the department.
2. Recruiting faculty and obtaining other resources needed to achieve established goals.
3. Establishing and maintaining an organizational structure for effective utilization of these resources.
4. Maintaining an atmosphere that will motivate faculty and staff toward achievement of goals.

Now let's examine where the development of graduate programs for students from developing countries fits in with these responsibilities:

1. Establishing goals and objectives.

Like other departments within the Institute of Agriculture and Natural Resources at the University of Nebraska, the Department of Agronomy does have a clearly defined set of goals and objectives which are revised and updated regularly through the comprehensive review process. The fact that we have a two-day conference aimed at improving graduate programs for LDC students implies that having a strong graduate program for foreign students is a desirable objective. Yet Agronomy does not have this as a clearly defined goal, and I wonder if there are any other departments in IANR that do.

This is not surprising when we consider that it takes resources to achieve most goals and that we have had essentially no long-term resource commitments for support of international programs at the state level, including graduate programs for foreign students. Essentially all of our resources, including both personnel and operating support, are fully committed to state and federal teaching, research and extension programs.

Is it realistic then for us to set up a goal establishing a strong graduate program for LDC students when in fact our resources are 100 percent committed to other programs and with today's accountability, we are even more formally held responsible for these commitments?

With the increasing accountability and pressures on existing resources I am convinced that there will have to be additional long-term commitments of resources to international programs before we can establish specific goals and objectives for expanding our efforts in helping the developing countries in general and in significantly

expanding our graduate programs for students from the LDCs in particular. These resource commitments are going to have to be such that we can hire additional professional staff since our present staff is largely committed to current state and federal programs. I personally feel that such an added commitment to international programs needs to be largely a nationally funded effort. We are beginning to get such a commitment through our Title XII programs. Perhaps it is also time, however, that the individual states begin to more formally acknowledge the benefits to be gained from involvement in international programs as well.

The fact that we have a large foreign student involvement in our state-supported research programs reflects the fact that there are areas of mutual benefit at the state level. Perhaps Nebraska, like a number of other states, is somewhat unique in that our climatic conditions involving frequent periods of high temperature and low moisture stress during the crop growing season are similar to those for a number of LDCs. As a result we share many of the same challenges in crop production.

2. Faculty recruitment and obtaining necessary resource support.

The quality of any graduate program is dependent on the quality of the faculty. One of the main roles of the department head is to recruit and keep the best faculty members possible in the areas of the established goals and objectives of the department.

Unfortunately, however, we have not had long-term commitments to international programs which will allow us to recruit faculty members whose major interest is in this area. As a result, we by necessity recruit faculty members whose training and interest are oriented toward state and federal programs. As already indicated if we are to significantly expand our programs for the LDC countries, we are going to have to have long-term funding commitments for these programs. Hopefully, Title XII programs will provide funding for this kind of commitment.

The department head can and should help in obtaining support for achieving the goals and objectives of the department. Again, however, most long-term support has been for state and federal programs. Any short-term support then must by necessity be consistent with the longer-term programs. While there has been in the past and continues to be significant short-term support for international programs, such support will not be most effective until there is a long-term commitment to international programs as well.

3. Maintaining effective organizational structures.

While the general administrative operations of a department cannot directly contribute toward the quality of graduate programs for LDC students, it likewise should not detract from it. The administrative staff of the department should be responsive to the needs of foreign students and be willing to assist them in any way reasonably possible.

4. Motivating faculty and staff.

Although it is an elusive and difficult area to define, I feel that creating an overall atmosphere which motivates faculty and staff toward greater productivity in achieving established goals is one of the greatest challenges and opportunities of a department head.

Motivation has been defined as "inducement or incentive to increase the rate, frequency or duration of desired performance." Three conditions, I feel, are necessary before such motivation can occur. A faculty or staff member must:

- a. Know what is expected (goals must be established).
- b. Must be able to do it (must be qualified for the job).
- c. Must know what is in it for him or her.

Thus, if we are to have a strong graduate program for students from developing countries, this must be a recognized goal; we must have faculty members qualified to carry out such a program, and involvement in this area must be recognized in the reward system.

It can be argued that establishment of the three conditions already listed are motivators in themselves, and this is no doubt true. However, given these conditions, I feel that a department head has a number of tools which can be used in motivating faculty and staff. Such tools or "motivators" are typically divided into two classes, rewards and punishments; i.e., a positive vs. a negative approach.

The negative approach, such as criticism, negative statements or disciplinary action, is sometimes necessary to stop unproductive or disruptive behavior, and it does usually get immediate results. However, it should be used sparingly, for it does not address or eliminate the basic cause of that behavior and does not in itself lead to more effective solutions. For "punishment" to have its greatest positive effect, it should be followed immediately by more positive steps or steps aimed at reducing or eliminating the non-productive behavior on a permanent basis.

It has been suggested that while the negative approach cannot always be avoided, positive reinforcement should be used over punishment in the ratio of from four to ten to one. Therefore, if a department head is to motivate faculty members to strive toward developing the most effective graduate program possible for graduate students from developing countries, efforts and accomplishments in this area must be recognized and reinforced. Such recognition and/or reinforcement can consist of such social or intangible "tools" as praise, attention, giving public recognition, granting special requests, etc. These tools are especially valuable in that they usually cost little, if anything, have long-term reinforcement value and exist in an unexhaustible supply. Alternately, such tangible or physical reinforcement as awards, gifts, formal commendations and money can be used effectively and are of importance.

However, these are generally limited in supply and are often awarded to one employee at the expense of another.

In summary, a department head or chairman can play an active role in the development of a graduate program to fit the professional needs of the LDC national through the role as a member of the graduate faculty and the role as a unit administrator. We must remember, however, that these are two separate and distinct roles. We must also recognize that today as in the past most of our resources, including faculty time, are essentially fully committed to ongoing state and federal programs. Until the time comes that we have long-term commitment of resources to international programs, our graduate programs for students from LDCs must complement our other state and federal programs. Title XII programs have the potential for providing the long-term funding commitments which will allow us to bring in professional staff with international program interest and training. In the meantime we need to develop the strongest possible graduate program for students from the LDCs that is consistent with our ongoing programs.

GRADUATE COMMITTEE RESPONSIBILITY IN
DEVELOPING A GRADUATE PROGRAM THAT FIT THE
NEEDS OF THE LDC NATIONAL

Dale G. Anderson
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Considerable irony exists in my being asked to discuss the appropriate structure for graduate studies programs since this is an issue which has consumed a large amount of staff time in my department over the past six months or more. I'm not yet sure of the outcome. I'm not sure whether the result will be good, bad or neutral or whether we will ever finish the task. I do know it has been a rather trying exercise.

A good basis for evaluating the needs of the LDC national may be the perceptions of our former students. Results of a recent survey of LDC alumni of U.S. universities supply some of these perceptions.¹ The survey, which was made by the American Agricultural Economics Association, was limited to former LDC students of U.S. agricultural economics programs, but the results may have broader application. These former students were asked to address major strengths and weaknesses of U.S. graduate training and to suggest ways that the training might be improved.

Respondents indicated that their courses in microeconomic theory, statistics and econometrics had been the most valuable. Next in usefulness were courses in agricultural development, mathematics, agricultural marketing, linear programming and operations research. Courses with greater institutional content and courses oriented most heavily toward U.S. agriculture were considered least useful.

When queried about courses they wished they had taken while in the U.S. the most frequent responses were statistics, econometrics and computer programming. At the same time, students frequently mentioned the desire to have taken more courses of a practical and applied nature. Perhaps this suggests that the quantitative courses they took were not sufficiently oriented toward practical applications.

About 30 percent of all respondents held administrative positions. Respondents noted that relatively few courses had been available in planning, management and public administration, and the need for more such courses was strongly expressed.

¹ Darrell F. Fienup and Harold M. Riley, Training Agricultural Economists for Work in International Development, A report based on a study sponsored by the American Agricultural Economics Association and funded by the U.S. Agency for International Development. New York: Agricultural Development Council, 1980.

Major strengths in U.S. graduate programs as seen by the former students were a good study atmosphere, generally good breadth and depth of course offerings, effective training in theory and quantitative methods, good library facilities, ready access to reliable data and to computing facilities, and good student-faculty interaction.

Perceived weaknesses included "lack of knowledge and perception of LDC problems by U.S. professors," "too little application of theory and quantitative methods to LDC situations," and too wide a gap between theory and application. Too little attention was given, they said, to political, social and institutional factors in development. Students stressed the need for more emphasis in "practical areas" such as project evaluation, agricultural planning and policy analysis. They called for increased emphasis on problems of income distribution and equity.

The former students were strongly in favor of the thesis option for the M.S. degree, particularly where the M.S. is likely to be the terminal degree. The thesis was perceived to be one of the most useful aspects of graduate school. Both M.S. and Ph.D. graduates favored, by a wide margin, thesis research on LDC problems. A majority of those having Ph.D. degrees favored research in the home country coupled with final analysis, thesis writing and its defense in the U.S.

Most of the respondents were pleased with their training at U.S. universities. They generally indicated that their effectiveness in home-country professional activities had been greatly enhanced by their U.S. education.

Now, for a few of my own perceptions. First, it is very difficult to tailor a graduate program to fit the needs of specific students or groups of students. Foreign students, in particular, are a diverse lot. They come from many lands and have widely differing academic and cultural backgrounds. They will return to widely differing employments. Only a very large graduate program can be structured to accommodate the particular needs of individual students, whether they be foreign or domestic. A more modest-sized program must accommodate the needs of both domestic and foreign students with the same core of courses and with a smaller faculty which may have less breadth of experience and expertise.

The result, however, is not necessarily all that bad. LDC students in a smaller, less specialized program mix more freely with their compatriot students from the U.S. and elsewhere and have a closer association with faculty and staff. In any case, what the student probably needs most of all, particularly at the M.S. level, is a good basic course of study, rigorous treatment of the theoretical bases of the discipline, along with basic supporting courses in mathematics and in the relevant physical, biological or social sciences, should form the core of any graduate student's program. There may not be a lot of opportunity for further specialization, regardless of the program size, especially at the M.S. level.

Many students, upon returning home, will quickly find themselves in high-level policy-oriented jobs. It is desirable that they have some training in evaluating alternative courses of action. Undue specialization might thus best be avoided, particularly for the students who know they will return home to administrative jobs.

Most of the specialization must and probably should center on the thesis project. Ph.D. students, and M.S. students who choose a non-thesis option, might do well to round out their programs with the types of courses called for in the survey results.

Thesis research of relevance to problems in the home country is obviously highly desirable. The research should at least be "transferrable," if not focused directly on a home-country issue. A project which centers on cultural or institutional arrangements unique to the United States might have limited transferrability and thus be of limited benefit to the LDC student and his country. We have serious problems in placing LDC students with advisers who have interests and backgrounds in LDC problems. Lack of appropriate research projects makes placement of assistantship students particularly difficult.

The arrangements which are being established under the MIAC-USAID contracts for home-country thesis research support for Moroccan and Tunisian Ph.D. students has promise. Arrangements are now available, as I understand the programs, for support of student and adviser travel expenses to carry out data collection and other basic research activities in the host countries. Adequate supervision of the overseas work is essential; final analyses of the data and completion of the thesis in the U.S. are probably imperative in most cases. Such programs are, of course, expensive. Unfortunately, we can seldom if ever provide such opportunities for students from other countries.

