

**ATTITUDES AND PERCEPTIONS OF SELECTED INTERNATIONAL
STUDENTS FROM DEVELOPING COUNTRIES
TOWARDS AGRICULTURE AND
STUDYING AGRICULTURE**

By

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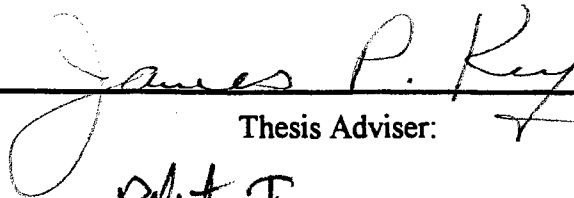
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**Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the degree of
DOCTOR OF EDUCATION
July, 1995**

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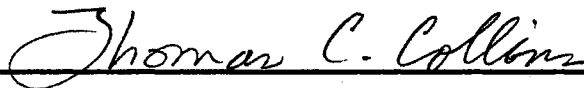


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ACKNOWLEDGMENTS

I would like to express a very special thanks to my research adviser Dr. James P. Key, Professor and the Director of Research at the Oklahoma State University Department of Agricultural Education, Communication and 4-H Youth Development for his constant guidance, support and encouragement throughout my graduate program and especially in the preparation of this thesis. I am especially grateful for his friendship, patience and helpfulness. I will always remember Dr. Key's guidance and advice.

My sincere appreciation goes to my major adviser, Dr. H. Robert Terry, Professor, Department Head (Emeritus) of the Agricultural Education Department (AGED) and Director of the Oklahoma Agricultural Leadership Program for giving me the opportunity to study in the Agricultural Education Department. Also, I thank the other members of my graduate committee, Dr. Dean Schreiner, Professor of Agricultural Economics, Dr. Eddy Finley, Professor of Agricultural Education and Dr. Bill Weeks, Associate Professor of Agricultural Education for their availability, assistance and encouragement throughout the doctoral program.

I extend my sincere thanks and acknowledgments to Dr. Authur Klatt, Director, Oklahoma State University Office of International Programs, for assisting us in contacting his colleagues at the Mid-America International Agriculture Consortium (MIAC) universities and getting us the names of international students for the research. I thank each Director at the MIAC universities and participants for their response and cooperation. Also, I thank, Mario Villaquiran and Tesfaye Liranso, for their help and suggestions on the data analysis, Dr. Micheal Stapper for proofing the questionnaire and Dr. Kelly Lee Cooper for editing this dissertation.

I wish to express my deep gratitude and thank all the people and organizations that supported and encouraged me during the course of the study especially Anne Benes, Jane Bosserman, David Stoddart at the Oklahoma State University, Residential Life, Family Resource Center and Matthew Hesser, Connie Lake and Joe Hagy at the Oklahoma State Regents for Higher Education for the Graduate Assistantship and Dr. Carol Olson, Nicole Bostian at the Oklahoma State University, Graduate College for the fee waiver scholarship and financial support; Thressa Bowler at the Oklahoma State University Financial Aid Office.

I want to express my sincere appreciation to all the members of my family and very special friends especially Kyari and Hadiza Abba Bukar, Akbar Niknam, Mijitaba Hamissou, Ph.d, Mario Villaquiran, Yusuf Etudaiye, Nazu Nargis, Oliver Mmaju and Philip Abode, Ronnie and Stephanie Williams, Laraba Z. Abbas, Mr. and Mrs. B. Akolade, Mr. and Mrs. J. Aluko for their support.

Finally I wish to express my deepest gratitude to government and the people of Borno State, Nigeria for investing so much resources in educating and supporting me over years - now I am ready to serve my people and my country.

DEDICATION

This study is dedicated to the Adam family, for giving me the sense of purpose and belonging. My late father Alhaji Adam Mustapha, my mother Hajja Yagana Ajiram Adam, my late brother Baba Gana Adam (B. Sc. (hon.), M.Sc Architecture), my brother Awali Adam (B.Sc. (hon.), M.Sc. Quantity Surveying) and all my other brothers and sisters for being there and for understanding, patience, support and love. I am and will always very be proud to be part of the family.

Also this study is dedicated to my family Yagana Hadiza , Ahmed and especially my wife Adenike Adam, Ph.D for the years of love, sacrifice understanding and support.

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CHAPTER I

INTRODUCTION

To a large extent, large scale agricultural and industrial development projects in the developing countries did not work (Oswald, 1986). It has been increasingly accepted that many obstacles to agricultural progress are human, social and institutional as well as technical. Far greater emphasis must be placed on the development and utilization of human resources as a key to economic and social advancement (Harbison, 1973).

Thirty to sixty percent of the people in the developing countries' live in the rural areas. Also, a large percentage of the people in the developing countries livelihood and their economies depend on agriculture (Todaro, 1987).

Modernizing agriculture is of paramount importance to solving problems in areas such as food supply to the current and fast growing populations, alleviating hunger and poverty, providing raw materials for industrialization, earning foreign exchange, improving the quality of living through equitable distribution of income, and increasing agricultural production.

One of the ways to modernize agriculture is through education and training. Around the world, over a million post secondary students (1,261,964) were studying in countries other than their own in 1990. Two thirds of these students (66 percent) were from the developing countries (UNESCO, 1992).

In 1990, the United States hosted by far the largest number of International students of any country with, (407,529) nearly one-third (32%), followed by France with 136,015 (11%), Federal Republic of Germany with 97,985 (8%), the United Kingdom with 70,717 (6%) and the former USSR with 66,806 or 5% International Students (Zikopoulos, 1993).

Problem Statement

One of the principal mechanisms for developing human skills and knowledge is through education and training (Schultz, 1981). Education and training in agriculture and allied fields is considered one of the most crucial inputs for accelerated production and rural development (OECD, 1969).

Central to the problem of this study is understanding why very small percentages of international students from the developing countries in the United States are studying agriculture, when much of the economies in their countries and livelihood depends on agriculture. It is deemed necessary to conduct research to determine the attitudes and perceptions of international students, to better understand how agricultural development could be achieved and improve the livelihood of many people living in the rural areas.

Purpose

The purpose of the study was to determine attitudes and perceptions of selected international students from developing countries towards agriculture and studying agriculture.

Objectives of the Study

To achieve the purpose of this study, the following objectives were established.

1. To determine international students' demographic information regarding the:
 - a. Gender of the students.
 - b. Country and region of origin.
 - c. Rural / urban background and intended place of domicile when the students return to their home country.
 - d. Reason why the students chose to study their current major field of study.
 - e. levels of enrollment.
2. To determine and compare the attitudes and perceptions of international students from different regions of the world toward agriculture and studying agriculture
3. To determine and compare the attitudes and perceptions of international students majoring in agriculture to the international students majoring in other fields of study toward agriculture and studying agriculture.
4. To determine qualitative responses of international students from developing countries to open-end questions on education, agriculture, rural / agricultural development.

Assumptions

1. It was assumed that the perceptions and views of aggregate responses of students represents the general views and perceptions of that region of the world.
2. It was assumed that non-agricultural respondents have no negative bias toward the rural \ agricultural sector.

Scope and Limitations

The study was limited to comprehensive 1862 land grant universities with programs including agriculture. These universities are part of an organization called the Mid-America International Agriculture Consortium. These institutions include Iowa State University, Kansas State University, Oklahoma State University, University of Missouri-Columbia, and University of Nebraska-Lincoln.

The study was limited to international students from developing countries.

Definition of Terms

Agricultural Development - the process of mobilizing existing resources and raising their productivity. The distinguishing characteristic of high productivity agriculture is not simply more of the traditional form of labor and capital, but rather a set of institutions and facilities which complement these existing resources and raise their productivity.

Attitude - refers to a person's favourable or unfavourable evaluation of an object.

Attitudes are developed through experience with an object; it predisposes one to act in a predictable manner with respect to an object; and an attitude consists of negative or positive evaluation.

Developing Countries - countries with low per capita income. In most of these countries between 30 - 80 percent of the economy is mainly based on agriculture. Also, a most common characteristic include is a level of industrial development.

Development - growth accompanied by changes in output, distribution, and structure. The change may include an improvement in the material well-being of the poor in the population; a decline in agriculture's share of the GNP and corresponding increases in the share of the GNP by manufacturing, finance, construction, and government administration; an increase in education and skills of the labor force; and substantial technical advances originating within the country.

Economic Development / Growth - an increase in a country's production or income per capita.

Education - basic and higher order cognitive and funtional skills.

Gross National Product (GNP) - a measure of an economy's total output of goods and services. Usually is the measure of production.

Informatics - is the automatic processing of information with the use of computers.

Mid-America International Agriculture Consortium (MIAC) - a non-profit organization with the member institutions being 1862 land grant institutions in the heartland of American agriculture. Various missions include assisting in alleviating world

hunger; providing technical assistance, agricultural sector analysis, and planning; institution building; and human resource development.

The MIAC headquarters is located at Oklahoma State University. Overall management and operation is directed by ten board members consisting of chief agricultural executive officers (Deans) and directors of international agricultural programs from each institution. At the headquarters, the MIAC office is headed by an executive director.

Perception - a process of extracting information. As perceptual set is broadened and becomes more complex and richly patterned with experience. The individual becomes capable of extracting more information from the environment.

Primary / Basic Education - intended to afford a knowledge of reading, writing, and figures as the necessary and primal infrastructure. Hence, literacy is the first important unit in development.

Rural Development - the transformation of the economy, society, politics, and the way of life of rural areas. It is interdisciplinary approach embracing all developmental sectors of a rural area. These sectors may include agriculture, industry, transport, education, health, trade, credit, and leisure activities.

Secondary / Intermediate Learning - defined as including all those types of technical training which are below the academic level of university education and are not purely vocational training for a particular occupation or trade in agriculture and related activities.

Training - refers to work-specific teaching or learning.

Vocational Training - that activity basically aimed at enabling those for whom it is intended to acquire the necessary information and skills in a particular sector of economic activity.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The purpose of this chapter was to present background information and pertinent aspects of a review of relevant and related literature. The review encompasses five major areas and each area has various sub-sections. The five major areas and sub-sections are:

1. Present problems. (a). Problems of a growing population. (b). Distribution of the population in the developing countries.
2. Agriculture in the developing countries. (a). Importance of agriculture (b). The need for agricultural development.
3. Development theories and strategies. (a). Past approaches to development. (b). New thinking and approaches to development. (c). Related literature.
4. Developing human resources. (a). Trends in the development of human resources. (b). Education and agriculture. (c). Primary / basic education (d). Secondary / intermediate education. (e). Vocational training. (f). Higher education.
5. The role of women.
6. International Students' education in the United States. (a). Historical perspective. (b). International students in the United States.

Present Problems

Problems of a Growing Population in the Developing Countries

Developing countries continue to experience rapid growth in population. Over 90% of the projected addition of roughly 3 billion people living in the year 2025 will live in Africa, Asia, and Latin America. In many developing countries, large numbers of the population live in the rural areas. Between 30-65% of the Gross National Product of these nations were based on agriculture.

After taking more than 100 years for the earth's population to double from 1.25 to 2.5 billion people in 1950, it took only 37 years to double again from 2.5 to 5 billion people by 1985 (Merrick, 1986).

The growth rates rose significantly higher in the developing countries. The population growth rate fell below 1% in the developed world by mid-1960 while they continued to rise in developing countries until the late 1960's, peaking at over 2.5% per year. These differences have resulted in a shift in the distribution of the global population toward developing countries, however, the fastest rates of growth were experienced in Africa and Latin America (United Nations, 1985).

Continuing high growth rates result not only from continuing high fertility rates and increases in life expectancy, but from demographic profiles, or age composition of the population. In developing countries, 37% of the population is under 15 years of age and only 4% is 65 years or older. In Africa, the figures are 45% under 15 and 3% 65 years or

older. By contrast, in the developed countries under 15 population is only 22% of the total and 11% is 65 or older (United Nations, 1984).

Increased numbers of people increases the demand on national resources; more people require more food, fuel, clothing, and other necessities of life. Can the world's natural resources support the growing world population or will human demand overwhelm the capacity of natural systems? Can the earth's finite resources of soil, water, and its biological processes continue to meet the demand of 5-10 billion people without collapsing and bringing on the Malthusian specter of increasing poverty and starvation? The answers to these global scale questions depend upon assumptions about development: education, technological progress, and human behavior (Population Reference Bureau, 1987).

Distribution of the Population in the Developing Countries.

The number of people living in the rural areas in the developed countries continued to decline. It was about 93% in 1800, 60% in 1925, about 30% in 1980, and the projected rural population is likely to be 15% by the year 2025. In comparison, according to the United Nations (Table I), since 1800 the number of people living in the rural areas in the developing countries has more than tripled, although the proportion dropped from 96% in the 1800s to about 70% in the 1980s.

Numerically, rural populations in developing countries will quadruple between the years 1800 and 2000. By the year 2025, the projection shows a decline in rural inhabitants,

TABLE I

RURAL AND URBAN POPULATIONS OF DEVELOPED AND
DEVELOPING COUNTRIES, 1800-2025
(In millions)

	World				Developing Regions				Developed Regions			
Year	Total	Urban	Rural	% Rural	Total	Urban	Rural	%Rural	Total	Urban	Rural	%Rural
1800	978	50	928	95	273	20	253	93	705	30	675	96
1850	1,262	80	1,182	94	352	40	312	89	910	40	870	96
1900	1,650	220	1,430	87	575	150	425	74	1,075	90	1,005	94
1925	1,950	400	1,550	80	715	285	430	60	1,235	115	1,120	91
1950	2,504	735	1,769	71	832	446	386	46	1,672	290	1,382	83
1980	4,453	1,776	2,677	60	1,136	802	334	29	3,317	974	2,343	71
2000	6,127	2,952	3,175	52	1,276	992	284	22	4,851	1,959	2,892	60
2025	8,177	5,107	3,070	38	1,397	1,192	205	15	6,780	3,915	2,865	42

Sources: United Nations, Patterns of Urban and Rural Population Growth, Population Studies No. 68 (New York: 1980) Tables 3, 48 and 50 and United Nations, Estimates and Projections of Urban, Rural and City Populations, 1950-2025: The Assessment, New York.

however, still more than 40% of the total population of developing countries will be living in the rural areas.

Overall, rural populations outnumber urban residents. Projections indicate, however, that urban residents in the entire world will increasingly outnumber rural residents by 2025 and, thereafter, as the rate of urban population growth increases, it will likely be much higher than rural population growth in both developed and developing countries.

Agriculture in the Developing Countries.

Importance of Agriculture

As presented in Table II, agriculture in the 1950's employed 80% of the labor force of the developing countries. In 30 years, the developed countries have reduced the agricultural labor force to a mere 6%. During this same period, developing countries barely managed to expand industrial employment by 9.5% and the service sector employment by 10.5%, still leaving 60% of the labor force in agriculture.

Contrary to historical experience, it seems that it is in agriculture that the bulk of future job openings have to be found (ILO, 1976).

The Need for Agricultural Development.

According to Lewis (1979) agriculture has been the weakest link in the development chain. In the developing countries as a whole, food production has failed to

TABLE II
COMPOSITION OF THE LABOR FORCES
(In percentages)

	Agriculture		Industries		Services	
	1950	1980	1950	1980	1950	1980
Developed Countries	38	6	30	38	32	56
Developing Countries	80	60	8.5	18	11.5	22
Asia	79	64	9	17	12	19
Africa	80	70	7	14	12	16
Latin America	53	30	19	24	28	46

Sources: ILO, Labor Force Estimates and Projection (Geneva, 1977); World Bank, World Development Report 1984 (Oxford University Press) and P. Bairouch and J.M. Limbor, "Changes in the Distribution of the World Labor Forces by Region, 1880-1960", Essays on Employment (Geneva:ILO, 1971)

keep pace with the demand for food, thereby causing or aggravating a whole series of other problems.

Basic reasons for this failure include:

1. The population growth is growing very fast. The population has grown at around 2.5% per annum and per capita demand for food has pushed the growth well beyond 3%, turning what used to be an export surplus into an import surplus of food.
2. The technical revolution in tropical food production has just begun. Research in the colonial days was been confined, almost but not exclusively, to commercial crops exportable to the world market. Spectacular progress has been made with maize, wheat for subtropical conditions, and rice for areas of controlled irrigation.

3. Even where there is new technology to impart, the agricultural extension services and the network for supplying modern inputs to the farmers, especially seeds, fertilizers, and pesticides, are gravely deficient and in many areas virtually nonexistent.
4. Investment in the rural infrastructure is inadequate. Road systems have improved but not enough has been invested in storage facilities.
5. Few governments have carried out land reform; whether it is distribution of land to the landless or change from rental to ownership tenures, or fixing rental ceilings.
6. The price of agricultural commodities in world trade fell while all industrial prices rose. The basic factor was enormous increases in agricultural productivity of developed countries, such as the United States, resulting in a buildup of the stock of cereals, thus depressing all agricultural prices. In addition, developing countries' governments want to keep farm revenues low; whether by imposing taxes on exportable crops or by placing price ceilings on food for the domestic market.

Development theories and strategies

Past Approaches to Development.

Modern development economics arose in the late 1940's as an economic counterpart to the political independence of the emerging countries of Asia, Africa, and the Caribbean and later spread to Latin America. The developing economics had some relation to the old growth economics of classical economists such as Smith, Malthus and Ricardo which were concerned with the heavy variables of capital, population, and the

objectives of what Adam Smith termed the “progress of opulence” in the progressive state (Meier and Baldwin, 1957).

New development economists went beyond their classical and neoclassical predecessors to consider the kind of policies that an active state and international community could adopt to accelerate a country’s rate of development.

Meier (1987) wrote the new development economics with its concern for economic theory and policy analysis became more analytical than classical and neoclassical economists. The Communists and socialists, in view of distrust of the market and a belief in the persuasiveness of market failure, turned to central planning.

Meier (1987) wrote that during the 1950’s and early 1960’s, developmental policies emphasized the maximization of the growth of the GNP through capital accumulation, industrialization-based, or import substitution. By the late 1960’s and early 1970’s, a second phase of development economics focused more directly on poverty and inequality. It was argued that growth in GNP is not a sufficient condition for the removal of poverty. Income was not trickling down to the lowest income groups and the number of people living in absolute poverty was increasing in many countries.

The focus in the 1970’s and 1980’s became increasingly divided due to the heterogeneity of the developing countries and to differential rates of country performance. More emphasis was placed on country specifics in applied research. In an increasing number of countries, these changes in development were thought to produce an improvement in agricultural policies, a liberalization of the foreign trade, and a professionalism in project appraisal (Meier, 1987).

The very meaning of development was questioned and instead of worshipping at the altar of the GNP, many economists added another dimension to the objective of development. The World Bank emphasized redistribution and growth. The International Labor Organization (ILO) concentrated on basic human needs. Much of the literature turned from an emphasis on industrial development to one of rural development. Impressed by studies of human capital formation (Schultz, 1961), development economists shifted their attention from physical capital to human resources.

There is compelling evidence that increasing access to education contributes positively to more equitable income distribution and reduces poverty.

In the words of Nobel prize-winning economist Theodore Schultz:

...the decisive factors of production in improving the welfare of poor people are the improvement in population quality and advances in knowledge (1961, p.9.)

Development requires changes in social institutions, replacing the old with the new. Adam Smith, the great representative of classical economics, also emphasizes the importance of the close correlation between education and economy. According to Schultz's (1961) view, education and culture are not only the foundation of an efficient state system, but also the elements upon which the state is based in economic matters and development. In this respect, it may be said that for developing countries, the role of education in development and modernization is much greater than in the industrialized countries (Woodhall, 1985).

New Thinking and Approaches to Development

There is a close connection between the development of a country and the personal and social development of its people. Crucially important in speeding up economic development are the new values in judgment brought through education and the will to develop. According to Papy (1966), the following points regarding the vital modernizing roles of education and human development are of particular importance:

1. People adjust themselves more easily to modern discoveries and innovation.
2. More areas of work and employment opportunities are created.
3. Production techniques are better integrated and more efficiently used.
4. Innovations and inventions are put to use without delay.
5. The efficiency and the enterprising ability of the domestic work force are enhanced benefits which are transmitted to international transactions as well.
6. The possibility of policy makers taking dangerous and wrong technical, economic, and political decisions is reduced.

Schultz (1961) states that money invested in education results in a huge increase in production. In other words, investment in education causes a greater increase in national income than resources spent on other development investments.

Some of the earliest research on the relationship between education and development focus on the contribution of education to economic growth (Schultz, 1961; Denison, 1962, 1967). The contribution of education to American growth has been most pronounced in the more recent decades, while capital investment was more important in earlier decades (Denison, 1962a).

Private and social benefits from incremental outlays on education are highest in the developing countries. Those countries have the highest outlays for expanding and improving basic education, precisely the level which targets the most disadvantaged groups. Basic education imparts essential knowledge, but it also develops critical attitudes and values - especially a sense of self-efficacy or “can do” which is needed to adopt new methods and adjust to rapid changes (Haddad , Carwoy, Rinaldi and Regel, 1990). For the developing countries, unlike the earlier historical situation, however, it may be necessary to have a relatively high level of skill and much more knowledge to take advantage of the more complex equipment and techniques that may be obtained from advanced countries.

Related Literature

The history of the development process over the last thirty years shows that the transfer of financial resources for physical investment has not in itself created an adequate foundation for self sustaining development. In the last several decades, many developing countries and development agencies in response to hunger, poverty, and inequitable distribution of income have embarked on large scale physical and infrastructural developments. To a large extent, these strategies failed in many developing countries (Oswald, 1986).

The experience acquired during this period clearly demonstrates that one of the major obstacle to economic progress in developing countries is the insufficient attention given to the development of human resources. The conventional wisdom of each decades

has tended to offer single-factor recipes for economic development - investment in physical infrastructure, industrialization, export substitution, basic needs, etc.

The latest thinking acknowledges that while all these elements are necessary conditions for growth, they are not sufficient without inputs into human capital formation. It is on human beings and their capacity to utilize skills and experience that self-sustaining development ultimately depends. This set the stage for the first meeting of the Roundtable on the Human Dimension of Development in Istanbul, Turkey on September 2 - 4th 1985. The Roundtable brought together a group of leading international academics and development experts to take a look at the human dimension in the economic and social development process, in order to identify the major issues and to mobilize international support for required policy changes (Haq and Kirdar, 1985).

In the past, the World Bank's and developing countries' development agencies based national development on the gross national product or per capita income. However, in the last decade, a continual shift was taking place to include human resources. This culminated in the 1990 United Nation's change on how it determines national development and the establishment of the Human Development Report, in 1990 and 1991 (UNDP, 1991). This new approach uses the Human Development Index to determine the level of development. The index includes education, health, and income.

According to Haq et al., (1985) the inclusion of education focuses on institution mechanisms to bring about rapid, large scale improvement in levels of living for the masses of people in developing countries. The Roundtable made a strong joint appeal for a general redirection of policy and planning toward the human dimension in development. It

called for intensified action in four specific areas: education and training, nutrition and health, roles of women, and new technologies.

Education: The importance of training in basic sciences in developing countries and stressed that technology cannot be expanded without a base of fundamental broad-based if it is to support a broad spectrum of technological applications.

Nutrition and Health: The serious deterioration in nutritional standards, especially of young children, underlined a special need for urgent action. Since improving nutrition requires action in several sectors including agriculture, education and the mass media, as well as in general economic policy multisectoral support is needed both nationally and internationally. Government must obviously take the lead, but non-governmental organizations and the key international agencies need to provide critical support.

Support for an enhanced position for women: Putting the human dimension as the central element in development means an explicit recognition of the role of women. In most societies, women have substantially less access to education, jobs, income and ruling elite than men. Women's level of health and nutrition are often inferior to men's and often girl's welfare are most invariably less than boy's in these respects. Women therefore generally account for the largest proportion of deprived people. Giving the human dimension a central role requires that women's status be improved. Moreover women are the main source of child care and family health and nutrition, therefore the welfare of whole populations depends largely on how women perform their role.

New Technologies: The world is in the midst of scientific and technological revolutions that are taking place in four different areas: Informatics; bio-technology;

materials, and energy. These developments can open important new perspectives for developing countries, providing the technologies are oriented toward solving the human problems of development.

It is important of sustaining traditional technologies, which are used mainly in crafts and small scale enterprises, and blend those technologies with modern ones. Traditional technologies are so filled with local skills and available resources that are literally the social pivots of many populations in developing countries. The blending of modern with traditional technologies can help to maintain and enhance the living standard of the mass of the population.

The new information technology offers great potential for developing countries, but threatens to widen the gap between the developing and the developed countries, unless special efforts are made to harness the technology appropriately. This requires more resources to be devoted to the development of suitable software for use in developing countries, especially in areas directly affecting the most deprived. Applications which enhance the productivity of agriculture and rural and small industries and which contribute to basic health care and education could aid in alleviation of poverty.

Developing Human Resources.

There is persuasive theoretical and empirical evidence that investment in education and training plays a crucial role in development. Some of the earliest research on the relationship between education and economic development focuses on the contribution of education to economic growth (Schultz, 1961; Denison, 1962, 1967). This study arises in

an attempt to account for unexplained residual growth in the production function when changes in labor and physical capital are included (Solow, 1957). The results of studies in both developed and developing countries show education as one of the most important factors contributing to economic growth.

Denison found that between 1930 and 1960, 23% of increases in the United State's output was due to the increased education of its labor force. Further growth accounting estimates for the United States and Europe in 1950-1962 showed a wide variation for education's contribution, from a low 2% in Germany to highs of 12% in Belgium, 15% in the United States, and 25% in Canada. Similar estimates for developing countries also suggest a wide variation of educational contribution, from lows of 1 to 3% in Mexico, Brazil, and Venezuela to 16% in Argentina. Other estimates for Ghana, Kenya, Nigeria, Malaysia, and the Republic of Korea, based on Schultz's method, showed education contributions in the 12 to 23% range (Psacharopoulous et al., 1985).

Trends in the Development of Human Resources in the Developing Countries.

In all countries of the world, developing and developed, enrollment in all levels of education, from primary to the tertiary, expanded from about 250 million in 1950 to 906 million in 1985. During this period, as much as one-third of the increase in the total population was absorbed in education institutions as student enrollment. More than half of the population of age group 6-24 in the world are presently in schools and colleges. However, expansion of education was higher in the developing countries.