Many of our graduate programs have a relatively large enrollment of foreign students, most of whom are from the less developed countries. Since it may not be practicable or even desirable to segregate them into special courses designed to meet whatever their special needs may be, I would hope we might defer to them at least to the extent of stressing in our courses and in other associations with these students that not all of the applications of theoretical principles to developed country settings will be directly transferrable to home-country problems. I hope we succeed in making all of our students (whether they are foreign or domestic) skeptical about alleged opportunities for the quick fix, for easy solutions to complex problems. I hope we impress upon them the need for hard work, for rigorous evaluation of alternative courses of action, and of the need for their individual specialized inputs to be considered in the context of other variables and other goals. I especially hope that we can convince them of the critical need to evaluate alternatives: the LDCs can ill afford second-best solutions.

MAJOR ADVISER RESPONSIBILITY IN DEVELOPING A GRADUATE
PROGRAM TO FIT THE NEEDS OF THE
LDC NATIONAL*

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The staff member who becomes an adviser for an international graduate student should make a major commitment: TIME. The adviser should plan to commit at least twice the time in student (1) planning, (2) counseling, and (3) reassessment as would ordinarily be expected. In addition to the designation of the quantity of time, the adviser must allocate quality time to spend with an international graduate student, time without interruptions and distractions when both parties are clearly and completely understanding what is being discussed.

The first contact should be used to get acquainted. Since the first meeting of the student and adviser is usually unexpected (from the adviser's standpoint) it is usually necessary to schedule a second, third and even fourth appointment. Ideally, these first two to six sessions should be spent in discussing the student's previous background and experience: course work, field and/or laboratory experience and aptitude, family background, job experience and any other factors related to training and experience. It is usually advisable not to take notes at the first two meetings but to record your impressions after the student leaves. Some international students become unduly concerned if the first discussions with the U.S. adviser appear to be data taking and recording of the student's personal attributes. However, as soon as student-adviser rapport permits, both parties should take notes of discussions and probably compare notes to avoid possible misunderstandings. Spoken agreements may be misunderstood or misinterpreted. This is less likely with written notes. Depending on the circumstances, it may be advisable to make typewritten copies of the discussions for use as future reference. As formal as this sounds and as time consuming as it appears, it may be a time-saver for both student and adviser in the long run. The important aspect of these first discussions is the gradual unobtrusive manner in which there is a change from informal talk to comprehensive planning. This may occur in a space of one hour but may require two or three meetings.

Another important objective of these first meetings is for both parties to become acquainted with and adjusted to speech patterns and mannerisms. It is less dangerous to misunderstand the number of brothers and sisters the student has than the number of mathematics and chemistry courses taken.

Unfortunately, the first meeting with the student and the adviser is usually unexpected for the adviser but crucial for the student. The student has arrived on the last day of registration and must decide immediately on a class schedule. In these circumstances it is best for the adviser to take

*Presented by Phillip J. Scholl.

the time to counsel the student carefully and perhaps even delay the registration process to assure that the student begins in the correct courses. A course transcript is very useful, but direct conversation with the student is often more revealing regarding previous academic training. The level of math comprehension is critical in determining the student's aptitude for biometric statistics, soil-water relationships, or physical chemistry courses. Equally important is the assessment of biological sciences and chemistry courses to determine the course entrance level for the student.

Many international students may have received excellent training in the basic sciences but have had little field and/or practical experience. These students may be able to trace the pathway of water from the soil pores, through all the plant cells and out of the leaf stoma, yet they may not have been exposed to the common crops and livestock of their native country. In these cases it may be advisable for the student to take one or two undergraduate non-credit courses to enhance training in more applied areas.

In any case, academic courses should be chosen very carefully and should be those which will be most useful to the student when he/she returns home. Although it is important for the student to be aware of and familiar with an electron microscope or a gas chromatograph, it may be more useful to know how to use a common microscope or even small hand lens. The early discussions should delineate the students' aspirations for their graduate programs and these should be compatible with the types of jobs expected upon returning home.

Equally, if not more important, is the selection and implementation of the student's thesis research. Insofar as possible this should be similar in scope and nature to the kind of work the student will do upon returning home.

MAJOR ADVISER RESPONSIBILITY IN
DEVELOPING A GRADUATE PROGRAM TO FIT THE
NEEDS OF THE LDC NATIONAL*

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Dr. Flowerday has emphasized several problem areas in the adviser-international student relationship. I would like to briefly outline a few additional concerns that have been brought to my attention from several sources.

1. For most international students, the most immediate obstacle to learning is difficulty with language. It takes time to acclimate. It is a large jump from English classes in their country to taking notes in an intensive basic course. Too often advisers feel that newly arrived students need to brush up on basic courses which tend to have large enrollments and very little individual attention. Poor grades may result from inability to understand, not inability to learn. The discouragement of poor grades at the beginning of a program can set the stage for an unpleasant graduate program, especially for students who were the "cream of the crop" in their countries. I feel that if the student can be directed to courses with more staff-student attention that are slower paced and more applied in nature, the student will have an opportunity to experience some success and to get established. This first semester should probably be a light load and may need to include English classes as well. In our department, for example, I would recommend Entomological Techniques or Field Entomology before Insect Transmission of Plant Diseases or one of the other lecture courses. Other departments, I'm sure, have other appropriate courses for the new international student.
2. Advisers should be aware that many international students come from countries where they are considered to be professionals in their field. They have had to contend with doing more with far less than their U.S. counterparts. The majority of international students with whom I have had contact were more mature and experienced than entry level graduate students from the U.S. Often they have families with all the responsibilities and time consumption that entails. This is not to suggest that their treatment should be radically different, but adjustments often have to be made. Most U.S. graduate students know how difficult it would be for them to go to a foreign country to do graduate work and do not resent the fact that advisers have to spend more time with their international students. As Dr. Flowerday has said, advising international students takes time. I feel that advisers who aren't willing or are too busy to spend the extra time to understand the

*Additional comments relating to the previous paper by Dale Flowerday.

vast cultural differences between themselves and their foreign students, as well as the special problems that constantly arise, are doing an injustice to that student's program. Also parenthetically, I feel they are missing some of the real pleasure that comes from these interactions with people with vastly different life experiences.

3. The last point I wish to make is a problem area. Of all the complaints I have heard from foreign nationals, the most often stated is that major professors were using them as "laborers" to do grant research unrelated to their thesis project. This is a two-edged sword, and I don't profess to have the solution. On one hand are the students who come with their own support money, sometimes with limited time visas to complete their degrees. They resent using this time to do other people's research. Also, as I've mentioned, many have families. This puts additional burdens on them because, unlike their U.S. counterparts who are either single or even have working spouses, the foreign student is often solely responsible for the daily needs of shopping, transportation, medical problems, school enrollment, etc. As such, they don't have a lot of spare time.

On the other hand, most of us feel that it is important that foreign nationals are exposed to the joys and drudgery of doing field work. There is a great deal of satisfaction and companionship that can be derived from these shared experiences. The complaints I have heard have not come because of the fact of assisting others in their work, for this help is often reciprocated. The complaints come when this field work becomes excessive and detracts from the student's own work. This balance of experience versus time is one of the most difficult aspects of advising foreign students, but these expectations should be dealt with during the initial counseling sessions. Our system is different from most other countries. I feel this is probably why our applied research is the best in the world. If we expose foreign graduate students to the system without overwhelming them, then the experience will be very fruitful not only to the student but also to the adviser.

CASE HISTORY-#1
PROGRAM CONDUCTED AT THE INSTITUTION ONLY

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Through the discussion of the case history of Sumer Hasimoglu, I would like to illustrate several points which I feel are important in training foreign graduate students. Sumer is Turkish. At the time he came to Nebraska, we had a team of staff members in Turkey. This is an important point in that they had the opportunity to recommend Sumer from direct contact. This kind of situation overcomes some of the problems of evaluating the credentials of foreign students which was discussed earlier.

Sumer obtained both his M.S. and Ph.D. degrees with us. Like most foreign students, he had a language problem in the beginning. He was initially placed in undergraduate classes to help solve this problem. Sumer was rather quiet and, of course, somewhat lonesome. He worked and studied very hard but often alone in his home. We encouraged, almost insisted, that he spend his days in the Animal Science building when not in class. This forced him to mix with the American students as they were officed together. Separate graduate rooms for foreign students should be discouraged. This interaction may be the most important part of the graduate experience for both the U.S. and foreign graduate students. We encouraged mutual cooperation in research activities. This interaction among graduate students was fostered by our informal seminars and also carried over into social activities.

I feel strongly that the research can and should be relevant to the student. I feel that our research programs should not be dependent on foreign students. Rather we should have a commitment to work with them and fit them into our program as well as possible but not be dependent upon their research to "make our research programs go." Foreign students take more time than U.S. students. I feel that one at a time is as much as I can manage and be fair to all the other graduate students.

When Sumer came we were fortunate that we were working in the research area of low quality forages, primarily crop residues. We feel like this fits in the future in Nebraska and in the U.S. It really fits us in training these graduate students because we can integrate the research into our ongoing research program, and that is what happened with Sumer. He worked with straw and some chemical treatments of straw. He learned appropriate forage techniques and knew how to deal with low quality forages. As our measure of success I have a manuscript of some work on water plants that he has done. He's been able to transfer what he learned to a problem they have in Turkey and has been able to work on it. He has done some really interesting work on a feedstuff that they have not used before. I suppose the compromise that was mentioned earlier today is what we have tried to use. This area is relevant to the student when he goes back. We try to work with the appropriate animal species, and it also fits our ongoing program. I don't think our research program is dependent upon it, but it fits in and it helps us. We're continuing that kind of effort with current students, one from Iraq and one from Peru.

The next comment that I would like to make would be in terms of the time spent with the student and specifically in the thesis writing. We spent quite a bit of time with Sumer on his thesis. His thesis is not as good as the best we've had. It's probably on par with some of the average ones from domestic students in terms of the way it was written and perhaps the depth of the research material. But I feel good about that. It does take time, and this is one of my concerns as we get involved in a lot of activities on campus. This area which I think is extremely important is being able to spend time with the thesis writing. There are two other comments that I want to make about Sumer and graduate students in general. I don't think this contact needs to or should end when they leave here. We have been able to maintain some contact with Sumer. I mentioned the manuscript he's put together. He sent me samples of these forages, and we did some laboratory analysis for him. We didn't have any funding to do that, but I went ahead and did it anyway. It wasn't that expensive. By being able to maintain some contact, we have been a help to Sumer. We've done the same thing with Dr. Umunna. Numerous times we've exchanged materials, and I think this is very important. We can have a tremendous impact by maintaining that contact.

Along with maintaining contact is to start from the beginning to train the student to go back to his country. I was surprised at previous comments about how many students have been trained who were planning on staying in this country. My personal feeling is that it takes extra effort, and I've made a personal commitment to these students. It is a bit of a missionary effort, and I feel quite let down if they want to stay in this country and compete with our U.S. students. We've done the extra work so they can go back and have that impact on their country.