In the developing countries, enrollment increased at an average annual rate of growth of 12% in primary, 37% secondary, and 43% higher education compared to -0.8% primary, 2.9% secondary, and 9.6% higher education in the developed countries. Between 1950 and 1960, a period for which detailed data are available, adult literacy in the world doubled from 1,134 to 2,314 million and by 1985 3,200 million of the world population, or nearly three-fourths, are literate (Tilak, 1990).

Education and Agriculture

Education and training in agriculture and allied fields at different levels is one of the most crucial inputs for accelerated food production and rural development. The World Bank studies, which measure the relationship in developing countries' farmers' education and their agricultural efficiency, concluded that if a farmer had completed four years of elementary education, his productivity was, on the average, 8.7% higher than that of a farmer with no education (Lockheed, Jamison and Lau., 1982). This is an average of results from 31 data sets, which yield both negative and positive education effects. The survey also found that the effect of education is higher where complementary inputs are available. Further evidence on the effect of education in raising farmers' productivity appears in the World Banks' studies carried out in the Republic of Korea, Malaysia, and Thailand (Jamison et al., 1982); and Nepal and again in Thailand (Jamison and Mooch, 1984). Other studies support the general conclusion that education contributes positively to agricultural productivity, especially where other inputs are available to farmers and land

reform has created favorable conditions for a range of production choices (Sack, Carnoy and Lesaros, 1980).

The requirements for agricultural manpower derive directly from the goal of food security through increased production and from what this goal implies in technological development necessary to increase crop production, given declining productivity because of limited land and water resources. A basic requirement is for an agricultural work force trained at all levels; i.e., plant and animal scientists, extension workers, farm workers, and managers (Wittwer, 1977).

Questions are raised concerning what type of education should be emphasized. Within the education system, it is necessary to establish priorities for the various possible forms of education and training.

Balogh (1962) feels that there is an essential need in the development of large scale technical and agricultural programs within schools at all levels. From the standpoint of accelerating development, the immediate requirement may call for emphasis on vocational, technical and adult education rather than on a greatly expanded system of formal education. However, according to Lewis (1962) universal primary education poses no serious problems due to the serious deficiency in secondary education. The most critical manpower requirement tends to be for people with secondary education who can be managers, administrators, professional technicians (scientists, engineers, agronomists, doctors, economists, accountants), or subprofessional technical personnel (agricultural assistants, technical supervisors, nurses, engineering assistants). Furthermore, Lewis (1962) characterizes the product of secondary schools as the officers and non-

commissioned officers of the economic and social system. A small percentage goes on to university education.

Haddad et. al, (1990) in a World Bank study found a high priority is infusion of new skills and knowledge into the agricultural sector. In order to achieve a system of modern agriculture, the quality of labor in agriculture has to be improved as an input in its own right and to allow the use of better forms of nonhuman capital (i.e., equipment, seeds, insecticides).

In another World Bank study Tilak (1990) concluded that in many countries that have experienced substantial increases in agricultural production, the main factor has not been new land or land that is superior for agriculture; nor has it been mainly the addition of reproducible capital. More importantly, the agricultural transformation has been predominantly on new skills and useful knowledge required to develop a modern agriculture.

Primary / Basic Education

Malassis (1966), in his UNESCO publication, points out that the structure and methods of the primary school are of exceptional importance. In the development context, the primary school must indeed provide basic education for those who will cultivate the land, but also for a very large number of young people whose working will be outside agriculture. He further stated that one of the fundamental problems of growth is the redeployment of labor to match the development of several sectors and branches of production. According to EDC (1989), in many developing countries, for most children,

primary school education is terminal. It is necessary to equip them with some basic skills that they can use in event they cannot continue their schooling.

Secondary or Intermediate Education

One of the problems of intermediate agricultural education is the lack of prestige and failure to attract young people in numbers required for development.

The basic purpose of intermediate agricultural education is to provide trained personnel possessing the necessary knowledge and technical skills essential for modern agriculture and its many related specialized fields of work.

Specific objectives of intermediate agricultural education are different from those of university level education. Agricultural technicians are mostly trained for professional duties of an essential practical character in the field. They must be skilled not only in modern techniques appropriate for the type of agricultural production where they will be employed, but they also need to be trained in the art of communication in order to teach farmers, farm workers, and others how to make use of the research in improvements of farm output and efficiency (EDC,1989).

Vocational Training

Vocational training in the rural area may ultimately be defined as the activity which fits a person for his present or future occupation and for his present or future environment. It, therefore, supplements regular school time.

One of the most important objectives of vocational training is to bring technological progress to the farmer in a form which he can assimilate. Adult farmers will find vocational training to improve farm productivity. Rural youth - introduction to future

activities as farmers or artisans. Young people - expose young people to new occupations for which they have no previous preparation. Women and girls - since they become increasingly responsible for many activities on the farm and are almost invariably responsible for the family economy, vocational training provides a solid foundation for many other different training programs (EDC, 1989).

Higher Education

The primary function of higher education is the conduct of high-level research, including projects of a fundamental nature, together with the training of scientifically-oriented graduates capable of staffing research centers. Also, universities are considered to supply technical executives or technologists whose activities are mainly concerned with the functioning of the agricultural industry. It is essential that an agricultural institution concerned with the training of this type of graduate, respond quickly to external change. Second, higher education systems are called on to produce agricultural specialists who have an in-depth knowledge of restricted areas of science and technology. In this case, soundness of scientific knowledge is essential and rapid adaptability less important.

As agricultural systems evolve and the whole complex of agricultural industry and commerce develop, the need for a wider range of agricultural manpower and responsibilities of higher education in the developing countries (EDC, 1989).

The Role of Women

The presence of women in the institutions linked to critical areas of development constitutes an important prerequisite for their assumption of a major role in this process. Education has been one of the main factors bringing women into the development process. A study by the World Bank showed young women get less education than young men in almost every country (Haddad et al., 1990). The development process, until now, does not take into account as such, but addresses the whole population. However, at a time when the global context of development requires special efforts to mobilize all resources, especially in developing countries.

Women represent an enormous potential source of human capital and of scientific and technical skills in both agriculture and industry. Here women appear as a critical variable, which makes it necessary to examine a new the relationship within families and within institutions in order to ensure a real equity of opinions by giving a new shape to the development process. However, their specific conditions have been given little consideration. This has created a series of obstacles and limitations that have become apparent by analyzing some available data.

In reality, the situation of women, as well as the development process, are matters of enormous complexity and variety. Countries and regions show basic differences in their condition of development. At the same time, the status of women varies within the borders of one and the same country. However, some general observations may serve as a basis of discussion on the subject. The situation of women should be seen in the framework of

development. Haddad, et al. (1990) specified that within this context, the integration of women in development implies specifically:

1. equality in opportunities for education
2. equality in employment opportunities
3. equal access to health services
4. full participation in public services.

The situation for women has changed during the past few years, partly because of the progress made in the development process in many countries. However, the scarcity of women still exists in the participation at the highest decision making levels. This may be due to the burden of the double role (at home and outside the home). There is need to introduce certain changes to ensure an improvement in the terms under which women are brought into the development system.

From this perspective, it becomes imperative to take actions that will allow women to take up decision making roles at both the national and international level. Policies for better utilization of human resources may become of great importance in this area.

International Students Education in the United States.

Historical Perspective.

Students traveling to study in other countries dates back to the Greek states. Intellectual enthusiasm, curiosity, desire for personal advancement, and personal charm of teachers were powerful forces inducing students to flock the side of many philosophers in ancient Greek states (Walden, 1909).

Later, with the rise of great universities in other parts of the Mediterranean, university studies were also available at such cities as Pergamum, Antioch, Pella, Cos, Rhodes, Tarsus, Soli, Nicaea, and Nicomedia and students from abroad traveled for study (Daly, 1950).

In the middle ages, students moved in leisurely fashion from place to place in search of eminent masters without fixed curriculums or fixed periods of study or degrees. With the use of such universities as those at Salerno, Bologna, Paris, Montepelliar, and Oxford, students from all parts of the world travel to seek education and training (Haskin, 1928).

According to Thuwing (1928), in the nineteenth century, German universities impelled by a new nationalism, evolved unique standards of instruction and scholarship and attracted many foreign students, especially from the United States. The first American, Benjamin Smith Barton (1755-1815) of Philadelphia, earned a degree in Medicine at the University of Göttingen in the early eighteenth century. During the course of the nineteenth century, tens of thousands of Americans enrolled in German universities. In the twentieth century, German universities ceased to attract foreign students (Cieslak, 1955).

International Students in the United States.

Students from abroad came to American colleges earlier than is generally realized. Shortly after the American Revolution in 1784, Fransisco de Miranda came from South America to study at Yale (Wheeler, 1925). At the present, because of the economic and political prestige of the United States, the United States attracts great numbers of foreign

students. The following statistics as shown in Table III indicates a continued increase in numbers of international students in the United States.

TABLE III
STATISTICS OF INTERNATIONAL STUDENT ENROLLMENTS IN
THE UNITED STATES HIGHER EDUCATION SYSTEM

Year	Number of Students	Year	Number of Students
1904	3,673	1955	34,232
1911	4,856	1965	82,045
1923	6,739	1975	154,580
1930	9,643	1985	342,113
1948	6,154	1994	449,749

Source: Open Doors 1993 / 94 (1994) Report on International Education Exchange. Todd Davis (Ed.). Institute of International Education. New York, NY.

In 1990, the United States hosted by far the largest number of International students of any country, 407,529 nearly one-third (32%), followed by France with 136,015 (11%), Federal Republic of Germany with 97,985 (8%), the United Kingdom with 70,717 (6%) and the former USSR with 66,806 or 5% International Students (Zikopoulos, 1993).

The number of International Students in the United States has risen to an all time high of 438,618 for the 1992 / 93 academic year. Over twenty percent, 88,120, (20.1%) of International Students major in Business and Management followed by Engineering with 77,280 students (17.6%), Physical and Life Sciences, 39,490 (9.0%), Computer and Mathematical Sciences, 36,980 (8.4%), Social Sciences, 33,260 (7.6%), Fine and Applied

Arts, 22,550 (5.1%), Health Sciences, 18,180 (4.1%), Humanities, 16,800 (3.9%), Education, 12,160 (2.8%) and Agriculture with 8,960 (2.1%) International Students (Zikopoulos, 1993).

Summary of the Review of Literature

In summary, the literature review provided evidence of the fast growing population in the developing countries and that a very large part of the population of the developing countries still live in the rural areas. Agriculture is of vital importance, not only in providing food, but is necessary in providing raw material for industrial development and foreign exchange.

Past development strategies to a large extent did not work. Now new approaches are being sought such as the inclusion of human resources into the development process through education and training. The literature reviewed also noted the importance and role of women in the agriculture many of the developing countries.

Statistics for the last ninety years signified a continual increase in the number of international students studying in the United States, however a very small percentage of the international students are studying agricultural sciences and natural resources. Taking into account the importance of agriculture in the developing countries, this study is meant to assess the attitudes and perceptions of international students from developing countries toward agriculture and studying agriculture.

CHAPTER III

OUTLINE OF PROCEDURES

The purpose of this chapter was to describe the procedures for the study. The design and conduct of the study reflected the purpose of the research. This chapter included sections on the population of the study, the sampling procedure, development and validation of the questionnaire, and the methods for data analysis.

Population of the Study

The population of the study included 7207 international students enrolled for the 1993 / 1994 academic year at member universities of the Mid America International Agriculture Consortium (MIAC): Iowa State University (2519 students), Kansas State University (1060 students), Oklahoma State University (1600 students), University of Missouri-Columbia (1000 students), and University of Nebraska-Lincoln (1088 students).

The purposive sampling technique was used in conducting this study.

Kerlinger (1973) defines purposive sampling as:

.....another form of nonprobability sampling, which is characterized by the use of judgement and a deliberate effort to obtain representative samples by including presumably typical areas of groups in a sample. (p.129).

The Sampling Procedure

Dr. Athur Klatt, Oklahoma State University, Director of the Office of International Programs contacted the five Directors of Mid-America International Agriculture Consortium (MIAC), which included Dr. James E. Osborn (OSU), Dr. Janice Swanson (KSU), Dr Mike Nolan (UMC), Dr. Harold Crawford (ISU), and Dr. Glen Vollmar (UNL), (the letters are shown in Appendix A).

The researcher was provided with names, addresses, gender, major fields of study and the country of origins of all the international students from each of the MIAC institutions. International students from the developing countries were selected from the MIAC list. Furthermore, the selected international students from the developing countries were grouped into two groups, students in the agricultural and non-agricultural major fields of study.

All the selected students were assigned numbers. Random numbers were generated with a computer. Using the generated random numbers and the assigned numbers to the international students from the developing countries, a sample of forty international students from the developing countries, twenty agricultural and twenty non-agricultural students were selected from each of the MIAC institutions.

The selected students represented Africa, Asia, Latin America and the Islands. The method used to select the students was chosen with the concurrence of the committee members to reach a balanced geographic distribution.

After the IRB's approval 40 questionnaires were mailed to the selected international students at each of the five institutions, with self-addressed stamped envelope for the

returning of the completed questionnaire. A follow-up was conducted for the respondents who did not return the questionnaire by the set deadline date.

Development and Validating of the Questionnaire

The researcher developed the survey instrument - a questionnaire. The questionnaire was designed to reflect the purpose and objectives of the research.