The last point would be something about the students themselves and their personalities. I think this is the overriding factor in their initial application. The important thing is if we can find out something about that student and how well he's going to fit into the program. I've commented that I felt that the integration, the Americanization, is so important. One of the problems that Sumer had (and, I think maybe Vic Umunna would admit to it a bit) was the better you do at integration and the longer they're here, the more difficult it is to return home. With a masters and a Ph.D. program for these two fellows (Sumer and Vic)--we got them Americanized. Their biggest problem was that cultural shock when going back home. It is very easy to stay here. Returning to Turkey was a problem for Sumer. He was used to dealing with things like they are in this country. Going back and being productive in an environment where it is not American anymore was a problem. He's been able to handle it.

Personal life also poses big adjustments upon returning home. A good example is that Sumer had a daughter with a heart condition. She could be treated well in this country. It caused him some difficult problems when he went back, and she could not get the same kind of treatment.

In conclusion, I feel quite strongly about programs in which the students complete the total program with us such as Sumer did. The integration of the students into our programs takes time. Cooperative efforts in research programs are an important part of this. Perhaps the most important contribution we can offer is the chance for mutual understanding. While they are here, foreign students, I feel, should get a good understanding of Americans. A student like Sumer with a genuine appreciation for the American way and good technical training is a success.

CASE HISTORY-#2
GRADUATE RESEARCH PROJECTS OF STUDENTS FROM
OVERSEAS SHOULD BE CARRIED OUT IN THEIR HOME COUNTRIES

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This conference is dedicated to appraising effective graduate programs for citizens of developing countries. This effort is undertaken, however, not so much to educate individual students as to encourage the accumulation and application of knowledge in those nations. If the foreign graduate students involved in these programs do not return to their homelands and do not apply their newly-earned skills toward the improvement of their countries' and their people's welfare, these graduate programs have failed.

Students from overseas must be educated to be experts in western concepts and procedures. Yet, they must not become too westernized. Their home situations must be kept foremost in their minds. They must not become so fond of western ways or so in need of sophisticated scientific equipment that they feel out of place in their home environments. While there are several reasons for graduate student research requirements to be completed overseas, I believe that the most important of these is the need for the student to remain in close touch with his own society.

Most graduate students are youthful and unmarried. Individuals in early adulthood cannot be expected to do otherwise than to form attachments with members of the opposite sex. Because of limited opportunity to meet suitable mating and marriage partners of their own nationalities, there is considerable likelihood that romantic relationships will be formed with Americans. When this happens, there will be a strong potential for the degree candidate to remain in the U.S. or to immigrate later. In such cases, of course, the benefits of advanced education do not accrue to the developing country. Insuring that the student stays in close touch with his country, his family and appropriate local hiring agencies is perhaps the most important consideration of all as plans are made for the dissertation research of students from abroad.

Of the 25 foreign nationals with whom I have worked during recent years, only one has become an American citizen. He married a Peace Corps volunteer while both were in his native country. This student is a fine person who will be a credit to the United States and who will probably work in an international resource management agency. Yet, his knowledge and abilities may be largely lost to his nation. Successful as I believe he will be, I am pleased that his is the only such case in my personal program with foreign graduate students.

Other factors, however, are also important. Although there are academic subjects where expanded knowledge of the home territory may not be essential, in most subject areas the student should be increasing his knowledge of conditions in his own country. Referring to my own field of study, ecologists must have broad interests and backgrounds. Ecological principles hold that, for every form of wild and domesticated plant and animal, the environment determines the distribution, abundance and rate of production. Ecologists are concerned with food and nutrition, water supplies, irrigation, deforestation,

desertification, erosion, resource depletion, species preservation, tourism, and recreation resources.

To work effectively in any area or nation, ecologists must become expert in the local flora, fauna, soils, climates, water resources, land use and social problems. Agriculturalists, foresters, and range managers from overseas also would benefit from detailed investigations, perhaps in a new part of their home nations, in such matters as soil erosion, irrigation, nutrient depletion, fertilizer reactions, microclimates, crop and livestock diseases, insect pests, range indicators, cropping and plantation practices, etc. They should become familiar with local indicators of favorable and adverse conditions for plant and animal production. These are matters with which they will have to be knowledgeable in some detail when later employed on the job in any assignment related to land or resource use.

Through graduate thesis work overseas, not only does the student enlarge his experience with his own national problems, in addition he contributes to the basic (and, hopefully, to the published) knowledge of his area. While completing his investigation, most often he would be employed by an arm of his national government. Whether or not so employed, at least he would be in close contact with the agencies, officials or companies from whom he would later seek employment. If properly planned his project would also involve local counterpart personnel who would receive at least technician-level training.

There is increasing evidence that the administrative officials in developing countries hope for university-sponsored research to be focused on local national needs. Dr. David Wiley, Director of African Studies at Michigan State University, was a team member on a recent African tour organized by the U.S. Office of Science and Technology. Upon his return last week (MSU debriefing October 22, 1980) he confirmed that educators in Nigeria, Zimbabwe, Kenya and Senegal all believed that even basic research should be encouraged in subject areas which are relevant to national development needs. They were critical of technical graduate research projects offered abroad which, when the student returns home, required sophisticated and unavailable apparatus for its continuation. In this regard, Professor Wiley found widespread interest in American land-grant college approaches to research and resource management.

Some effort is required, of course, to maintain a university overseas graduate program. Anyone attempting this type of activity must have a personal interest in the international aspect of his field. Correspondence with prospective degree candidates must be based on a knowledge of scientific and economic needs in the countries concerned. The faculty involved must develop associations with agencies and foundations at home and abroad which might provide information and financial support. Occasional, but continuing, professional contacts with colleagues in those organizations are essential. Yet, as a university graduate program advances in a particular field, a network inevitably develops which involves students, alumni, international experts and foundations. Several of our American graduates (Table 1) have also accepted overseas research and resource-management assignments. Sometimes they can offer assistance in advising foreign graduate students.

Table 1.

Current Employment of Graduated Wildlife Scientists with International Backgrounds, 1953-1980. Department of Fisheries and Wildlife, Michigan State University, East Lansing, Michigan, U.S.A.

<u>Field of Employment</u>	<u>Graduated Scientists</u>	
	<u>Foreign Nationals</u>	<u>Americans</u>
Government (Administrative)	2	2
Government (Scientific)	11	4
Universities	3	7
Zoological Societies	0	3
Private	0	2

Over the last 27 years (mainly since 1970) I have worked with 25 foreign students in 15 nations and with 20 Americans in 16 overseas countries (Table 2). I have made it a point to consult with each of these students on their overseas study areas. In addition, an annual newsletter is assembled and circulated among students, alumni and their agencies. This describes research results and personal activities of students and graduates. It is also circulated among potential and active grant donors and hiring organizations. On campus, the desks of foreign graduate students are intermixed with those of Americans. At the same time, however, they are grouped so that students from around the world can become well-acquainted, often forming lasting friendships. Occasional off-campus study tours are organized for our foreign students, and they are encouraged to attend scientific meetings in this country.

When the required thesis research is to be completed in their home countries, this must be made plain to students prior to the outset of their graduate work. The costs of overseas investigations most often (Table 3) are borne by the students' sponsoring agency. Usually this is a foreign governmental organization but sometimes is an American or United Nations' affiliate. Most students require faculty assistance in arranging for grant support, but this is a normal professorial function whether foreign or American graduate students are involved. In only a few cases, have the students, perhaps through their parents, been self-supporting.

The expenses of overseas visits by the professor may be financed as a portion of the grant budget. Many private foundations, however, will not provide such assistance. In some cases, advantage may be taken of invitations to participate in scientific conventions held overseas near student projects. On occasion, personal funds may have to be spent to achieve program objectives. Additional support is badly needed.

When a student completes his research overseas, it is usual for him to return to the campus to complete his write-up and to be examined. I have heard rumors of individuals who were examined by conference-telephone while remaining in their home countries. While this sometimes may be feasible, my experience indicates that young people like to travel and, with or without grant support, they somehow arrange to return to the university for degree-completion formalities.

Table 2

Summary of Overseas Graduate Student Programs in Wildlife Management
 Department of Fisheries and Wildlife
 Michigan State University, East Lansing, Michigan, U.S.A.

<u>Study Area</u>	<u>Current Programs</u>		<u>Completed Studies</u>		<u>Total Students</u>	<u>Foreign Nationals</u>
	<u>Masters</u>	<u>Ph.D.</u>	<u>M.S.</u>	<u>Ph.D.</u>		
Africa						
Botswana		3	1	1	4	0
Cameroon			1		1	0
Central Af. Republic			1		1	0
Kenya			1	2(+1)	4	2
Liberia			1		1	0
Niger	2				2	0
Nigeria			2		2	2
South Africa			1		1	1
Tanzania			1	1	1	0
Uganda		1			1	1
Upper Volta			1		1	0
Zaire		1			1	0
Zambia				1	1	0
Asia						
Afghanistan		1	1		1	1
India			1		1	1
Iran		2	2	1	4	4
Malaysia		1	2		3	2
Nepal		3	3	1	5	4
Sri Lanka		1			1	1
Thailand			1	1	2	2
Latin America						
Costa Rica		1			1	1*
Europe						
Greece		1	3	2	4	3
Oceania						
Papua New Guinea		1	1		1	0
New Zealand				(1)	1	0
Antarctica						
			(1)	(1)	(2)	0
	2	16	25	13	47	25

* Australian national, completed M.S. research in Malaysia.

() Four Americans completed extended professional overseas research after completion of MSU doctoral degrees

Table 3

Sources of Financial Support for
 Graduate Students in Wildlife Management 1953-1980
 Department of Fisheries and Wildlife
 Michigan State University, East Lansing, Michigan, U.S.A.

<u>Funding Sources</u>	<u>Foreign Nationals</u>		<u>American Students</u>	
	<u>M.S.</u>	<u>Ph.D.</u>	<u>M.S.</u>	<u>Ph.D.</u>
Foreign governments	15	13	0	2
UN Volunteer agency	0	0	1	1
AID	0	1	0	0
Peace Corps	0	0	9	3
NSF/MAB	0	0	0	2
Smithsonian Institution	0	1	0	0
Scientific Foundations	0	0	1	3
TOTALS	15	15	11	11

While the next speaker on this panel will review the position of American students studying in developing nations, I would like to comment on the valuable role of the American Peace Corps in contributing to world knowledge and to increased local benefits through research by Peace Corps Volunteers. "Help to the local people" is the principal objective of these volunteers, yet they have carried out research programs either on the job or during their off-duty hours. Graduate studies by PCVs contribute to the development of the volunteers themselves and also, if properly conceived, provide training for counterpart national personnel and leave records of scientific value to the host country.

Unlike foreign students with paid fellowships, American students returning from abroad may require financial assistance while completing their work on campus. Ex-Peace Corps personnel may have their resettlement allowances to tide them over. For others in need, we fractionalize the few available teaching assistantships so as to extend help as far as possible.

While our main outlook is to assist developing nations, those of us who work in international studies must agree that we too benefit. In terms of enlarged cultural and scientific backgrounds, not only do we gain personally but our graduate and undergraduate teaching backgrounds are broadened and our universities are thus improved. There may be justification in some cases for graduate research by foreign students to be completed elsewhere. In general, however, I believe that by far the greatest benefits result when the university faculty, the student, and their supporting agencies cooperate to insure that thesis investigations are made in the student's home country and applied to the scientific background and economic needs of that nation.

Acknowledgement: I wish to offer thanks to Dean Irving R. Wyeth of the Institute for International Agriculture and Natural Resources at Michigan State University, who, prior to manuscript preparation, was most helpful in reviewing this topic in conversations with me.

CASE HISTORY-#3a
PROGRAM IN WHICH A DOMESTIC STUDENT CONDUCTS
DISSERTATION RESEARCH IN A LESS DEVELOPED COUNTRY

Paul H. Gessaman
Professor of Agricultural Economics
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln

This report is a brief overview of experience over the last more than four years as Gayle Ann Morris, Ph.D. candidate in Agricultural Economics has been enrolled in a graduate degree program that includes a research study in a less developed country. Ms. Morris came to the Agricultural Economics Department and graduate program with a B.A. in International Studies and an M.A. in Latin American History from Bowling Green University. Her career goals include possible employment in policy evaluation, or in the evaluation of alternative institutional arrangements for economic development in less developed countries. This work might be with a government or international agency, in the research aspects of a position in an academic institution, or in a business sector position.

Several aspects of a graduate program of the type Ms. Morris has been undertaking that seem to me to be of special significance to our discussion today are: (a) The need for the adviser and student to develop a shared understanding of the student's goals, (b) The importance of adviser and student recognition of the extended time commitment needed for a graduate program of this type, (c) The need for early identification of, and response to, special study preparation requirements, and (d) The importance for the student's work of an arrangement providing a base of operations, legitimation, and (if possible) logistical support. We'll talk briefly about each of these topics in the next few minutes.

Developing a Shared Understanding of Goals

As Ms. Morris and I became acquainted during the early portions of her graduate work, we were involved in numerous discussions of her career objectives and the types of educational experiences that would build needed skills and background. We approached this in both structured and unstructured situations. In the early parts of her graduate student experience we talked about career goals as a part of our discussions of assistantship work, assignments and activities. We also set up a sequence of appointments and discussed research reports, journal articles, or other documents that Ms. Morris had selected as being of special interest. From my point of view these discussions were very useful in that they improved my understanding of both the types of work in which Ms. Morris was especially interested and the skills she wished to develop through her graduate education. I believe she also found the discussions useful as a means of clarifying and bringing into focus her own interests and career goals.

Recognition of Time Requirements

An issue to which Ms. Morris and I returned time after time in our discussions was that of time commitments needed for her graduate program.

As her adviser I felt it to be important that we thoroughly discussed the extended time commitment needed for a degree program with research in another country. Ms. Morris consistently indicated her willingness to commit the five or more years of work that we could foresee would be needed to complete the degree; so we proceeded on that basis.

This extended degree program also required accommodation on the part of the department since assistantship support and our graduate program are intended to be appropriate for the Ph.D. student who completes a degree program in approximately three years subsequent to the Masters Degree.

Overall, I think the importance of this aspect grows out of the need for recognition and acceptance by all concerned that the domestic student who intends to conduct research in a LDC is embarking on a graduate degree program vastly different from the usual program of a student whose research will be conducted in Nebraska.

Special Preparation Requirements

As Ms. Morris and I discussed her proposed study and research activities, we concluded that special background experience at an institution with an active international program in agricultural economics would greatly strengthen her graduate program. This recognition of need fortunately preceded a visit to our campus by Professor William Thiesenhusen of the Land Tenure Center of the University of Wisconsin-Madison. Discussions initiated while Dr. Thiesenhusen was visiting our department resulted in his graciously inviting Ms. Morris to be a visiting student at the Land Tenure Center during the summer and fall of 1977. She was asked to participate in the July 14-22, 1977, International Seminar entitled, "Agrarian Reform, Institutional Innovation, and Rural Development: Major Issues in Perspective."

Experiences in attending and serving as a working group reporter for the Seminar, in combination with formal and informal discussions with students and staff at the Land Tenure Center, provided intellectual enrichment that was not then available at this University. During the fall semester at the University of Wisconsin Ms. Morris took three courses, prepared a thesis plan and developed a proposal for funding. We maintained contact by letter, telephone, and through two days of discussion when I visited the University of Wisconsin in November, 1977.

Ms. Morris submitted her funding proposal to the Inter-American Foundation in late 1977. After the customary interviews, she was awarded a research fellowship for her study entitled, "The Beneficio in Costa Rica: An Alternative Credit Delivery System." The Fellowship provided travel expenses, health insurance coverage, a limited research budget and a stipend for support during her tenure in Costa Rica plus three months after her return to the United States.

An Institutional Affiliation for Work in Costa Rica

The Inter-American Foundation places priority on each of its program fellows having a firm affiliation with an institution in the host country. When Ms. Morris was awarded her fellowship, we immediately faced the need to

secure an affiliation with a Costa Rican institution. We explored several alternatives including possibilities for affiliation with the programs of U.S. Universities having ongoing Costa Rican programs. These initial inquiries were unsuccessful. Professor Peter Dorner of the University of Wisconsin came to our assistance and asked the Inter-American Institute of Agricultural Cooperation (IICA), which is the agricultural research arm of the Organization of American States, to provide Ms. Morris with an affiliation. The invitation was extended by Mr. Hector Morales of the IICA staff. The Inter-American Foundation indicated its approval and reaffirmed its funding commitment.

Throughout Ms. Morris's tenure in Costa Rica, IICA provided her with an office, access to a telephone and copy machine, limited secretarial support, and numerous opportunities to consult with other persons. All were important to the progress of her work. We especially owe a vote of thanks to Dr. Gilberto Paéz, Director of IICA's Center for Documentation, for providing on-the-spot advising and many kinds of support and assistance.

Our Institutional Strengthening Grant made possible my traveling to Costa Rica on two occasions for consultation and advising. Both Ms. Morris and I greatly appreciated this.

Summary

Ms. Morris's experiences in Costa Rica appear to me to have been substantially enhanced by the affiliation with the Inter-American Institute of Agricultural Cooperation (IICA). Through the generosity of people at IICA, Ms. Morris was provided with a base of operations and opportunities for discussion and consultation with other professionals. For a person in a strange country and surroundings, such support is psychologically and logistically important. I believe it was a major factor in the rapidity with which Ms. Morris was able to become acclimated and to carry out her research. While these arrangements might not be extremely important for a person who is a part of an ongoing research program in a LDC, I think they are especially important for the student like Ms. Morris who is not part of a major program.

I also believe the other aspects we've touched on are equally important. Agreement on goals, agreement on the time commitment, and an early start on special preparation are also vital to the well-being of the student and the work that is to be done.

Two additional personal items are needed to complete this brief overview. Ms. Morris has shown a high level of initiative, desire to succeed, and ability in her work. This has made my advising role very pleasant. Ms. Morris' husband has actively supported her interest and involvement in the Costa Rican research. Her ability to get the job done can be, to a large extent, attributed to the willingness of both Ms. Morris and her husband to do what was necessary at the time it needed to be done. Without that type of approach, all the rest of the things I've reported would have been of little value.

CASE HISTORY-#3b
PROGRAM IN WHICH A DOMESTIC STUDENT
STUDIES IN A LDC

Charles A. Francis
Associate Professor of Agronomy
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln

Dr. Gessaman has done an excellent job of outlining the benefits as well as some of the constraints of a student doing thesis research in another country. I was fortunate to have such an experience for the M.S. degree in Los Baños, Philippines, under Ford Foundation support, and later for the Ph.D. degree in Medellin, Colombia, under Rockefeller Foundation support. Some general points I would like to emphasize follow:

1. There must be a high degree of interest and motivation on the part of the student. Due to the additional time and expense involved, the cultural adjustments, language challenges, and inevitable complications, this is not a situation into which we should urge students with marginal interest.
2. It should be determined if the goals and perspectives of the student, professor, university, and host institution in another country are well understood by all, and that they coincide to a high degree.
3. Groundwork would be laid out well ahead of the actual thesis/dissertation trip by the student. This may require a trip by the major professor and/or the student ahead of the actual travel for initiation of field work. This way it can be determined if the correct institution has been identified, collaborators chosen, and supervision of the thesis activity assured.
4. No financial obligations should be laid on the host institution unless there is some clear reason to do this, and it must be clearly understood and agreed upon by all participants. This includes transportation, a most difficult and touchy subject where vehicles are limited and under a premium.
5. The student participant should contribute whenever possible to the local program, through teaching, field work, supervision of labor in lab or field, assisting colleagues in data analysis, or however possible.
6. Students should keep everyone informed of what they are doing--both on the local scene and back at the home university. A quarterly report to the committee is one vehicle which can be used. This is a supplement to visits by the major professor or others on the committee.

7. One way to handle supervision is to name one or more ex officio members of the supervisory committee who can handle the day-to-day problems which everyone faces during a thesis activity. This can get away from red tape and possible diplomatic problems in a more formalized "acceptance by the graduate school" approach.
8. All possible attention should be given to recognition of colleagues in the publication of results--a footnote is minimum, and a joint authorship is preferable. If in doubt, include a colleague from another country who has been of help in crucial steps in the research.

This is an excellent way for students to gain experience and develop career goals at low risk to either student or to an institution or funding agency. In a sense, it is a screening procedure for international agencies, the centers and others. In addition, from the student's point of view it is a way to decide if this is the way to go into a future career.

OPPORTUNITIES FOR YOUNG STAFF MEMBERS
TO WORK WITH LDC GRADUATE STUDENTS

Roy G. Arnold
Dean and Director
Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln

I wish to commend the International Programs Division of IANR and the planning committee for their efforts in planning and arranging this workshop. This is an important workshop, and I am most appreciative of the opportunity to share some viewpoints concerning the assigned topic.

Two challenges confronted me in preparing this paper. The first challenge was to constrain my comments to the specific topics assigned and avoid the temptation to range broadly over the subject matter of the workshop. The second challenge was definition of terms in the assigned title. I have adopted some working definitions, as follows:

"opportunities": consider both short-term and long-term implications.

"young staff member": the definition of "young" presents some difficulty, depending on whether one considers chronological age, the state of mind, or the possible changing definition of this term in view of the recent Presidential election! For the purpose of this presentation, I have chosen to interpret this as meaning a faculty member in their first ten years of service.

I approached this assignment by first trying to ascertain why the committee identified this specific topic. What underlying issues or concerns led to its selection? Thus, this presentation addresses those issues or concerns which I perceive to be the major considerations. Onto this model, I have superimposed some personal views and observations. However, stating a viewpoint does not establish a truth. Debate and discussion of other views will be desirable. Finally, some unanswered questions intended to provide a basis for further thought will be posed.

There is risk in following an outline structured around concerns in that a negative view of the general topic may be communicated. To the contrary, I am highly enthusiastic about the growing opportunities and possibilities for professional contributions to the international programs arena in general, and in work with graduate students from LDC countries in particular. From this positive viewpoint, I wish to use this time to state certain pluses and minuses which need to be considered objectively relative to the interests of young faculty members in working with LDC graduate students.

In my judgment, there are two key issues which need specific attention. These are (a) credit or recognition for work with developing country graduate students and (b) compatibility of research interests and professional goals of young faculty members and developing country graduate students.

Credit and Recognition

It is not difficult to identify the underlying basis for this area of concern. We live in an age of increasing accountability. Tenure considerations and productivity expectations related thereto, including publications, grants, and peer recognition, are much on the minds of young faculty members. These concerns are focused on several levels within the academic hierarchy. Within the academic unit, young faculty members receive from departmental colleagues numerous signals regarding expectations for professional advancement. Included among these are the attraction of graduate students. Negative signals are frequently communicated regarding the relative challenge of accepting foreign graduate students as opposed to recruitment of domestic graduate students. Further, young faculty are concerned about administrators' expectations and evaluations of performance. The concept of career or professional development is frequently mentioned in discussions with colleagues and administrators, although this concept usually is quite vague. I believe that this concept frequently represents a historic viewpoint and bias and doesn't necessarily reflect future career models for today's young faculty members.