The questionnaire was developed with the aid of the researchers' advisors, and past and contemporary literature, to include questions on demographics, several factors related to general agriculture and factors related to studying agriculture. Four and five point likert-type scales were used to discern the attitudes and the perceptions. For the perceptions responses, respondents extent of agreements were assessed. For the attitude questions, respondents' level of importance to the questions were assessed. Also, the questionnaire included qualitative open-ended questions.

Guidelines provided by Key (1974) were used in the design of the instrument. These included the following characteristics: (a). Questions are easily readable with "white space" on each sides. (b). Questions dealt with topics pertaining to the researchers' objectives and topics which the respondents would deem important to them. (c). The survey is short and limited and in the form of a booklet. (d). Questions of a related nature are grouped together. (e). Questions are arranged in logical order. (f). Questions are arranged from those requiring less thought to those requiring intensive judgement and decisions.

The questionnaire was submitted to the faculty members of the Agricultural Education and Agricultural Economics departments at Oklahoma State University for their evaluation and recommendation. In a pilot test, the questionnaire was administered to selected international students to assess the clarity of the questions and suggestions for changes and improvements.

The instrument validation was done through a random purposive sampling of the researcher's peers and a panel of experts including the researcher's committee.

The final version of the questionnaire was submitted to the group monitoring all research involving human subjects at Oklahoma State University, the Institutional Review Board (IRB). IRB approval # : AG-94-034, shown in Appendix D, was granted on June 30th 1994 to conduct the research.

The Methods for Data Analysis

Questions in the study were separated into three categories: demographic, perceptions and attitudes. The first category of questions on the demographic was mainly yes or no answers and filling the blanks. The second category of questions was on perceptions and was analyzed using a continuous scales on the extent of agreement. The third category of questions was on attitudes and it was analyzed using likert-type scale on the level of importance to the respondent.

The open-ended questions were analyzed qualitatively. Descriptive statistics were used to analyze the quantitative questions. Frequency distributions, percentages, and means were calculated. Analysis of variance was conducted to determine if there were

mean differences in perception or attitudes of the two groups of students, the agricultural and non-agricultural majors and across regions. The Tukey post hoc test was conducted to determine where significant mean difference occurred.

A numerical scale was used to facilitate comparison of findings in each mean response category and responses were assigned the following patterns:

Categories	Value
Strongly Agree	4
Agree	3
Disagree	2
Strongly Disagree	1

Categories	Value
Extremely Important	5
Very Important	4
Important	3
Somewhat Important	2
Not Important	1

For ease of categorizing the fractions resulting from computing of the mean response the following absolute limits were given to the following two groups of categories:

Categories	Values
Strongly Agree	3.50-4.00
Agree	2.50-3.49
Disagree	1.50-2.49
Strongly Disagree	1.00-1.49

Categories	Values
Extremely Important	4.50-5.00
Very Important	3.50-4.49
Important	2.50-3.49
Somewhat Important	1.50-2.49
Not Important	1.00-1.49

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

The focus of this chapter was to describe and analyze the collected data and was in line with the outlined objectives of the study. This study was designed and carried out with the purpose of determining the attitudes and perceptions of international students from developing countries toward agriculture and studying agriculture. Also, demographic information of the respondents were reported. This information described the respondents in detail and categorized the respondents for comparative purposes by such criteria as gender, region of the world where the respondents came from, sizes of the city where respondents were born, where respondents planned to reside upon returning back to their country, and major fields of study.

In order to accomplish the specific objectives, responses were collected and collated. In this chapter, analysis of the findings were presented in tables and figures to facilitate the presentations.

Population

The target population of the study included 7207 international students enrolled during the 1993-1994 academic year at the Mid-America International Agriculture Consortium (MIAC) universities. The MIAC universities are Iowa State University,

Kansas State University, Oklahoma State University, University of Missouri-Columbia and the University of Nebraska-Lincoln.

Lists of the international students were obtained from the Director of MIAC at each university. From each of the MIAC universities, the sampling for the study included forty international students from the developing countries, for a combined total of two hundred students. The first criteria for selecting the students at each university included a requirement that the sample shall include twenty students majoring in any area of agriculture and twenty students majoring in any fields of studies other than agriculture. The second selection criteria included a requirement for a world-wide geographic distribution of the selected forty international students at each university.

A total of two hundred questionnaires were mailed between the beginning of July through the middle of August, 1994. Forty questionnaires, went to each university, with twenty to the agricultural and 20 to the non-agricultural majors at each of the universities. Follow-up questionnaires were mailed to the students who did not respond to the survey in the first mailing, with a deadline for returning the follow-up questionnaires of October 1994.

The overall responses to the study are presented in Table IV and in Figure 1. A combined total of one hundred and forty one or 70.5 percent of the questionnaires were returned by the cutoff deadline from all the surveyed students. Out of the total returned, one hundred and thirty nine or 69.5 percent or of the questionnaires were valid, two or 5 percent of the questionnaires returned were non-valid. The two non-valid respondents signified that they were not from developing countries.

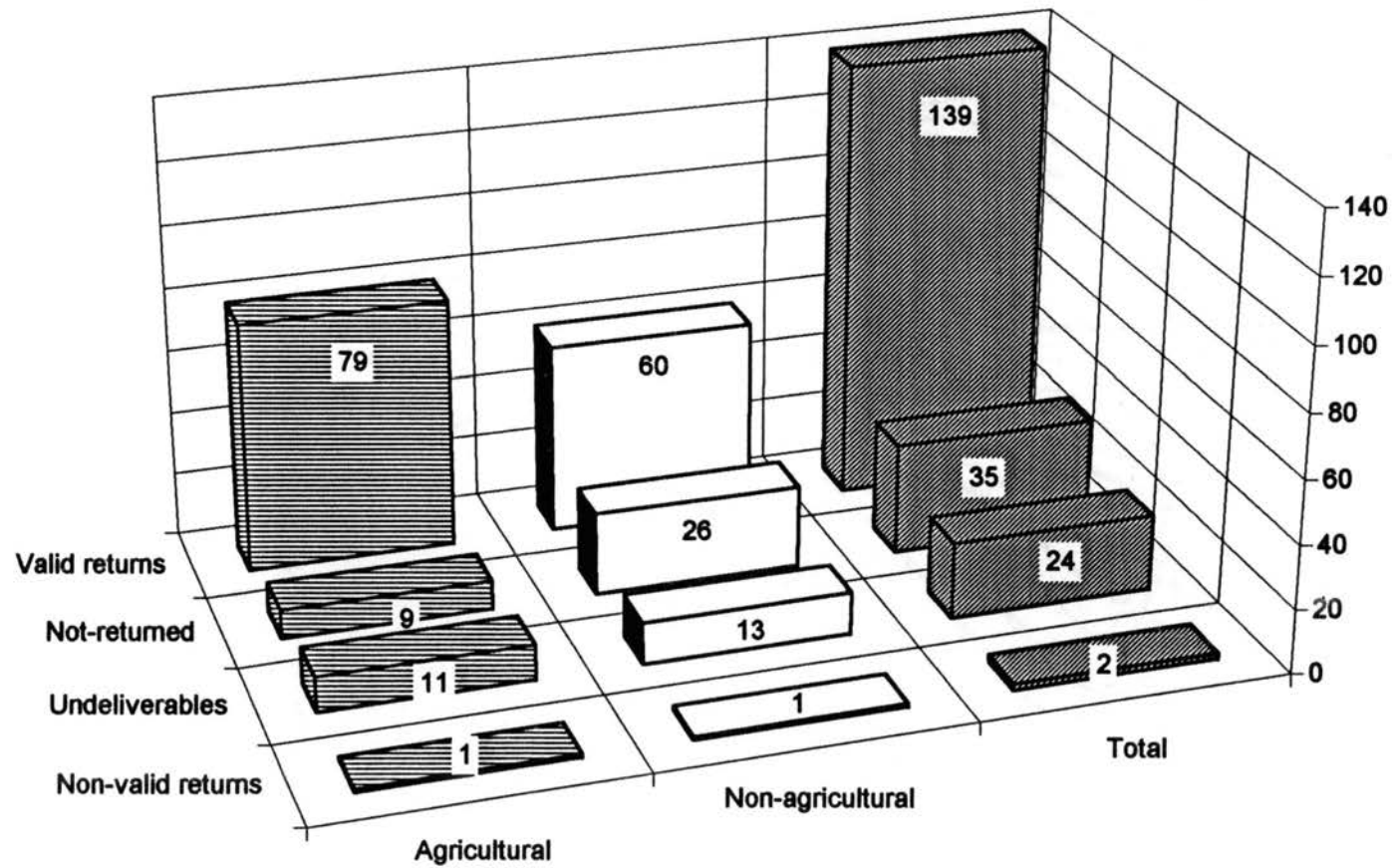
TABLE IV
QUESTIONNAIRE RETURNS BY THE AGRICULTURAL AND NON-AGRICULTURAL
RESPONDENTS AT THE DIFFERENT INSTITUTIONS

Questionnaires mailed					Returned								Not-returned							
					Valid returns				Non-valid returns				Undeliverables				Non-returns			
	N	Agr	Nag	%	Agr	Nag	n	%	Agr	Nag	n	%	Agr	Nag	n	%	Agr	Nag	n	%
OSU	40.0	20.0	20.0	100.0	18.0	15.0	33.0	82.5	1.0		1.0	2.5		4.0	4.0	10.0	1.0	1.0	2.0	5.0
ISU	40.0	20.0	20.0	100.0	15.0	10.0	25.0	62.5					2.0	5.0	7.0	17.5	3.0	5.0	8.0	20.0
KSU	40.0	20.0	20.0	100.0	15.0	12.0	27.0	67.5					3.0	2.0	5.0	12.5	2.0	6.0	8.0	20.0
UMC	40.0	20.0	20.0	100.0	15.0	12.0	27.0	67.5		1.0	1.0	2.5	3.0		3.0	7.5	2.0	7.0	9.0	22.5
UNL	40.0	20.0	20.0	100.0	16.0	11.0	27.0	67.5					3.0	2.0	5.0	12.5	1.0	7.0	8.0	20.0
Total	200.0	100.0	100.0	100.0	79.0	60.0	139.0	69.5	1.0	1.0	2.0	5.0	11.0	13.0	24.0	12.0	9.0	26.0	35.0	17.5

n=respondents within categories.

N=total respondents within categories.

FIGURE I
DISTRIBUTION OF RESPONSE TO SURVEY BY MAJOR FIELDS OF STUDY.



Thirty five students, (nine agricultural and twenty six non-agricultural majors) or a total of 17.5 percent did not return questionnaires or responded to either the first mailings of the questionnaires or the follow-up. The United States Postal Service was unable to deliver 24 survey instruments due to students moving and leaving no forwarding address.

The responses by the international students from each of the universities were also presented in Table IV. Oklahoma State University respondents returned a total of thirty six or 85 percent of the questionnaires. Out of the total returned, thirty three or 82.5 percent were valid, one or 2.5 percent of the questionnaire were non-valid, four or 10 percent of the questionnaires were undeliverable, and two or 5 percent of the questionnaires were not returned.

Twenty five or 62.5 percent of the questionnaires returned by Iowa State University respondents were valid and seven or 17.5 percent of the questionnaires were undeliverable, and eight or 20 percent of the questionnaires were not returned.

A total of twenty seven or 67.5 percent of the questionnaires returned by the respondents at Kansas State University were valid. Five or 12.5 percent of the questionnaires were undeliverables and eight or 20 percent of the questionnaires were not return.

A total twenty eight or 70 percent of the questionnaires were returned by the respondents at University of Missouri-Columbia. Out of the total returned, twenty seven or 67.5 percent of the questionnaires were valid; one or 2.5 percent of the questionnaires were non valid; three or 7.5 percent of the questionnaires were undeliverable; and nine or 22.5 percent of the questionnaires were not returned. For the University of Nebraska-Lincoln, twenty seven or 67.5 percent of the questionnaires were valid and five or 12.5

FIGURE 2
DISTRIBUTION OF RESPONDENTS BY GENDER

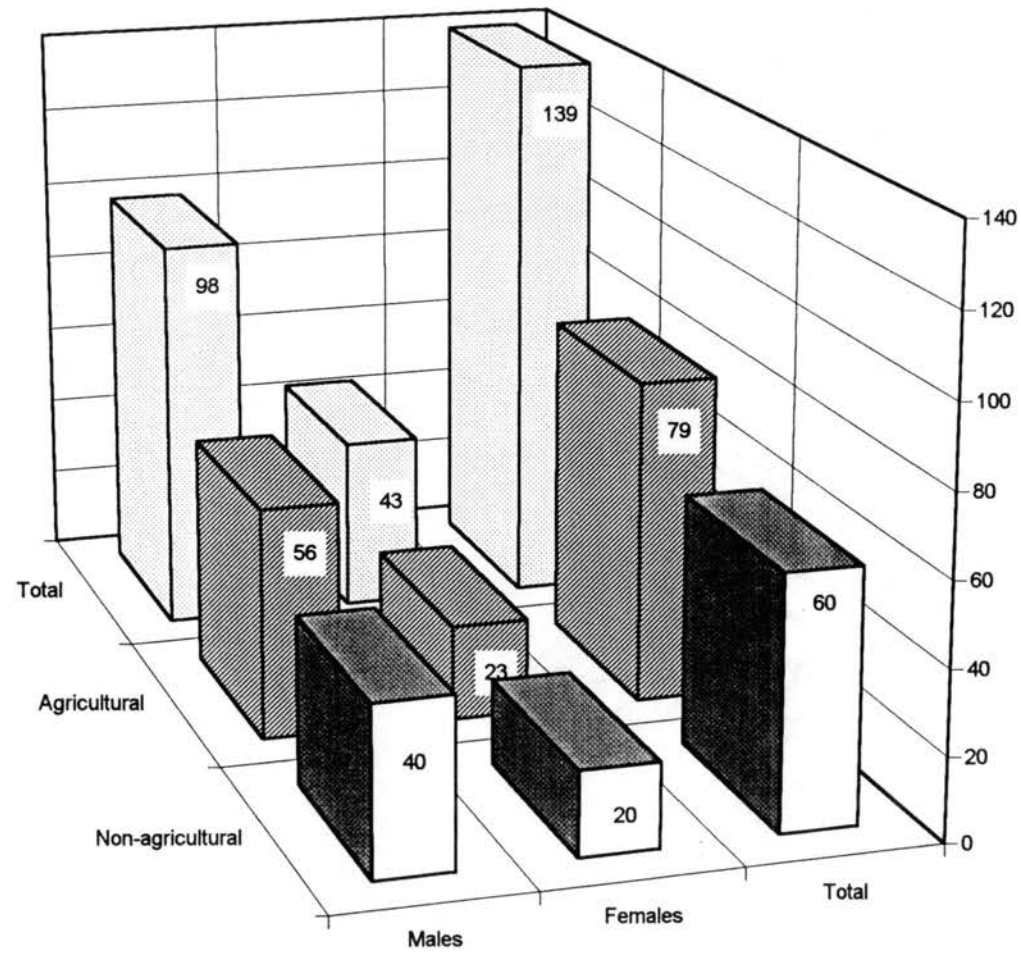


FIGURE 3
DISTRIBUTION OF RESPONDENTS BY THE REGIONS OF THE WORLD.

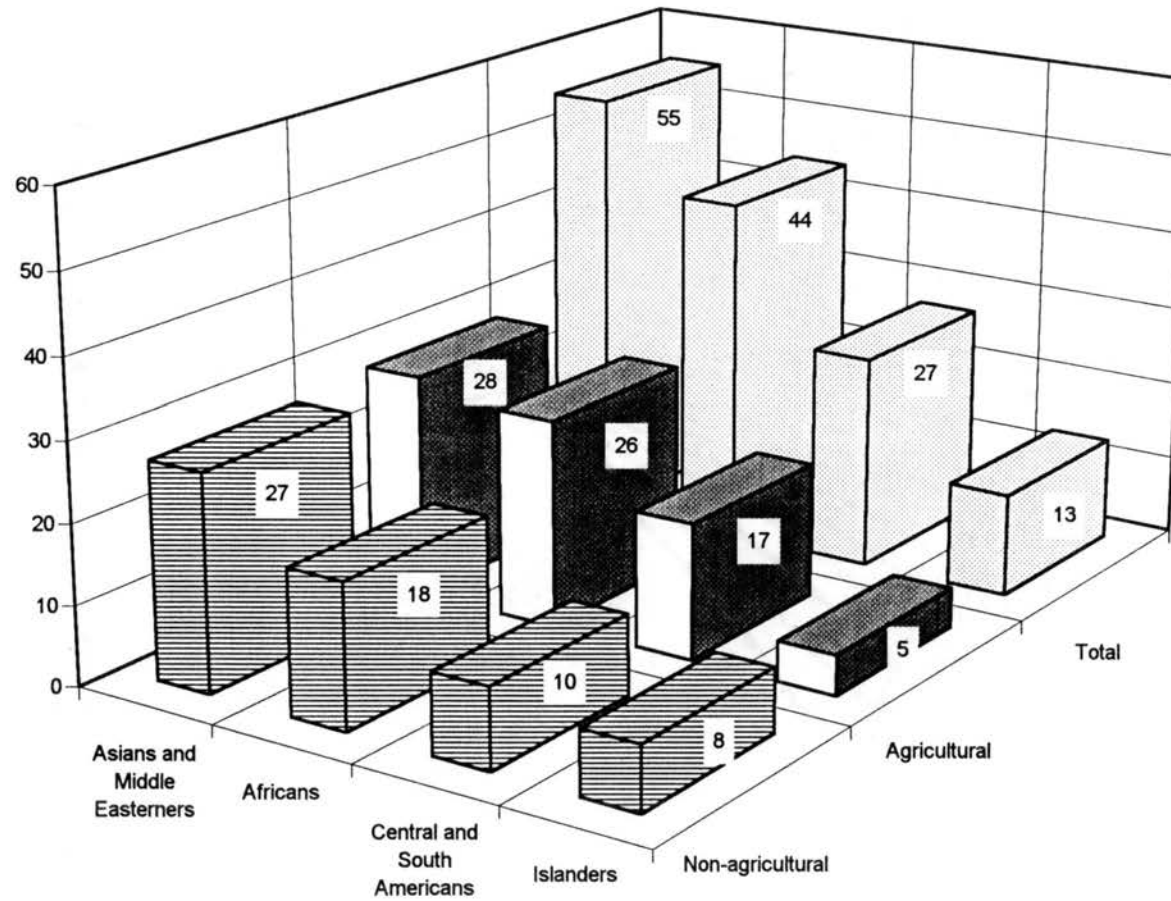


TABLE V
RESPONDENTS' COUNTRIES OF ORIGIN DISTRIBUTED
BY DIFFERENT REGIONS OF THE WORLD

Africa	Middle-East and Asia	Central and South America	The Islands
Algeria	Bangladesh(4)	Argentina	Cape Verde(2)
Botswana(2)	India(8)	Belize	Indonesia(6)
Bukina Faso	Iran(2)	Bolivia(4)	Jamaica
Burundi	Jordan	Brazil(5)	Mauritius
Cameroon(2)	Malaysia(6)	Columbia(2)	Papua New Guinea
Cote D' Ivoire(2)	Nepal(2)	Costa Rica(2)	Sri Lanka(2)
Ethiopia(4)	Oman	Ecuador	
Eygpt(2)	Pakistan(6)	El Salvador	
Ghana(2)	Philippines(3)	Mexico(4)	
Guinea	PR China(7)	Peru(2)	
Kenya(4)	S. Korea(3)	Venezuela(4)	
Mali	Saudi Arabia(4)		
Morroco	Syria		
Nigeria(6)	Taiwan(2)		
S. Africa	Thailand(4)		
Senegal(3)	W. Bank		
Sudan			
Tanzania(2)			
Togo			
Tunisia			
Uganda			
Zaire(2)			
Zimbabwe(2)			
44	55	27	13

percent of the questionnaires were undeliverable and eight or 20 percent of the questionnaires were not returned.

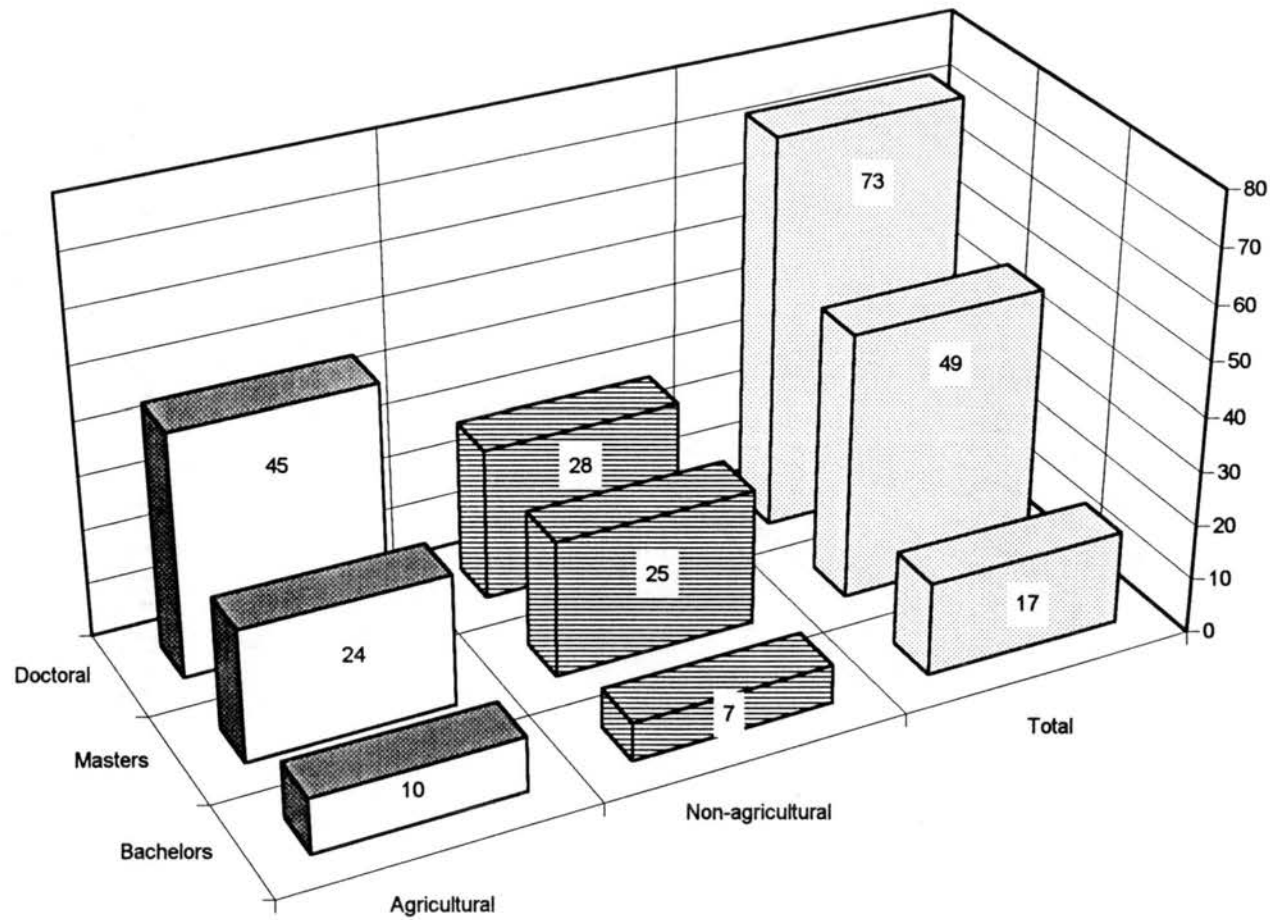
Demographics

Gender of the valid respondents to the survey were presented in Figure 2. The gender distribution of the respondents included ninety six males and forty three females. Fifty six male and twenty three female students were agricultural majors, while forty males and twenty females were majoring in non-agricultural fields of studies. The regional distribution of respondents were presented in Figure 3. Forty four respondents, twenty six agricultural and eighteen non-agricultural majors were from Africa. The Middle East and Asia had fifty five respondents, twenty eight agricultural and twenty seven non-agricultural majors. Twenty seven respondents, seventeen agricultural and ten non-agricultural majors, were from Central and South America and thirteen respondents, eight agricultural and five non-agricultural majors were from the Islands.

The respondents' countries of origin were presented in Table V. A total of fifty six developing countries worldwide were represented in the survey. These included twenty three African countries, sixteen Middle East and Asian countries, eleven Central and South American countries and six Island countries.

The respondents levels of study were presented in Figure 4. Seventy three of the respondents were doctoral degree students. Of those students forty five were agricultural and twenty eight non-agricultural majors. Forty nine were masters students, and included twenty four agricultural and twenty five non-agricultural majors. Seventeen were

FIGURE 4
DISTRIBUTION OF RESPONDENTS BY LEVEL OF STUDY



bachelors degree students of which ten were agricultural and seven non-agricultural majors. The major fields of study of the respondents were presented in Table VI. A total of fifty seven major fields of studies were represented. These included twenty nine agricultural and twenty eight non-agricultural major fields of studies.

The distribution of why the respondents chose to study their major fields of study are as follows: for the one hundred and eight graduate student respondents, sixty two agricultural and forty six non-agricultural majors stated that they selected their major fields of study due to; their interest; nine of the respondents, five agricultural and four non-agricultural majors stated that they were selected by their governments; and five of the respondents, two agricultural and three non-agricultural majors stated that they were selected by international development organizations.

For the undergraduate student respondents, seven respondents, five agricultural and two non-agricultural majors, stated that they selected their major fields of study due to their interest; eight of the respondents, four each of agricultural and non-agricultural majors; stated that they were selected by their governments; and two of the respondents, one of each agricultural and non-agricultural majors, stated that they were selected by international development organizations.