Accepting the existence of concerns about credit and recognition, I believe it would be helpful to share some observations regarding the Nebraska setting for young faculty. Within the Institute of Agriculture and Natural Resources, International Program involvement has a much higher profile than ever before. Participation in International Program activities is regarded more positively, there is greater opportunity for such participation, and there is a much higher and consistent level of commitment to this arena than previously experienced. Admittedly, this enthusiasm is not shared by everyone within the organization, and differential attitudes exist among the various academic units. But the general observation that the commitment, enthusiasm, and profile of this arena of professional involvement is at an all time high is, I believe, valid.

Within the Institute of Agriculture and Natural Resources, the evaluation process does make an effort to evaluate International Program participation. Admittedly, we may not know how to evaluate perfectly this area of activity, but the effort is evident. For example, the IANR staff activities report includes a section for the faculty member to report International Program involvement and accomplishments. In the section of the activities report dealing with graduate students, there is no differentiation between domestic and foreign graduate students. In the area of research productivity, publications which may be listed are not restricted to domestic publications. Certainly evidence of publication in refereed or peer-reviewed journals does have significance, but this significance applies irrespective of the country location or the language of the publication. Science may be viewed as a universal language. Ideas and creativity can be expressed in any language. In recent visits to the various IANR units, I have indicated on several occasions my intent to discard the strict quantitative assessment of publication productivity. This places a somewhat higher burden on the individual faculty member and unit administrator to document evidence of impact of research programs. However, it is possible to provide such evidence, which certainly includes, but is not limited to, publication of results. Inventions, variety releases, methods, techniques, practices, new concepts or ideas can be identified as evidence. Creativity is evidenced by acceptance and adoption of these by other persons. I wish to assure all faculty members that imagination and creativity will be recognized and rewarded, irrespective of the arena in which it is demonstrated.

Within the IANR, unit administrators have the key responsibility in evaluation of faculty performance. There has been a greater effort in recent years to involve unit administrators in planning and scheduling of International Program activities and programs. Performance evaluations of faculty are reviewed and discussed with Deans and Directors, as a group, rather than by individual divisions. Where International Program activity is involved, the Dean and Director of the International Programs Division is included in these discussions.

As a bottom line assessment of this area of concern, I would summarize by indicating that the concern is understandable, but I believe it is overstated. The basic evidence of research performance in the form of creativity, innovation, and the risk-taking associated with these behaviors, will be rewarded within the IANR performance evaluation structure where evidence of these behaviors can be cited.

Compatibility of Research Interests and Professional Goals

A young staff member operates from the perspective of seeking to establish himself in his profession, build programs and demonstrate initiative, imagination and productivity. He is sensitive to expectations to serve needs of the State. He is concerned with quality and sophistication of research work within his discipline. On the other hand, a developing country graduate student seeking training and knowledge within a particular subject matter area may be more interested in agriculture and commodities of his homeland rather than Nebraska agriculture and products.

These contrasting perspectives certainly lead to some uneasiness in making significant commitments to work with developing country graduate students. Earlier today, Woods Thomas commented on the quality of training provided to developing country graduate students in U. S. institutions. In my judgment, we are frequently too quick to criticize the failure of our system of graduate education to adequately serve the needs of foreign graduate students. We need to remind ourselves of the basic goals of graduate education. The purpose of graduate education is not to train individuals to work on specific products or problems using specific methods or approaches. Rather, it is to develop in graduate students an ability to think, to reason, and to apply logic; to develop their powers of disciplined observation; to develop their skills in experimental design and data interpretation; and to develop in them a recognition that research requires considerable effort. These goals should be irrespective of the specific topic or research problem in which graduate students are engaged. We need to remind ourselves that graduate education prepares these persons to deal with problems of tomorrow, not with specific problems of today. I have a favorite saying which is credited to Dr. Albert Sent-Gyorgy: "Discovery consists in seeing what everybody else has seen, and thinking what nobody else has thought". In this sense, science is a universal language, transcending the self-interest of both parties to this young faculty-graduate student partnership.

Admittedly, our young scientists are working within the constraints of the objectives of their Agricultural Experiment Station and grant funded projects. This does not by definition, however, prevent the design of thesis research projects for developing country nationals which will meet the aforementioned basic goals of graduate education. And, vice versa, significant scientific progress can be made through research projects conducted within

the home countries of developing country graduate students. There may be considerable opportunity for exploration of opportunities of this type in graduate programs in the various subject matter areas with which the Agricultural Experiment Station concerns itself. For example, it would appear that there should be great opportunity to develop for Ph.D. thesis projects collaborative research relationships with various International Development Centers throughout the world. Such arrangements would maximize the learning experience of both the faculty member and the graduate student.

Perhaps a major deficiency in our present approach to graduate programs involving international students is a failure to communicate more openly about the differences and commonalities of our perceptions of the role of graduate education. It would appear that there are several challenges which need further consideration. I offer the following questions:

1. How adequately do we assess the objectives and goals of incoming graduate students in our program?
2. How effectively do we challenge incoming graduate students to stretch their minds beyond their preconceived notions regarding their goals or objectives?
3. How adequately do we assess the perceptions of students finishing their graduate programs relative to the adequacy and quality of their programs and experiences?
4. Do we build on these perceptions to strengthen the programs we are making available to incoming graduate students?

It is easy to pose such questions. I do not have data to indicate their answers, but I believe these questions are worthy of further consideration. It has been my observation that we go to great lengths to evaluate specific courses and teachers, but perhaps we do not exert sufficient effort on evaluation of the total program experiences of graduate students, whether they be domestic or foreign students.

Conclusion

I would like to complete this discussion with a few general, personal observations. It appears to me that greater attention to selection and admission of foreign graduate students is needed. I see evidence of unfair and inaccurate stereotyping of foreign students. One frequently hears the comment that a faculty member cannot build a strong research program around foreign graduate students. That observation contradicts my personal experience, wherein foreign graduate students contributed significantly in quality and quantity of research productivity in projects which I directed. I believe it is fair to say that the same variation in quality of graduate students which we see among domestic students exists among foreign students. Perhaps we can improve our selection and admission decisions by narrowing the sources of origin of foreign students and by developing closer working relationships with institutions with selected countries. The Title XII program may contribute to development of greater depth of relationship with selected institutions and countries, and it should permit us to recruit and admit strong foreign graduate students to our graduate programs.

Working with a developing country graduate student can be a tremendous learning experience for a young faculty member. No one has a corner on good ideas. Learning doesn't stop at Ph.D. final oral exam. At a legislative budget hearing, a disgruntled senator was overheard to say, "It was no wonder that the University was such a great storehouse of knowledge, because the students brought so much and took away so little." This statement, intended as humor, does highlight the two-way learning relationship which exists rather uniquely in large institutions at the graduate level. Such opportunities for learning, in my opinion, can contribute significantly to the growth in knowledge and understanding of other nations by a young faculty member and can further lead to lasting relationships which may serve as valuable future contacts for that faculty member.

I believe it is in the short-range interest of the young faculty member to work with graduate students from developing countries. These students can provide manpower support and can contribute ideas essential to successful completion of research projects. Also, this working relationship provides a personal and professional learning experience. Given the assumption of continued growth in our involvements in the international arena, it is also in the long-range interest of young faculty members to develop these relationships and maintain them as future in-country contacts.

Perhaps the questions or concerns need to be rephrased. Rather than asking, "What can I gain?" or "What's in it for me?", the question should be "What can I contribute by directing graduate programs of developing country graduate students?" Contributions in this arena can be and will be recognized fairly and will contribute positively to the notion of professional or career development likely to emerge over the next two decades.

MAINTAINING ACADEMIC STANDARDS

Discussion leader: Russell C. Nelson
Associate Dean of Graduate Studies
and Professor of Mechanical Engineering
University of Nebraska-Lincoln

Recorder: David T. Lewis
Professor of Agronomy
Institute of Agriculture & Natural Resources
University of Nebraska-Lincoln

Dean Nelson welcomed the members of the discussion session and indicated the group's objectives. To stimulate thought he suggested for discussion the following items which have been of concern to the Graduate Deans:

1. What about theses and dissertations done overseas and their supervision? What about comprehensive examinations and dissertation defense? Can they be handled effectively overseas?
2. What is the responsibility of our institution to an overseas student who wishes to do his dissertation research here, but is to receive his graduate degree from an institution in his own country?
3. In our treatment of the foreign student should we make any compensation for the student's background? How do we handle our recognition of the fact that he has problems with our language and culture?
4. What about admission standards in regard to adequate preparation and English proficiency?

The group was of the definite opinion that we should not maintain double standards in regard to academic requirements for foreign students. Domestic and foreign students should be treated alike in terms of their academic programs: we should do nothing to "cheapen" the degree awarded to a student from a developing country. To do so would be an injustice to both the student and our institution.

The question was asked as to the rejection rate on foreign students entering graduate programs. Dean Nelson indicated that he did not have that information available, but he would try to find this out for inclusion in the Proceedings. The Office of International Education Services has since indicated that they have no such statistic. They cannot distinguish between students who voluntarily drop out of a program and those who fail. The point was brought out by one member that various techniques are employed by foreign students to gain admittance to a degree program. For example, some employ subterfuges in regard to verification of English proficiency, and we find later that the student has difficulty with the English language.

The question was raised as to the timing in a student's program regarding the decision as to whether the thesis/dissertation is acceptable. Many foreign students do well in coursework, but there seems to be little relationship between coursework and the ability to do research well. Of major concern would be the tendency to lower academic standards by passing students who have demonstrated inadequate research capability simply because we have already invested many months or years in their training.

Another point that was raised concerned our objectives in graduate programs, and whether or not we should be training students from developing countries in research techniques they will not be able to use when they return home. The consensus was that the major effort in graduate programs should be on thought principles so that students are aware of what they need in order to do the job. We should be training them in how to carry out the research process. Along these lines, should we be encouraging graduate students from developing countries to go on for the Doctor of Philosophy degree if what they really need is more practical information? One suggestion was made that we not admit certain foreign nationals for the Masters degree but have them receive that degree from one of their own strong institutions. These students would be admitted only for the doctorate.

The discussion group was of the opinion that good research can be done in the field as well as in the laboratory, and therefore, can be done abroad. In regard to work done abroad, however, the group felt it was imperative that the members of the Supervisory Committee be available on-site. In regard to work done overseas in a country that is sponsoring the student, the question was raised as to whether the thesis/dissertation could be written and accepted in a foreign language. At UNL we have not had such a request--yet!