The distribution of the sizes of the towns where all the respondents were born was presented in Table VII and the distribution of the size of the towns where all the respondents planned to live upon returning back to their countries were presented in Table VIII. The overall total of 16.5 percent of the respondents, 10.8 percent agricultural and 5.8 percent non-agricultural majors, were born in a town of more than 1,000 people but less than 5,000 people, while a total of 3.6 percent of the respondents, 1.4 percent

TABLE VI
AGRICULTURAL AND NON-AGRICULTURAL RESPONDENTS
MAJOR FIELDS OF STUDY

Non-agricultural	Agricultural
Accounting	Agri Business
Aerospace Engineering	Agricultural Communication
Architecture	Agricultural Economics(9)
Broadcasting	Agricultural Education(3)
Business Administration(9)	Agricultural Engineering(2)
Business Management(3)	Agricultural Leadership
Chemical Engineering(3)	Agricultural Meteorology
Civil Engineering(2)	Agronomy(7)
Computer Sciences(3)	Animal Breeding(4)
Construction	Animal Genetics
Dietetics	Animal Science(8)
Economics(3)	Biochemistry(2)
Electrical Engineering(4)	Biosystems and Agricultural Engineering(3)
English	Entomology(4)
Environmental Sciences	Extension
Finance	Food Engineering
Fire Protection(2)	Food Sciences and Technology(4)
French	Forest Genetics
Genetics	Forestry(4)
Higher Education	Grain Science and Industry
Industrial Engineering(3)	Horticulture(2)
Journalism(3)	Molecular Genetics
Management and Information Sciences(3)	Molecular Plant Pathology
Mass Communication(2)	Natural Resources Management
Mechanical Engineering(5)	Plant Breeding(5)
Microbiology	Plant Cytogenetics
Spanish	Plant Pathology(4)
Statistics	Soil Sciences(4)
	Veterinary Sciences
60	79

TABLE VII

DISTRIBUTION BY THE SIZE OF TOWNS AND REGIONS WHERE AGRICULTURAL AND NON-AGRICULTURAL STUDENTS WERE BORN.

Size of Town where respondent was born.	Africans					Middle Easterners and Asians					Central and South Americans					Islanders					Total				
	AG		NAG		Total	AG		NAG		Total	AG		NAG		Total	AG		NAG		Total	AG		NAG		N
	n	%	n	%		n	%	n	%		n	%	n	%		n	%	n	%		n	%	n	%	
>1,000 but <5,000	9	20.4	5	11	14	3	5.5	3	5.5	6	3	11.1			3						15	10.8	8	5.8	23
>5,000 but <50,000	6	13.6			6	3	5.5	1	1.8	4	2	7.4	3	11	5	2	15.4			2	13	9.3	4	2.9	17
>50,000 but <100,000	5	11.4			5	2	3.6	5	9.1	7	4	14.8			4	3	23.1	1	7.7	4	14	10.1	6	4.3	20
>100,000 but <1,000,000	1	2.3	4	9.1	5	8	14.5	4	7.3	12	8	29.6			8	1	7.7	3	23	4	18	12.9	11	7.9	29
>1,000,000	5	11.4	9	21	14	12	21.8	14	26	26			7	26	7	2	15.4	1	7.7	3	19	13.7	31	22	50
Total	26	59.1	18	41	44	28	50.9	27	49	55	17	62.9	10	37	27	8	61.6	5	38	13	79	56.8	60	43	139

TABLE VIII

DISTRIBUTION BY THE SIZE OF TOWNS AND REGIONS WHERE AGRICULTURAL AND NON-AGRICULTURAL STUDENTS WILL BE LIVING UPON RETURNING TO THEIR COUNTRY.

Size of Town where respondent will be living.	Africans					Middle Easterners and Asians					Central and South Americans					Islanders					Total				
	AG		NAG		Total	AG		NAG		Total	AG		NAG		Total	AG		NAG		Total	AG		NAG		N
	n	%	n	%		n	%	n	%		n	%	n	%		n	%	n	%		n	%	n	%	
>1,000 but <5,000	1	2.3	1	2.3	2			2	3.6	2	1	3.7			1						2	1.4	3	2.2	5
>5,000 but <50,000	1	2.3			1	2	3.6			2	1	3.7	1	3.7	2						4	2.9	4	2.9	8
>50,000 but <100,000	6	13.6			6	3	5.5	4	7.3	7	1	3.7			1	3	23.1			3	13	9.4	1	0.7	14
>100,000 but <1,000,000	6	13.6	6	14	12	8	14.5	2	3.6	10	11	40.7	3	11	14	2	15.4	3	23	5	27	19.4	14	10	41
>1,000,000	12	27.3	11	25.0	23	15	27.3	19	35	34	3	11.1	6	22	9	3	23.1	2	15	5	33	23.7	38	27	71
Total	26	59.1	18	41	44	28	50.9	27	49.0	55	17	62.9	10	37.0	27	8	61.5	5	39	13	79	56.8	60	43	139

N=Total number of subjects within categories. n=Number of observations within categories.
 AG=Agricultural Students. NAG=Non-agricultural Students.

agricultural and 2.2 percent of the non-agricultural majors will be living in a town of more than 1,000 people but less than 5,000 people upon returning home. Over nine percent (9.3%) agricultural and 2.9 percent non-agricultural major, for a total of 12.2 percent of the respondents were born in a town of more than 5,000 people but less than 50,000 people, while 5.7 percent of the respondents, 2.9 percent each for both agricultural and non-agricultural majors will be living in a town of more than 5,000 people but less than 50,000 people upon returning home.

A total of 14.4 percent of the respondents, 10.1 percent agricultural and 4.3 percent non-agricultural majors were born in a town of more than 50,000 people but less than 100,000 people. A total of 10.1 percent of the respondents, 9.4 percent agricultural and 0.7 percent non-agricultural majors will be living in a town of more than 50,000 people but less than 100,000 people upon returning home. Nearly twenty one (20.9) percent of the respondents, 12.9 percent agricultural and 7.9 percent non-agricultural majors were born in a town of more than 100,000 people but less than 1,000,000 people, while 29.5 percent of the respondents, 19.4 percent agricultural and 10.1 percent non-agricultural majors will be living in a town of more than 100,000 people but less than 1,000,000 people upon returning home. A total of 36.0 percent of the respondents, 13.7 percent agricultural and 22.3 percent non-agricultural majors, were born in a town of more than 1,000,000 people, while a total of 51.1 percent of the respondents, 23.7 percent agricultural and 27.3 percent non-agricultural majors will be living in a town of more than 1,000,000 people upon returning home.

The regional analysis, broken into agricultural and non-agricultural majors of where the respondents were born and where they planned to live upon returning to their

countries were also presented in Tables VII and VIII. Within the regions, 20.4 percent Africans, 5.5 percent Middle Easterners and Asians, 11.1 percent Central and South American respondents in agricultural majors and 11.4 percent Africans, 5.5 percent Middle Easterners and Asian respondents in non-agricultural majors were born in a town of size more than 1,000 people but less than 5,000 people, while 2.3 percent African, 3.7 percent Central and South American respondents in agricultural majors and 3.7 percent Central and South Americans, 3.6 percent Middle Easterners and Asian respondents in non-agricultural majors will be living in a town of size more than 1,000 people but less than 5,000 people upon returning back to their country.

Over thirteen and a half (13.6) percent Africans, 5.5 percent Middle Easterners and Asians, 7.4 percent Central and South Americans, 15.4 percent Islanders respondents in agricultural majors and 1.8 percent Middle Easterners and Asians, 11.1 percent Central and South Americans in non-agricultural majors were born in a town of size more than 5,000 people but less than 50,000 people, while 2.3 percent Africans, 3.6 percent Middle Easterners and Asians, 3.7 percent Central and South American respondents in agricultural majors and 3.7 percent Central and South American respondents in non-agricultural majors will be living in a town of size more than 5,000 people but less than 50,000 people when they return back to their country. Nearly eleven and half (11.4) percent Africans, 3.6 percent Middle Easterners and Asians, 14.8 percent Central and South Americans, and 23.1 percent Islander respondents in agricultural majors and 9.1 percent Middle Easterners and Asian, and 7.7 percent Islander respondents in non-agricultural majors were born in a town of size more than 50,000 people but less than 100,000 people, while 13.6 percent Africans, 5.5 percent Middle Easterners and Asians,

3.7 percent Central and South Americans and 23.1 Islander respondents in agricultural majors and 7.3 percent Middle Easterners and Asian respondents in non-agricultural majors will be living in a town of size more than 50,000 people but less than 100,000 people when they return back to their country. Over two (2.3) percent Africans, 14.5 percent Middle Easterners and Asians, 29.6 percent Central and South Americans, 7.7 percent Islander respondents in agricultural majors and 9.1 percent Africans, 7.3 percent Middle Easterners and Asians, 23.1 percent Islanders respondents in non-agricultural majors were born in a town of size more than 100,000 people but less than 1,000,000 people, while 13.6 percent Africans, 14.5 percent Middle Easterners and Asians, 40.7 percent Central and South Americans, and 15.4 percent Islander respondents in agricultural majors and 13.6 percent Africans, 3.6 percent Middle Easterners and Asians, 11.1 percent Central and South Americans, and 23.1 percent Islander respondents in non-agricultural majors will be living in a town of size more than 100,000 people but less than 1,000,000 people when they return to their country. Nearly eleven and half (11.4) percent Africans, 21.8 percent Middle Easterners and Asians, 15.4 percent Islanders, respondents in agricultural majors and 20.5 percent Africans, 25.5 percent Middle Easterners and Asians, 25.9 percent Central and South Americans, and 7.7 percent Islander respondents in non-agricultural majors were born in a town of size more than 1,000,000 people, while 27.3 percent Africans, 27.3 percent Middle Easterners and Asians, 11.1 percent Central and South American, and 23.1 percent Islander respondents in agricultural majors and 25.0 percent Africans, 34.5 percent Middle Easterners and Asians, 22.0 percent Central and South Americans, and 15.4 percent Islander respondents in non-agricultural majors

plans to live in a town of size more than 1,000,000 people when they return to their country.

Attitudes and Perceptions towards Agriculture

In the presentation of the analyzed data in this section, the numbering order of the questions were changed in comparison to the questionnaire for ease of reading and organizing the responses into similar groupings. However, the original question numberings were signified in the footnotes of each table.

International students from developing countries perceptions and attitudes toward agriculture were presented in Tables IX through XXIV. A sub-section presents regional comparisons and comparisons between agricultural and non-agricultural majors extent of agreement or level of importance toward statements or questions on agriculture. The means, analysis of variance determined. If the analysis of variance signified a significant mean difference for the respondents from the different regions of the world or between the agricultural and non-agricultural students, from the analysis of variance calculations F values, Tukey's post-hoc comparisons were calculated to determine were the difference occurred. The mean response for each category was determined.

Analysis of the comparison of the perceived extent of agreement about modern agriculture in the developing countries by students from the different regions of the world and by students majoring in agricultural and non-agricultural fields of study.

In Table IX, for the statements in question # 8, that "modern agriculture is more than farming", all the respondents, were in the "agree" mean response category. The Middle-Easterners and Asians had the highest mean (3.15), while the Islanders had the lowest mean (2.69). For the statement "that modern agriculture is very science oriented", the Africans and the Middle-Easterners and Asians were in the "agree" mean response category, while the Central and South Americans and the Islanders were in the "disagree" mean response category. The highest and the lowest means were for the Africans (2.81) and the Islanders (2.08), respectively. For the statement "modern agriculture involves small farms", all the respondents were in the "agree" mean response category, the highest and the lowest means were for the Islanders and the Central and South Americans, 3.15 and 2.59, respectively. For the statement "modern agriculture is big business", the respondents from Africa and Central and South America were in the "agree" mean response category, while the respondents from the Middle-East and Asia and the Islands were in the "disagree" mean response category. The lowest and highest means were for the Central and South Americans and the Islanders, 2.89 and 2.15, respectively.

Analysis of variance calculations as shown by the F values in Table IX determined that there was a significant mean difference between respondents from the different regions of the world on "modern agriculture is big business". Tukey's Post hoc analysis for the regions showed that African and the Central and South American respondents' perceptions about "modern agriculture is a big business" were significantly different from the Middle Easterners and the Islanders.

In Table X, for the statements in question # 8, that "modern agriculture is more than farming", both the agricultural and non-agricultural respondents from all the regions

TABLE IX

COMPARISON OF THE PERCEIVED EXTENT OF AGREEMENT ABOUT MODERN AGRICULTURE IN THE DEVELOPING COUNTRIES BY STUDENTS FROM DIFFERENT REGIONS OF THE WORLD.

In the developing countries modern agriculture# ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
is more than farming.	Africans	44	3.07	Agree	0.88	1.12	0.34	
	Middle Easterners and Asians	55	3.16	Agree	0.81			
	Central and South Americans	27	3.15	Agree	0.86			
	Islanders	13	2.69	Agree	1.11			
is very science oriented.	Africans	44	2.81	Agree	1.03	2.45	0.07	
	Middle Easterners and Asians	55	2.67	Agree	0.84			
	Central and South Americans	27	2.41	Disagree	0.97			
	Islanders	13	2.08	Disagree	1.19			
involves small farms.	Africans	44	2.91	Agree	1.13	1.68	0.17	
	Middle Easterners and Asians	55	3.13	Agree	0.94			
	Central and South Americans	27	2.59	Agree	1.15			
	Islanders	13	3.15	Agree	0.90			
is a big business.	Africans	44	2.77	Agree	0.95	3.22	0.02	*
	Middle Easterners and Asians	55	2.35	Disagree	0.97			
	Central and South Americans	27	2.89	Agree	0.85			
	Islanders	13	2.15	Disagree	1.41			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. # Question 8.

TABLE X

PERCEIVED EXTENT OF AGREEMENT ABOUT MODERN AGRICULTURE IN THE DEVELOPING COUNTRIES BY
AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD.