CULTURAL-SOCIOLOGICAL NEEDS OF THE STUDENT

Discussion leader: Peter S. Levitov
Director of International Educational Services
Assistant Professor of History & Philosophy
of Education
University of Nebraska-Lincoln

Recorder: Judy Wendorff
Program Assistant
Office of International Educational Services
University of Nebraska-Lincoln

The group began its discussion by reacting to Professor Nemeth's comments earlier in the workshop regarding the regularity of culture shock occurring at three-month intervals during a foreign student's first year abroad. The discussion leader noted the multi-phase intercultural adjustment cycle developed by Stephen Rhinesmith, which differs significantly from the model presented by Nemeth. Members of the group shared their observations of foreign students at different points in the cycle, and some related their own experience as foreigners in the same context. This lengthy discussion culminated with the consensus expression of a need to anticipate low points in the adjustment cycle by developing heightened awareness of both the blatant and the subtle symptoms of anxiety and, thereafter, to reduce the effect of culture shock by utilizing local campus and fellow student resources.

All participants agreed that the language proficiency problem seems to be the greatest impediment to a successful experience as a foreign student. Frequently students hesitate to use the English language because of (a) the fear of ridicule for making mistakes in the language and (b) the less than enthusiastic response of U.S. nationals to non-native speakers of English, intensifying their difficulty in making the adjustment to life as a UNL student. Occasionally foreign students who are unable to cope with these anxieties may retreat to exclusive non-academic contact with people from their respective countries, making oral and written academic communication in English an even greater problem. While no one expects foreign students to have the proficiency of domestic students, there were expressions of the need for "correct" English and the desirability of teaching English with a "standard American" accent. English conversation classes offered informally as well as a more extensive offering of formal English classes for foreign students might be advantageous. It was noted that Nebraska is developing a greater international consciousness which will result inevitably in more positive attitudes to non-native speakers.

Another aspect of culture shock noted by the group was "mechanization shock" or how to access the myriad of machines we use as a matter of course in this country but which may be unfamiliar to many foreign students from less developed countries. In the case of technical courses of study the

university students from less developed countries might be given a reduced course load during their first semester, supplemented by a scheme of orientation to technical jargon and equipment.

Many students have had difficulty acquiring a taste for food in the U.S. Furthermore, meal times are often at variance with a student's prior experience. In some cultures certain foods are imbued with emotional or spiritual overtones; hence, their unavailability in the U.S. can create psychological deficiencies. A nutritionist in the group pointed out that food traits are one of the last and most difficult to change in a culture.

Health care presents a peculiar problem for foreign students. Part of it is attributable to confusion over who gives what care in the U.S. Other complicating factors are the unavailability of traditional healers, the unfamiliarity with the degree of medical specialization, the uneasiness in being treated by a member of the opposite sex, and the culture-based issue of who shares confidences with whom.

The issue of sharing confidences precipitated a discussion of the reasons why foreign students may not share "routine" concerns with their advisers. It became evident that a special role is played by the foreign student advisers who may be the only non-family people in the U.S. with whom certain confidences are shared.

At this point in the discussion the group asked itself if it really is important for foreign students to adopt U.S. modes of behavior, since, by so doing, the students may make it more difficult to readjust to their home countries. (After all, they are here as transients en route from home to home.) If it would be disadvantageous to "go native" in the U.S., we must modify our expectations of them.

Several participants ashamedly pointed out the increasing negative attitude of the student body and the community toward foreign students. Hope was expressed that after the Iranian hostage crisis has been resolved, positive attitudes would again prevail.

In this vein faculty members must be aware of their own values and attitudes, recognizing that they are strongly influenced by their own culture. With that self-awareness it will be easier to understand and work with students whose culture base is different than their own.

Different ways of involving foreign students with the "American life-style" were mentioned, not as ways of Americanizing the students but rather as providing a broader base for successfully coping with the society of their sojourn. Programs, such as the Lincoln Friends of Foreign Students (formerly the Host Family Association) and the College of Agriculture field trips to farms are helpful in this regard. It also was noted that spouses of foreign students are often "lost" in Lincoln, especially if they don't speak English. The International Women's group attempts to meet this need.

Foreign students frequently suffer a diminished self-image because they arrive in the U.S. (as the educational elite of their country) finding few people who know anything about their country. Furthermore they are constantly in the receiving end of education here as though they had nothing to contribute to the educational exchange process. The group recognized the tremendous value of foreign students as resources to the University and the State. It encouraged the involvement of foreign students in the institutional process in the community as well as in the classroom.

Several members of the group raised concerns about informing students that they would be unable to continue in their programs for academic reasons. While no solutions were offered, it was noted that the high expectations they, their families and their communities held for them made it particularly difficult for them to accept failure--often resulting in lifelong shame and, in some cases, a perceived inability to return home.

The participants learned of the orientation "host" approach which introduced new foreign students to "old-timer" students from their country and to interested U.S. students who provide peer support during the anxious first days in Lincoln. This was seen as offering the basis for continuing relationships with fellow students as well as meeting the immediate needs of new arrivals.

Finally the discussion group noted the difficulties presented by differences in non-verbal behavior across cultures. The foreign student advisers were seen as helpful to faculty members in interpreting unfamiliar behaviors/responses and explaining how their own behaviors might be perceived by foreign students from culture to culture.

In summary it was agreed that to best facilitate the education of less developed country nationals faculty at UNL have a dual responsibility: to become more aware of the foreign students' experience from the students' perspective and to become more aware of their own culture as it affects the students they teach.

INSTITUTIONAL BENEFIT FROM INTERNATIONAL CONTINGENTS

Discussion leader: Roberto Esquenazi-Mayo
Director of
Institute for International Studies
Professor of Modern Languages
University of Nebraska-Lincoln

Recorder: Max D. Clegg
Associate Professor Agronomy
Institute of Agriculture & Natural Resources
University of Nebraska-Lincoln

This group enjoyed a very fruitful and rewarding exchange of views. It was unanimously agreed that the presence of international students would allow staff members to broaden their agriculture views to an international level. Examples were mentioned to attest to this fact.

It was agreed also that staff must expand its knowledge of international situations, whether in agriculture or otherwise, because of the increasing interdependence in industrial and agricultural production.

It behooves the staff to acquire proficiency in foreign languages in order to understand firsthand other cultures. Indeed, this would facilitate and improve the relationship between international students and the staff.

The presence of international contingents allows local students direct contact and exchanges with peers from other nations. This is important anywhere in the United States, however, it is especially important in areas such as our where there is not the frequent and daily contacts with other nationalities that take place, for instance, in New York City or San Francisco. International contingents should be made available to local schools and civic organizations in order for them to talk about their respective homelands.

The coordination of contacts between local students, local community and international students should be strengthened since that would be a very effective way of contributing to mutual understanding. Any effort that increases international involvement with the local community and with local students should be encouraged since that would provide an excellent opportunity for improved relations.

This may be specially true in many cases where the former international student in later years becomes a leader in his own country. An international student who enjoyed a satisfactory experience in the United States would tend to view the relations between his homeland and us with less prejudice.

Being knowledgeable about the grass roots of the United States would give international students the background for a sound interpretation of American goals and motives. At the same time our own community and students would be more effective in understanding U.S. foreign policy and possibly would be able to contribute accurately to the formulation of such a policy.

This group had the feeling that not enough is being done in this area. This resource of international contingents, the group stated, is of paramount importance and should be used better and in a variety of ways that would prove to be mutually beneficial.

EDUCATIONAL AND PROFESSIONAL NEEDS OF A LDC

Discussion leader: Donald Hanway
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Institute of Agriculture & Natural Resources
University of Nebraska-Lincoln

Recorder: Larry Schulze
Assistant Instructor of Agronomy
Institute of Agriculture & Natural Resources
University of Nebraska-Lincoln

I. Situation in Most LDCs

- A. Pool of trained manpower in agriculture (and other areas) is low.
 - 1. Many independent 25-30 years.
 - 2. Started with few trained people, little capability in educational systems, high levels of illiteracy, especially in rural areas.
 - 3. Developing institutions with limited trained people is slow process.
 - 4. Few from rural areas get good secondary education and chance for university. Most agriculture graduates are from cities.
- B. In-Country training capabilities are limited.
 - 1. Advanced training institutions often recently established- as yet few graduates.
 - 2. Nations may have technical schools in agriculture for training technicians at lower levels.
- C. Needs for trained people far exceed supply.
 - 1. Competition among government agencies great for each year's graduates.
 - 2. Sending people for 2-4 years added training means real government commitment.
 - 3. Whoever is sent represents some of the highest capability available.
 - 4. University graduates in agriculture are destined for important roles and often rapid advancement just to fill critical needs.

II. Objectives of Development Programs

- A. Development often requires institution building.
 - 1. Capability in and government at all levels in supply, service and regulatory functions.
 - 2. Capability in universities and other educational institutions.
 - 3. Capability in research and extension.
 - 4. Capabilities in private sector.

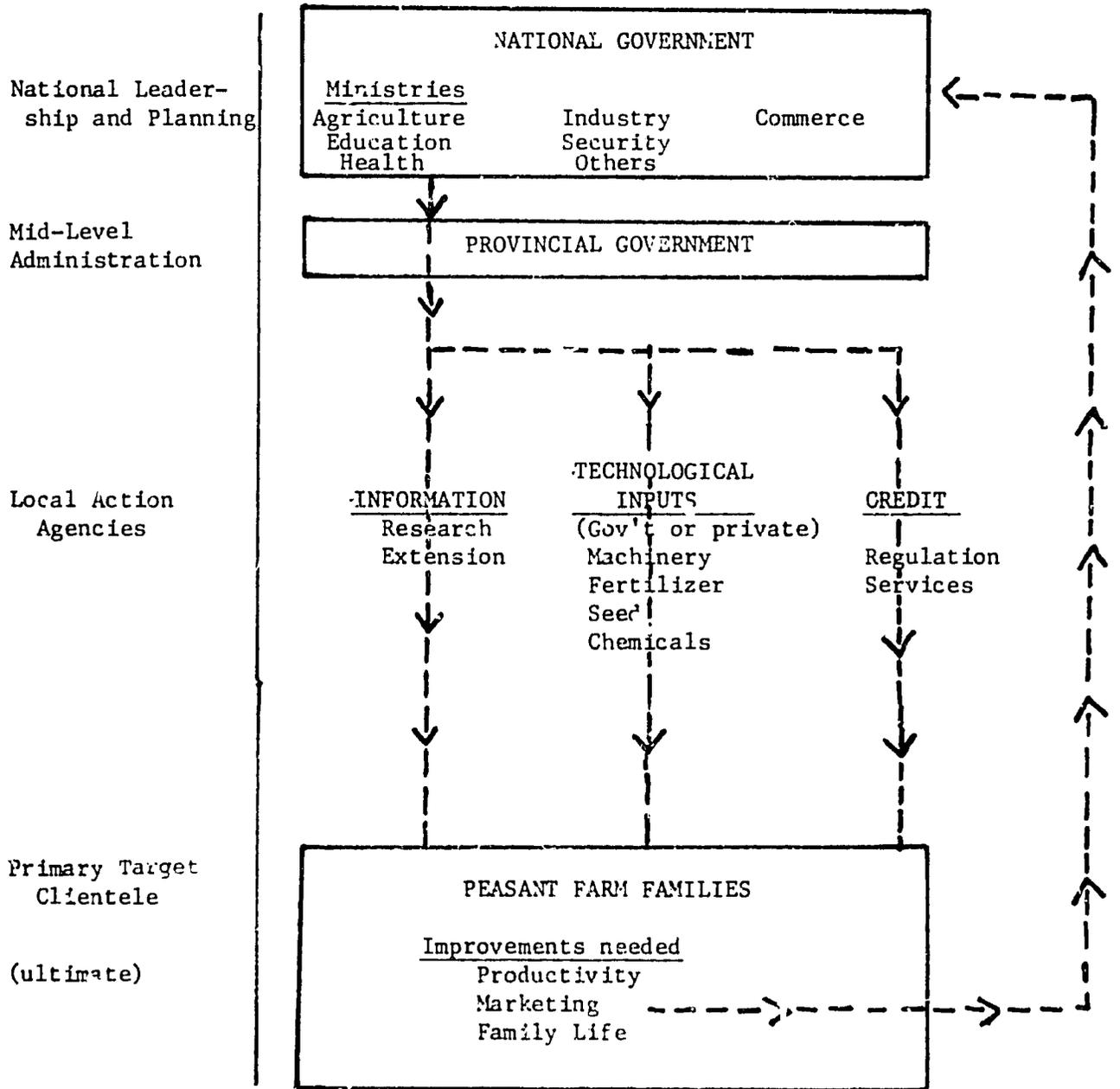
5. But institutions are means to ultimate end.
 6. Still this is the starting point and represents the place where most foreign students we train will function.
- B. Ultimate goal is increased productivity, improved income, and better family life for the rural population with the poor peasant farmers the primary ultimate target.

III. Meeting Educational and Development Needs--Discussion Comments

- A. See attached diagram.
1. In LDCs leadership, planning and a government commitment are essential to development.
 - a. Most LDC students in graduate training in the U.S. will fit into such roles or directly supporting roles of teaching and research.
 2. Provincial governments play important mid-level administrative roles in development.
 3. Local action agencies, extension and credit services must provide services to individual farmers.
 - a. Information, demonstrations and technological inputs must be provided.
 - 1) In many LDCs the commercial infrastructure for doing these adequately does not exist.
 4. The ultimate changes that must occur if development activities are effective is increased productivity of peasant farmers and an improved quality of life for them.
- B. National leadership and planning.
1. Projections are that the greatest population increases, in many cases 50% or more, will occur in LDCs by the turn of the century among their rural poor, the majority of their populations.
 2. The pressure of both people and livestock numbers in many LDCs is denuding the land, resulting in land deterioration at increasing rates.
 3. If the graduate students we train go back into policy and administrative leadership positions, do we prepare them
 - a. In humanities and sociology in addition to scientists?
 - b. To be administrators in addition to sciences?
 - c. Most participants will have city backgrounds. This makes living and working in rural areas a difficult transition for them.
 - d. For participants value structures are more likely to be upper class rather than peasant based.
 4. Preparation of foreign students to be most effective when they return home is a difficult and complex question.
 - a. Some may be moved immediately into administration.
 - b. Some will be suppressed by their organization and existing leadership.

- c. Some will return to the scientific roles they came to prepare for.
 - d. Some breadth of training, exposure to the problems of planning and supporting broad research programs, some introduction to extension methods and organization-- these in addition to the basic degree program are probably desirable.
5. The reward system in LDCs will probably be very different from that in land grant universities here.
 - a. Research publications indicating accomplishment will have some value.
 - b. Greatest rewards may require proper political relationships.
 6. If the increasing populations in LDCs are to eat, the food will come from agricultural production in the countries themselves.
 - a. U.S. land grant institutions are more capable, if given needed support, in helping these countries improve agriculture than any other institutions in the world.
- C. Provincial mid-level administration.
1. In early stages of development few advanced degree participants will return and function at this level.
 2. LDC abilities to train people for this level of service and for technician roles is increasing.
- D. Peasant farm families are the primary target clientele in Title XII development programs.
1. Projected rates of population growth could degrade quality of life so that hunger and disease will reduce population growth rate.
 2. Development changes for LDC farmers must start where they are and gradually improve through appropriate technology, direct help and demonstrations so as to improve productivity.
 - a. Mass movements of rural peasants to cities places them in worse situations than if retained in a subsistence agriculture that slowly improves.
 - b. Such farmers can not use advanced technologies immediately-- still the nation will have places for both high and low technologies.
 - c. Local employment opportunities must be developed for the peasant masses.
 - d. Changes will be slow, over decades or generations, not within 5-year periods.
 - e. If returning trained participants are to be effective agents of change, they must be willing to get out with the people, get their hands dirty, learn what will work, and then demonstrate how to do it.

TRAINED PERSONNEL NEEDS IN AGRICULTURE
IN LDCs



EFFECTIVE ACADEMIC ADVISING OF LDC STUDENTS

Discussion leader: Robert A. Olson
Professor of Agronomy
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln

Recorder: David T. Lewis
Professor of Agronomy
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln

Student Contributor: Aziz Hanna, Iraq
Agronomy Graduate Student

Three major topics surfaced as an agenda on a preliminary scan of the issue Effective Academic Advising:

1. arrival (settling in),
2. program of courses and research, and
3. modus operandi.

Regarding the first of these topics, it was recognized that the arriving student is usually confronted with a totally foreign environment and is lonely and quite unsure of what is in store for him/her in respect to personal amenities. There may have been some contact beforehand with the University of Nebraska foreign student office and sometimes with friends of the same nationality in residence at the University, the latter serving as an effective ice-breaker. In most cases, however, this period of "lost kinship" is a very critical time for the individual and is a splendid opportunity for the adviser to display friendship and concern by meeting the student at the airport. Established confidence in the adviser and in the University system by this early contact can assist greatly toward a smooth working relationship throughout the ensuing graduate program. Consensus of the group was that the student should be met on arrival in Lincoln whenever possible and that measures be implemented that will positively confirm travel arrangements beforehand with further provision to the student of telephone numbers of University of Nebraska-Lincoln staff who might assist this early transition.

The initial socio-cultural adjustment carries over as well into the establishment of housing facilities, both within Lincoln and the subject matter department. The adviser can be of great help in the selection of the living site by his understanding of the ethnology of the city along with economic implications. Similarly, the adviser can be responsible for a room assignment within the department that will foster a rapid adjustment to University of Nebraska-Lincoln academic life by a judicious admixture of foreign and domestic students that will stimulate and broaden the perspectives of both. The adjustment will be assisted significantly by the adviser's acquiring as much understanding as possible of the student's country and its traditions

All agreed that relevance of program was the over-riding issue on the second topic of operational details. With some contracts such as AID, FAO, and IAEA the area of specialization for the student is well spelled out, while in many others program objectives are not so clear. In either case it is mandatory that the adviser critically evaluate the student's background of training and interests in relation to the program to be undertaken. A first requisite is that of determining English perception with provisions for early remedial action if needed. Frequently one or more background courses at the undergraduate level may be required for providing the "practical" aspect of relevance to the student in his field. This, plus the need for arranging a relatively light load during the first semester of settling in, will often buck against the time limitations of the student's contract.

There was total agreement among the discussants that there must be no double standard in level of achievement expected between foreign and domestic students. Various means can assist in achieving the essential background of practical experience to afford a common footing for the foreigner with the domestic counterpart including summer interning and, most feasibly, by working shoulder to shoulder with domestic students on the adviser's projects, again with time the primary limitation. No quick solution was apparent to the group, however, for providing the needed experience in administration of the new Ph.D. graduate who is assigned a high level administrative post on returning to the LDC of origin. Nor was there total agreement on the time requirement for advising of foreign students, some expressing little or no difference between foreigner and domestic but others contending at least twice as much time was spent on foreigners, especially at the thesis-writing stage. There was general consensus, though, that foreign student contracts for meeting program objectives were notably better accomplished today than in prior times, attributable in part to the fact that most come here now with commitment to return to the homeland.

The third topic on operations brought out the need for keeping channels of communication between adviser and student open, a requirement that is assisted by the establishment of realistic thesis objectives and by a thoughtful meshing of the student's operations with those of other graduate students in the subject area. A modest emolument accompanying each student contract is essential for covering operational costs of the research project undertaken (glassware, reagents, computer time, etc.). It would be especially helpful if this fund could be large enough to permit some travel of the student outside the University confines for observing agricultural practices and for attending one or two professional meetings during the training period.

Assistantships for foreign graduate students have been rare in the past and will likely continue to be rare in the future. The numbers available to the adviser are limited and usually have specific commitments requiring domestic candidates. It is virtually impossible to procure good American student applications without promise of an assistantship. Thus, the University would not be fulfilling its state and national mandate of training our national scientists and educators for the future if the limited funds available were uniformly spread across local and foreign candidates. This does not mean, however, that foreign student enrollment has been without benefit to the adviser and his programs. The presence of these students has contributed significantly to the work force available for realizing the overall research objectives of the adviser and the University.

EVALUATING LDC APPLICANT CREDENTIALS

Discussion leader: Earl F. Ellington
Assistant Dean
College of Agriculture
Institute of Agriculture & Natural Resources
University of Nebraska-Lincoln

Recorder: Helen Dawson
Admission Assistant
Graduate Studies
University of Nebraska-Lincoln

Student Contributor: Abdel Fettah Berrada, Morocco
Agronomy Graduate Student

As an introductory contribution to the discussion of evaluating LDC applicant credentials, the procedures presently used by the Graduate Studies office were reviewed. This office functions as a central clearing and coordinating unit for the evaluation of all graduate applicant credentials. It maintains a library of resource materials for use in evaluating transcripts from foreign institutions. This office always welcomes input on how it may better perform this function.

An active discussion followed with points discussed being primarily those of the different components represented in an LDC applicant credentials. Components and discussions were as follows:

1. Transcripts and degree statements. The challenge of evaluation and understanding transcripts and degree statements was mentioned by a number of participants. Educational systems around the world differ considerably with differences reflected in examination and grading systems. Some foreign students stated that grades for performance in their institutions tended to penalize them because students were in programs with less flexibility and choice than is typical in the United States. Possible solutions to the problems of transcript evaluation that were suggested included greater utilization of resource publications now on campus, utilization of faculty with experience or connections with foreign institutions and some utilization of our current foreign students.
2. Graduate examinations. The Graduate Record Examination (GRE) is used at the University of Nebraska by several departments but not all. Although the results of the GRE exam may be helpful in some cases, concern was expressed that it does not fulfill all needs of an entrance examination. For example, it does not test in many subject areas of agriculture, and it is not designed for foreign students. Some departments have designed their own examinations, but there were no reports on how successful they were.

3. Language examinations. All agreed that language examinations to test English proficiency was an essential requirement. Consensus was that the student should fulfill this requirement before the graduate program is activated. Most discussion was directed toward procedures for testing language proficiency. Use of only the TOEFL examination which measures English comprehension and writing ability was criticized because there would be no testing of speaking ability. The English placement examinations administered by the English Department are helpful in correcting this deficiency since they now include an interview component.
4. Letters of recommendation. Questions were raised on the value of many letters of reference that were part of the foreign student's application credentials. Many such letters tend to overrate the student and mislead those attempting to do credential evaluation. Faculty members that had some experience in such evaluations gave more credit to letters from colleagues that they knew and tutors that students had utilized.
5. Agricultural experiences. Most LDC graduate students in agriculture are not from farms. This provides an additional challenge for graduate training programs. Social and political organizational structures in the home countries of LDC students reduce the chances of students with agriculture experience achieving graduate education. Many foreign graduate students have gained some agriculture experience as part of post-secondary programs. The tour of Nebraska agriculture course that was recently initiated should be helpful in overcoming at least some of this deficiency.