In the developing countries modern agriculture*...	Regions	Agricultural Students				Non Agricultural Students				F	Pr>F
		n	Mean	Category	SD	n	Mean	Category	SD		
is more than farming.	Africans	26	3.04	Agree	0.77	18	3.12	Agree	1.05	0.17	0.68
	Middle Easterners and Asians	28	3.04	Agree	0.88	27	3.30	Agree	0.72	1.43	0.24
	Central and South Americans	17	3.35	Agree	0.61	10	2.80	Agree	1.14	2.75	0.11
	Islanders	8	3.00	Agree	1.07	5	2.20	Disagree	1.10	1.69	0.22
	All Students	79	3.10	Agree	0.81	60	3.07	Agree	0.95	0.02	0.88
is very science oriented.	Africans	26	2.54	Agree	0.95	18	3.18	Agree	1.01	5.28	0.03 *
	Middle Easterners and Asians	28	2.71	Agree	0.94	27	2.63	Agree	0.74	0.14	0.71
	Central and South Americans	17	2.41	Disagree	0.94	10	2.40	Disagree	1.07	0.00	0.97
	Islanders	8	2.38	Disagree	1.30	5	1.60	Disagree	0.89	1.35	0.27
	All Students	79	2.56	Agree	0.97	60	2.67	Agree	0.97	0.59	0.44
involves small farms.	Africans	26	2.88	Agree	1.18	18	3.00	Agree	1.12	0.11	0.74
	Middle Easterners and Asians	28	3.11	Agree	0.99	27	3.15	Agree	0.91	0.03	0.87
	Central and South Americans	17	2.47	Disagree	1.23	10	2.80	Agree	1.03	0.50	0.48
	Islanders	8	3.38	Agree	0.92	5	2.80	Agree	0.84	1.29	0.28
	All Students	79	2.92	Agree	1.12	60	3.02	Agree	0.97	0.27	0.61
is a big business.	Africans	26	2.77	Agree	0.76	18	2.82	Agree	1.19	0.00	0.98
	Middle Easterners and Asians	28	2.39	Disagree	1.03	27	2.30	Disagree	0.91	0.14	0.71
	Central and South Americans	17	2.88	Agree	0.78	10	2.90	Agree	0.99	0.00	0.96
	Islanders	8	2.25	Disagree	1.49	5	2.00	Disagree	1.41	0.09	0.77
	All Students	79	2.61	Agree	0.97	60	2.52	Agree	1.07	0.29	0.59

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 8.

of the world were in the "agree" mean response category, except for the Islanders' non-agricultural respondents, who were in the "disagree" mean response category. The mean of the agricultural students range from a high of 3.35 for Central and South American to a low of 3.00 for the Islanders. The highest mean for the non-agricultural respondent was 3.30 for the Middle Easterners and Asians and lowest was 2.20 for the Islanders. For the statement "modern agriculture is very science oriented", both the agricultural and non-agricultural respondents from the Africa and Middle East and Asia were in the "agree" mean response category, while both of the agricultural and non-agricultural students from Central and South America and the Islands, were in the "disagree" mean response category. The highest and the lowest mean for the agricultural respondents were 2.56 for all regions of the world combined and 2.38 for the Islanders and for the non-agricultural respondents, the highest mean was 3.18 for the African and 1.60 for the Island respondents. For the statement that "modern agriculture involves small farms", the response of both the agricultural and non-agricultural students from all the regions of world were in the "agree" mean response category, with the exception of Central and South Americans agricultural respondents who were in the "disagree" mean response category. The Islander agricultural respondents had the highest mean (3.38) while the Central and South Americans had the lowest mean of 2.47. For the non-agricultural, the respondents from the Middle-East and Asia (3.15) and the Central and South Americans (2.80) had the highest and lowest means. For the statement that modern agriculture "is big business", both the agricultural and non-agricultural students from Africa and the Central and South America were in the "agree" mean response category, while both the

agricultural and non-agricultural students from the Middle East and Asia and the Islands were in the "disagree" mean response category. The highest and the lowest mean for the agricultural students were 2.88 for all Central and South America and 2.25 for the Islands and for the non-agricultural respondents, the highest mean was 2.90 for Central and South America and 2.00 for the Island respondents.

The analysis of variance between the means of the agricultural and non-agricultural respondents indicates a significant difference between the African agricultural and non-agricultural students perceptions that in the developing countries modern agriculture "is very science oriented".

Analysis of the comparison of the attitudes on the importance of agriculture to the national economy by students from the different regions of the world and by students majoring in agricultural and non-agricultural fields of study.

The regional comparisons were presented in Table XI. The analysis for question # 23, was on how important is agriculture in the developing countries to the national economy in terms of "producing food to feed the nation?". The mean response categories in terms of the level of importance were "very important" for all the regions of the world except for the Africans with mean response categories of "extremely important". The African respondents had the highest mean of 4.51, while the Middle-Easterners and Asians had the lowest mean of 3.91. For the questions on the importance of agriculture to the national economy in terms of "producing cash/export crops for earning foreign exchange?", "providing raw materials to the industries?", "providing employment for the rural people?", the mean response categories for all the regions of the world for all three

TABLE XI

COMPARISON OF THE ATTITUDES OF STUDENTS FROM DIFFERENT REGIONS OF THE WORLD ON THE IMPORTANCE OF AGRICULTURE TO THE NATIONAL ECONOMY.

In the developing countries how important is agriculture to the National economy in terms of# ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
producing food to feed the nation?	Africans	44	4.51	Extremely Important	0.80	0.61	0.61	
	Middle Easterners and Asians	55	3.91	Very Important	1.16			
	Central and South Americans	27	4.48	Very Important	1.12			
	Islanders	13	4.15	Very Important	0.99			
producing cash/export crops for earning foreign exchange?	Africans	44	4.09	Very Important	1.06	0.39	0.76	
	Middle Easterners and Asians	55	4.00	Very Important	1.14			
	Central and South Americans	27	3.93	Very Important	1.11			
	Islanders	13	3.92	Very Important	0.95			
providing raw materials to industries?	Africans	44	4.23	Very Important	0.78	1.60	0.19	
	Middle Easterners and Asians	55	3.91	Very Important	1.21			
	Central and South Americans	27	4.04	Very Important	0.90			
	Islanders	13	3.62	Very Important	0.96			
providing employment for the rural people?	Africans	44	4.35	Very Important	0.81	1.36	0.26	
	Middle Easterners and Asians	55	3.98	Very Important	1.03			
	Central and South Americans	27	4.37	Very Important	0.74			
	Islanders	13	4.00	Very Important	1.29			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location significantly different means. * Indicates means significantly different at alpha=0.05. * Question 23.

questions were "very important". The highest means were for the Africans (4.09, 4.23 and 4.35) and the lowest (3.92, 3.62, 3.98) for the Middle-Easterners and Asians respectively.

The comparisons between agricultural and non-agricultural students presented in Table XII, was based on the question # 23, how important is agriculture in the developing countries to the national economy in terms of "producing food to feed the nation?". The mean response categories for all the regions of the world combined, shows the Africans and the Middle-Easterners and Asians, were "extremely important" and "very important" for the agricultural and non-agricultural majors, respectively, and "very important" and "extremely important" for Central and South Americans agricultural and non-agricultural majors respectively, and "very important" for both the Islanders agricultural and non-agricultural majors, respectively. The highest and lowest means for the agricultural majors were 4.81 and 4.25 for Africans and the Islanders and for the non-agricultural majors were 4.50 and 4.00 for Central and South Americans and the Islanders respectively. The responses for "producing cash / export crops for earning foreign exchange?", except for the non-agricultural majors, the Middle-Easterners and Asians had the "important" mean response category. Respondents from all the regions of the world, both agricultural and non-agricultural majors, mean response categories were "very important". The largest and smallest means were 4.25 and 3.88 for the agricultural majors from Middle-Easterners and Asians, and Central and South Americans, while 4.00 and 3.44 for the non-agricultural majors from Central and South Americans and Middle-Easterners and Asians respondents respectively. On the question of, "producing cash / export crops for earning foreign exchange?", except for the non-agricultural majors, Islanders and Middle-Easterners and Asians with "important" mean response categories, respondents from all the regions of the

TABLE XII

ATTITUDES OF AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE DEVELOPING COUNTRIES ON THE LEVEL OF IMPORTANCE OF AGRICULTURE TO THE NATIONAL ECONOMY.

In the developing countries how important is agriculture to the National economy in terms of* ...	Regions	Agricultural Students				Non Agricultural Students					
		n	Mean	Category	SD	n	Mean	Category	SD	F	Pr>F
producing food to feed the nation?	Africans	26	4.81	Extremely Important	0.40	18	4.06	Very Important	1.03	12.04	0.00 *
	Middle Easterners and Asians	28	4.64	Extremely Important	0.68	27	4.26	Very Important	0.94	3.01	0.09
	Central and South Americans	17	4.47	Very Important	1.23	10	4.50	Extremely Important	0.97	0.00	0.95
	Islanders	8	4.25	Very Important	0.71	5	4.00	Very Important	1.41	0.18	0.68
	All Students	79	4.62	Extremely Important	0.77	60	4.22	Very Important	0.99	7.20	0.01
producing cash/export crops for earning foreign exchange?	Africans	26	4.23	Very Important	1.07	18	3.94	Very Important	1.09	0.77	0.38
	Middle Easterners and Asians	28	4.25	Very Important	1.04	27	3.44	Important	1.22	6.96	0.01 *
	Central and South Americans	17	3.88	Very Important	1.27	10	4.00	Very Important	0.82	0.07	0.80
	Islanders	8	4.00	Very Important	1.07	5	3.80	Very Important	0.84	0.13	0.73
	All Students	79	4.14	Very Important	1.09	60	3.72	Very Important	1.09	5.03	0.03
providing raw materials to industries?	Africans	26	4.31	Very Important	0.74	18	4.12	Very Important	0.86	0.68	0.41
	Middle Easterners and Asians	28	4.36	Very Important	0.99	27	3.44	Important	1.15	9.93	0.00 *
	Central and South Americans	17	3.94	Very Important	0.90	10	4.20	Very Important	0.92	0.51	0.48
	Islanders	8	3.88	Very Important	0.99	5	3.20	Important	0.84	1.59	0.23
	All Students	79	4.20	Very Important	0.90	60	3.75	Very Important	1.05	7.57	0.01
providing employment for the rural people?	Africans	26	4.65	Extremely Important	0.56	18	3.88	Very Important	0.93	9.85	0.00 *
	Middle Easterners and Asians	28	4.29	Very Important	1.12	27	3.70	Very Important	1.10	3.78	0.06
	Central and South Americans	17	4.24	Very Important	0.83	10	4.60	Extremely Important	0.52	1.56	0.22
	Islanders	8	4.38	Very Important	0.74	5	3.40	Important	1.82	1.88	0.20
	All Students	79	4.41	Very Important	0.87	60	3.90	Very Important	1.08	9.35	0.00

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 23.

world, both agricultural and non-agricultural majors, mean response categories were "very important". The largest and smallest means were 4.25 and 3.88 for the agricultural majors from the Middle-East and Asia, and Central and South America, while 4.00 and 3.44 for the non-agricultural majors from Central and South America, and Middle-East and Asian respondents respectively. On the question, "providing employment to the rural people?", the mean response categories were "very important" for both the agricultural and non-agricultural majors from all the regions of the world combined. The mean responses categories for the Africans were "extremely important" and "important", for Central and South Americans were "very important" and "extremely important", and for the Islanders were "very important" and "important" for the agricultural and non-agricultural majors respectively. Africans (4.31 and 4.12) had the highest mean and Islanders (3.88 and 4.12) had the lowest mean for agricultural and non-agricultural majors respectively.

The analysis of variance indicates two significant differences between the African respondents. The first difference was between the means of agricultural and non-agricultural respondents attitudes on the importance of agriculture to the national economy in terms of "producing food to feed the nation?" and the second mean difference was on "providing employment to the rural people?". Also the analysis of variance indicates two significant differences for the Middle-Easterners and Asians. The first mean difference between the agricultural and non-agricultural students attitudes was on the importance of agriculture to the national economy in terms of "producing cash / export crop for earning foreign exchange?" and the second mean difference on "providing raw materials to industries?".

Analysis of the comparison of the perceived extent of agreement about problems of agriculture in the developing countries by the students from the different regions of the world and by students majoring in agricultural and non-agricultural fields of study.

In Table XIII, for the statements in question # 9, that the problems of agriculture within my country were due to "government policies" and "credit and financing", all the respondents were in the "agree" mean response category, except for the South Americans who were in the "strongly agree" the mean response category. For the "land tenure" statement, respondents from all the regions of the world were in the "agree" mean response category, while for the "level of education of the farmer" statement, respondents from all the regions were in the "agree", except for the Central and South Americans who were in the "strongly agree" mean response category. The highest and the lowest mean for the statement "government policies" were for Central and South Americans (3.63) and the Islanders (3.00). The highest and the lowest mean for the statements on the "land tenure" were the Islanders (3.42) and Africans (2.65). The highest and the lowest mean for the statement on the "credit and financing" were Central and South Americans (3.52) and Middle-Easterners and Asians (3.16) and the highest and the lowest mean for the statement on the, "level of education of the farmer" were the Islanders (3.50) and Africans (3.16), respectively.

Analysis of variance calculations determined that there was a significant mean difference between respondents from the different regions of the world on the statement the problems of agriculture in each country due to "government policies". Tukey's Post hoc analysis for the regions showed that Middle Easterners and Asians and Central and

TABLE XIII

COMPARISON OF THE PERCEIVED EXTENT OF AGREEMENT ABOUT PROBLEMS OF AGRICULTURE
IN THE DEVELOPING COUNTRIES BY STUDENTS FROM DIFFERENT REGIONS OF THE WORLD.