MAKING THESIS RESEARCH RELEVANT
FOR THE LDC NATIONAL

Discussion leader: Lowell D. Satterlee
Professor of Food Science & Technology
Institute of Agriculture & Natural Resources
University of Nebraska-Lincoln

Recorder: Jerry Maranville
Professor of Agronomy
Institute of Agriculture & Natural Resources
University of Nebraska-Lincoln

Student Contributor: Judith Garcia, Venezuela - Graduate Student
Muftah Azzouz, Libya - Graduate Student
Amadu Ayebo, Ghana - Graduate Student

Initial discussion centered around the concern for maintaining and building upon the existing quality in the present-day graduate program. The group felt, without exception, that the University of Nebraska has set high standards for its graduate program, and that those standards should not be sacrificed for any specific program which has special needs, such as the International Programs for students from the LDC. Yet, as was stated by University of Nebraska President Roskens at this conference, the University of Nebraska must "Get outside the bounds of its old cage" and work to incorporate international needs into the University, the graduate program and more specifically, into the thesis research of the foreign student.

When establishing the graduate research program for the foreign student, several factors must be taken into consideration. These factors are:

1. Not all students know what type of job they will have upon returning to their home country.
2. A student getting an advanced degree frequently is either moved immediately into an administrative post in his/her home country or is moved into administration in a few years.
3. Many countries, especially the LDCs, are unable to assist the student in doing part of his/her graduate research at home if that research is of a highly technological or scientific nature. This is simply because of the lack of needed facilities and equipment.
4. The students who stay in the profession as teachers/researchers, upon returning home, are frequently without the excellent library facilities and "on campus expertise" (other scientists in closely related areas) that they were accustomed to while students in the U.S.A.

The question that should then be asked after considering the four factors listed above is, "How does a graduate committee determine what is the best way to structure the graduate program for the foreign student?"

First of all, as was stated by one student, "I came to the U.S.A. to obtain a graduate education. I chose the U.S.A. because its universities possessed the highest quality programs for coursework as well as research." A student, such as the one just quoted, is seeking an education in the basic sciences which is not present in his/her home country. It is this student and other LDC nationals who will become the foundation of the science and technology in that LDC.

Not all graduate students from the LDCs, however, are seeking a degree in the pure sciences. As is the case in agriculture, they are seeking training in both science and the application of that science to the production of food/fiber. For these students, it may be best if they can pursue some of the applied aspects of their research back in their home country. This allows these students to immediately apply basic knowledge and skills obtained in the U.S.A. to problems at home. Second, it also gives the returning students a "head start" on solving problems pertinent to their home country. If such a research program is established, it should follow this general format:

1. Select a major adviser and other members of a graduate supervisory committee at the University of Nebraska.
2. Select and get approval of a research adviser in the home country.
3. Develop a coursework program and have it approved by the University of Nebraska supervisory committee.
4. Develop a thesis research project to be reviewed and approved by University of Nebraska supervisor committee and home country adviser.
5. Complete majority of coursework at University of Nebraska and initiate research project.
6. Return to the home country to complete the applied aspects of the thesis research problem.
7. Complete thesis research and writing at University of Nebraska.

The above described thesis research program will not be suitable for all students and all graduate programs, but when it is suitable, it will require these special needs:

- A. A home country willing to facilitate the needs of the student when he or she returns home to pursue a portion of the thesis research. To facilitate this happening the home country should:
 1. Aid the student and University of Nebraska faculty in finding a home country research adviser.

2. Provide time, facilities and funds for the student's research needs while home and funds for the student's research needs at the University of Nebraska.
 3. Aid the student and University of Nebraska faculty in defining an appropriate research area for the student which meets a need of the home country and matches the expertise of the University of Nebraska faculty.
- B. The University of Nebraska faculty working with this student (major adviser and other members of the student's supervisory committee) must possess the willingness to give the extra time, effort and expense that this graduate program will demand.
 - C. The major professor must be willing to adapt his area of expertise to the unique requirements of a research problem based in another country.
 - D. The home country and the University of Nebraska Administration and Graduate College must also adapt to the special needs of the student and his or her major adviser and supervisory committee. These needs center around:
 1. The possible need of the major adviser to visit and counsel with the student while that student is pursuing research in the home country.
 2. The requirement of specialized research processing equipment in the University of Nebraska laboratory that will help the student in pursuing that portion of his research best done at the University of Nebraska.

Thus far we have discussed how the foreign student pursuing a graduate degree at the University of Nebraska can do part of the thesis research in the home country. What has been outlined for that student should also be made available to American students enrolled at the University of Nebraska who would like international experience to be a part of their graduate program. If that experience is to be in research, then the needs outlined above should also apply to the U.S. student.

The above considerations will allow the University of Nebraska graduate students who desire to make their research meaningful to do so, without requiring the University of Nebraska graduate faculty to lower its research requirements and standards for these students. At the same time this will be one more significant way to foster the University of Nebraska's involvement in International Agriculture.

	THURSDAY NOV. 6, 1980		
8:30 a.m.	Registration <i>Morning Topic: International Institutional Programs and Educational Goals</i> <i>Chaired by: Ted H. Doane, Professor, Animal Science IANR UN-L</i>	2:50 p.m.	Questions
9:00 a.m.	Professional and educational needs of the developing country student LDC Official - N.N. "Victor" Umunna, Chairman, Animal Science Ahmadu Bello University, Zaria, Nigeria	3:00 p.m.	Break
9:30 a.m.	Questions	3:15 p.m.	Discussion Groups
9:45 a.m.	Socio-cultural adjustment needs and offerings of the LDC student Ed Nemeth, Associate Professor of History & Philosophy of Education, UN-L		1-Maintaining academic standards - Russell C. Nelson, Associate Dean of Graduate Studies, Professor of Mechanical Engineering, UN-L (Leader)
10:15 a.m.	Questions		2-Cultural-sociological needs of the student, Peter Levitov, Director of International Educational Services, Assistant Professor of History & Philosophy of Education, UN-L (Leader)
10:30 a.m.	Break		3-Institutional benefits from International contingents, Roberto Esquenazi-Mayo, Director of Institute for International Studies, Professor of Modern Languages, UN-L (Leader)
10:45 a.m.	Title XII concept, programs and status Woods Thomas, Director of International Programs, Purdue University Former Title XII Director	4:00 p.m.	4-Educational and professional needs of a LDC - Donald Hanway, Professor of Agronomy, IANR UN-L (Leader)
11:30 a.m.	Questions	5:00 p.m.	Reconvene for group reports
12:00 noon	Luncheon Chaired by: Ted Hartung, Dean of Agriculture, IANR - UN-L Speaker: Martin Massengale, Vice Chancellor, IANR - UN-L IANR Commitments to the International Programs		Adjourn
	<i>Afternoon Topic: Institutional Standards - International Mission</i> <i>Chaired by: Barbara Chesser, Associate Professor of Human Development & Family IANR UN-L</i>		FRIDAY, NOV. 7, 1980
1:30 p.m.	The Graduate Schools responsibility Henry Holtzclaw, Dean for Graduate Studies, Professor of Chemistry - UN-L		<i>Morning Topic: Developing a Graduate Program to Fit the Professional Needs of the LDC National</i> <i>Chaired by: Dermot Coyne, Professor, Horticulture IANR UN-L</i>
1:50 p.m.	Questions	8:30 a.m.	The Department Chairman—Robert Gast, Professor & Head of Agronomy, UN-L Department Graduate Committee Chairman—Dale Anderson, Professor of Agricultural Economics, UN-L
2:00 p.m.	Institution responsibility Earl Leng, Program Director, International Sorghum-Millet Project, IANR UN-L	9:00 a.m.	The Major Advisor - Dale Flowerday, Professor of Agronomy UN-L
2:20 p.m.	Questions	9:30 a.m.	Questions
2:30 p.m.	Student program relevance and functions to LDC needs Joseph F. Metz, Jr., Director of International Agriculture Development Professor of Marketing, Cornell University, Ithaca, N.Y.	10:00 a.m.	Break
		10:15 a.m.	Discussion Groups
			1 - Effective academic advising of LDC students - Robert Olson, Professor of Agronomy, UN-L (Group Leader). Student Contributor, Aziz Hanna, Iraq
			2 - Evaluating LDC applicants credentials - Earl Ellington, Assistant Dean, College of Agriculture, IANR UN-L. (Group Leader). Student Contributor, Abdel Fettah Berrada, Morocco
			3 - Making thesis research relevant - Lowell Satterlee, Professor of Food Science & Technology, IANR UN-L (Group Leader). Student Contributors, Mu Ftah Azzouz, Libya; Judith Garcia, Venezuela
		11:15 a.m.	Reports from group discussions.

12:00 noon Luncheon
 Chaired by: Martin Massengale, Vice Chancellor, IANR UN-L
 Speaker: Ronald Roskens, President of the University of Nebraska

Afternoon Topic: Advisor-Student Relationship
 Chaired by: Darrell Watts, Associate Professor of Agricultural Engineering, IANR UN-L

Case Histories:

1:10 p.m. 1 - Program conducted at the Institution only,
 Terry Klopfensein, Professor of Animal Science, IANR UN-L

1:30 p.m. 2 - Program where research is conducted in the LDC
 George Petrides, Professor of Zoology, Michigan State University

2:00 p.m. 3 - Program in which a domestic student studies in a LDC
 Paul Gessaman, Professor of Agricultural Economics, IANR UN-L

2:20 p.m. Questions

2:45 p.m. Break

3:00 p.m. Topic: Opportunities for young staff members to work with LDC graduate students
 Roy Arnold, Dean & Director of Agricultural Experiment Station, IANR UN-L

Discussion period:

3:45 p.m. Wrap up: Dr. Robert Kleis, Dean of International Programs, IANR UN-L

4:00 p.m. Adjourn

N. N. "Victor" Umunna, Head, Department of Animal Science, Ahmadu Bello University, Zaria, Nigeria. Dr. Umunna received three degrees at the University of Nebraska: B.S. in Animal Science 1968; M.S. in Animal Science 1970; Ph.D. in Animal Nutrition 1972. Since his return to Nigeria, "Victor" has become the Chairman of Animal Science in Northern Nigeria. He has traveled extensively and has given many lectures throughout the World.

George A. Petrides, Professor of Wildlife Management and Zoology, Michigan State University and Professor of African Studies Center, Michigan State University. Dr. Petrides received his B.S. from George Washington University, his M.S. from Cornell and Ph.D. from Ohio State University in 1948. He has served Michigan State since 1958 in several capacities, and his work of advising graduate students throughout the world has brought him to this conference.

Joseph F. Metz Jr., Director, International Agriculture, Cornell University and Professor of Marketing, Dept. of Agricultural Economics. Dr. Metz has held the position of Associate Director of Cornell's Agricultural Experiment Station, Director of the International Rice Research Institute in Los Baños, Philippines as well as Project Leader for the University of Philippines - Cornell Graduate Education Program in the Philippines. Some of his consulting appointments have been: with Ford Foundation, AID and the World Bank.

Dr. Woods Thomas, Director, International Education and Research and Director International Programs in Agriculture, Purdue University. Dr. Thomas is the immediate past Executive Director, Board of International Food and Agriculture Development (BIFAD) US State/AID from 1977-1979. Prior to these positions Dr. Thomas had been associated with Brazil AID/contracts as well as Director of Purdue Fellows in Latin America. He holds the staff position of Professor of Agricultural Economics at Purdue University.