Problems of agriculture in my country are mainly due to* ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
government policies.	Africans	44	3.30	Agree	0.80	4.03	0.01	*
	Middle Easterners and Asians	55	3.02	Agree	0.80			
	Central and South Americans	27	3.63	Strongly Agree	0.56			
	Islanders	13	3.00	Agree	0.95			
land tenure.	Africans	44	2.65	Agree	1.04	2.54	0.06	
	Middle Easterners and Asians	55	2.85	Agree	0.78			
	Central and South Americans	27	3.04	Agree	0.90			
	Islanders	13	3.42	Agree	0.79			
credit and financing.	Africans	44	3.21	Agree	0.77	1.39	0.25	
	Middle Easterners and Asians	55	3.16	Agree	0.74			
	Central and South Americans	27	3.52	Strongly Agree	0.64			
	Islanders	13	3.31	Agree	0.63			
level of education of the farmers.	Africans	44	3.16	Agree	0.90	0.76	0.52	
	Middle Easterners and Asians	55	3.27	Agree	0.73			
	Central and South Americans	27	3.33	Agree	0.78			
	Islanders	13	3.50	Strongly Agree	0.67			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 9.

South Americans respondents perceptions on the problems of agriculture in each country due to "government policies" were significantly different from that of the Africans and the Islanders.

In Table XXIV, for the statements in question # 9, that the problems of agriculture within my country were due to "government policies", except for the Central and South Americans non-agricultural majors, who had the "strongly agree" mean response category, the respondents from all the regions of the world combined, (Africans, Middle-Easterners and Asians, and Central and South Americans), both agricultural and non-agricultural majors respondents, had the "agree" mean response category. The Islanders agricultural majors had the "strongly agree" and while the Islanders non-agricultural majors had the "disagree" mean response category. For the agricultural majors, the highest mean (3.50) and the lowest means (3.14) were for the Islanders and the Middle-Easterners and Asians, while for the non-agricultural majors, the highest mean (3.90) was for the Central and South Americans and the lowest mean (2.00) for the Islanders respectively. For the "land tenure" statement, respondents from all the regions of the world combined, the Africans, the Middle-Easterners and Asians and Central and South Americans and the Islanders, both the agricultural and non-agricultural majors respondents were in the "agree" mean response category, except for the Islanders agricultural majors, who were in the "strongly agree" mean response category. For the agricultural majors, the highest mean (3.75) and the lowest mean (2.69) were for the Islanders and the Africans, while for the non-agricultural majors, the highest mean (3.10) was for the Central and South Americans and the lowest mean (2.53) for the Africans respectively. For the "credit and financing" statement, respondents from all the regions of the world combined, the Africans, the

TABLE XIV

PERCEIVED EXTENT OF AGREEMENT ABOUT PROBLEMS OF AGRICULTURE IN THE DEVELOPING COUNTRIES BY
AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD.

Problems of agriculture in my country are mainly due to* ...	Regions	Agricultural Students				Non Agricultural Students					
		n	Mean	Category	SD	n	Mean	Category	SD	F	Pr>F
government policies.	Africans	26	3.35	Agree	0.56	18	3.18	Agree	0.78	0.25	0.62
	Middle Easterners and Asians	28	3.14	Agree	0.50	27	2.89	Agree	0.79	1.38	0.25
	Central and South Americans	17	3.47	Agree	0.39	10	3.90	Strongly Agree	0.10	4.07	0.05 *
	Islanders	8	3.50	Strongly Agree	0.29	5	2.00	Disagree	0.50	11.92	0.00 *
	All Students	79	3.32	Agree	0.48	60	3.12	Agree	0.85	2.70	0.10
land tenure.	Africans	26	2.69	Agree	1.10	18	2.53	Agree	1.01	0.06	0.80
	Middle Easterners and Asians	28	3.00	Agree	0.37	27	2.70	Agree	0.83	2.02	0.16
	Central and South Americans	17	3.00	Agree	0.88	10	3.10	Agree	0.77	0.08	0.79
	Islanders	8	3.75	Strongly Agree	0.21	5	2.80	Agree	0.70	7.10	0.02 *
	All Students	79	2.97	Agree	0.77	60	2.75	Agree	0.87	2.19	0.14
credit and financing.	Africans	26	3.31	Agree	0.62	18	3.06	Agree	0.56	0.68	0.41
	Middle Easterners and Asians	28	3.21	Agree	0.47	27	3.11	Agree	0.64	0.26	0.61
	Central and South Americans	17	3.53	Strongly Agree	0.39	10	3.50	Strongly Agree	0.50	0.01	0.91
	Islanders	8	3.38	Agree	0.55	5	3.20	Agree	0.20	0.22	0.65
	All Students	79	3.33	Agree	0.51	60	3.18	Agree	0.56	1.38	0.24
level of education of the farmers.	Africans	26	2.88	Agree	0.83	18	3.47	Agree	0.64	5.43	0.02 *
	Middle Easterners and Asians	28	3.32	Agree	0.30	27	3.22	Agree	0.79	0.25	0.62
	Central and South Americans	17	3.18	Agree	0.65	10	3.60	Strongly Agree	0.49	1.90	0.18
	Islanders	8	3.38	Agree	0.55	5	3.60	Strongly Agree	0.30	0.34	0.57
	All Students	79	3.15	Agree	0.59	60	3.42	Agree	0.65	3.38	0.07

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 9.

Middle-Easterners and Asians, and the Islanders, both the agricultural and non-agricultural majors respondents were in the "agree" mean response category, while the Central and South Americans, both the agricultural and non-agricultural majors, were in the "strongly agree" mean response category. For the agricultural majors, the highest mean (3.53) and the lowest mean (3.21) were for the Central and South Americans and the Middle-Easterners and Asians, while for the non-agricultural majors, the highest mean (3.50) was for the Central and South Americans and the lowest mean (3.06) was for the Africans respectively. For the "level of education of the farmer" statement, respondents from all the regions of the world combined, the Africans, the Middle-Easterners and Asians, both the agricultural and non-agricultural majors respondents had the "agree" mean response category, while the Central and South Americans and the Islanders, agricultural majors and non-agricultural majors, respondents had the "strongly agree" mean response category. For the agricultural majors, the highest mean (3.38) and the lowest mean (2.88) were for the Islanders and the Africans, while for the non-agricultural majors, the highest mean (3.60) was for the Central and South Americans and Islanders and the lowest mean (2.53) for the Middle-Easterners and Asians respectively.

The analysis of variance between the means of the agricultural and non-agricultural respondents indicates a significant difference for the statements that the problems of agriculture within my country were due to "government policies" for the Central and South Americans and the Islanders, due to "land tenure" for the Islanders, and due to "level of education of the farmers".

Analysis of the comparison of the perceived extent of agreement about agricultural production in the developing countries by students from the different regions of the world and by students majoring in agricultural and non-agricultural fields of study.

In Table XV, for the statements in question # 16, that developing countries should "concentrate on producing food and fiber", respondents from all the regions of the world were in the "agree" mean response category. The Middle-Easterners and Asians had the highest mean (3.35) and the Central and South Americans had the lowest mean (2.78), while for the statement "produce other product and buy food and fiber from other countries", all the respondents from the different regions of the world were in the "disagree" mean response category, except for the Middle-Easterners and Asians who were in the "strongly disagree" mean response category. The Islanders had the highest mean (2.00) and the Middle-Easterners and Asians had the lowest mean (1.49). For the statement "produce any thing a country produces best", the respondents from Africa and Central and South Americans "agree", while the Islanders "strongly agree", and the Middle-Easterners and Asians were in the "strongly disagree" mean response category. The Islanders had the highest mean (3.62) and the Middle-Easterners and Asians had the lowest (1.45) mean. For the statement developing countries should "depend on foreign aid to supplement food and fiber needs" the Africans and the Islanders respondents had the "strongly disagree", Central and South Americans had the "disagree", while the Middle-Easterners and Asians had the "agree" mean response category. The Middle-Easterners and Asians had the highest (2.85) and the Islanders had the lowest (1.46) mean.

TABLE XV

COMPARISON OF THE PERCEIVED EXTENT OF AGREEMENT ABOUT AGRICULTURAL PRODUCTION
IN THE DEVELOPING COUNTRIES BY STUDENTS FROM DIFFERENT REGIONS OF THE WORLD.

Developing countries should [#] ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
concentrate on producing food and fiber.	Africans	44	3.00	Agree	0.95	0.42	0.73	
	Middle Easterners and Asians	55	3.35	Agree	0.64			
	Central and South Americans	27	2.78	Agree	0.80			
	Islanders	13	3.08	Agree	0.86			
produce other products and buy food and fiber from other countries.	Africans	44	1.79	Disagree	0.99	0.95	0.42	
	Middle Easterners and Asians	55	1.49	Strongly Disagree	0.63			
	Central and South Americans	27	1.67	Disagree	0.68			
	Islanders	13	2.00	Disagree	0.82			
produce anything a country can produce best.	Africans	44	3.35	Agree	0.84	1.10	0.35	
	Middle Easterners and Asians	55	2.85	Agree	0.63			
	Central and South Americans	27	3.15	Agree	0.95			
	Islanders	13	3.62	Strongly Agree	0.65			
depends on foreign aid to supplement food and fiber needs.	Africans	44	1.49	Strongly Disagree	0.83	0.21	0.89	
	Middle Easterners and Asians	55	1.45	Strongly Disagree	0.78			
	Central and South Americans	27	1.59	Disagree	1.05			
	Islanders	13	1.46	Strongly Disagree	0.88			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 16.

Analysis of variance calculations determined that there was no significant mean difference, between respondents from the different regions of the world on all the statements on agricultural production.

In Table XVI, for the statements in question # 16, that developing countries should "concentrate on producing food and fiber" both the agricultural and non-agricultural majors respondents from all the regions of the world were in the "agree" mean response category. The Islanders, Central and South American had the highest mean (3.13 and 3.00) for the agricultural and non-agricultural majors, respectively, while the respondents from the Middle-Easterners and Asians and Africans had the lowest mean (2.65 and 2.47) for the agricultural and non-agricultural majors, respectively. For the statement "produce other products and buy food and fiber from other countries", both the agricultural and non-agricultural majors respondents from all the regions of the world were in the "disagree" mean response category. The Middle-Easterners and Asians and Islanders, had the highest mean (1.96 and 2.20) for the agricultural and non-agricultural majors, respectively, while the respondents from both Africa, Central and South America and the Middle-East and Asia had the lowest mean (1.65 and 1.70) for the agricultural and non-agricultural majors, respectively. For the statement "produce anything a country produces best", except for the Middle-Easterners and Asians and Islanders agricultural majors respondents, both the agricultural and non-agricultural majors respondents from all the regions of the world were in the "agree" mean response category. The Islanders and the Africans, had the highest means (3.75 and 3.41) for the agricultural and non-agricultural majors, respectively, while the respondents Central and South America and the Middle-East and Asia had the lowest mean (3.06 and 3.19) for the agricultural and non-

TABLE XVI

PERCEIVED EXTENT OF AGREEMENT ABOUT AGRICULTURAL PRODUCTION IN THE DEVELOPING COUNTRIES
BY AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD.

Developing countries should* ...	Regions	Agricultural Students				Non Agricultural Students					
		n	Mean	Category	SD	n	Mean	Category	SD	F	Pr>F
concentrate on producing food and fiber.	Africans	26	3.12	Agree	0.95	18	2.47	Disagree	1.18	1.71	0.20
	Middle Easterners and Asians	28	2.93	Agree	0.81	27	2.93	Agree	0.73	0.00	0.99
	Central and South Americans	17	2.65	Agree	0.79	10	3.00	Agree	0.82	1.23	0.28
	Islanders	8	3.13	Agree	0.83	5	3.00	Agree	1.00	0.06	0.81
	All Students	79	2.95	Agree	0.86	60	2.88	Agree	0.85	0.20	0.65
produce other products and and buy food and fiber from other countries.	Africans	26	1.65	Disagree	0.89	18	1.82	Disagree	1.19	1.34	0.25
	Middle Easterners and Asians	28	1.96	Disagree	0.64	27	1.96	Disagree	0.76	0.00	0.99
	Central and South Americans	17	1.65	Disagree	0.70	10	1.70	Disagree	0.67	0.04	0.85
	Islanders	8	1.88	Disagree	0.64	5	2.20	Disagree	1.10	0.47	0.51
	All Students	79	1.78	Disagree	0.75	60	1.95	Disagree	0.87	1.44	0.23
produce anything a country can produce best.	Africans	26	3.27	Agree	0.78	18	3.41	Agree	0.94	0.46	0.50
	Middle Easterners and Asians	28	3.50	Strongly Agree	0.58	27	3.19	Agree	0.68	3.43	0.07
	Central and South Americans	17	3.06	Agree	0.97	10	3.30	Agree	0.95	0.40	0.53
	Islanders	8	3.75	Strongly Agree	0.46	5	3.40	Agree	0.89	0.88	0.37
	All Students	79	3.35	Agree	0.75	60	3.30	Agree	0.81	0.17	0.68
depends on foreign aid to supplement food and fiber needs.	Africans	26	1.23	Strongly Disagree	0.51	18	1.88	Disagree	1.05	6.46	0.01 *
	Middle Easterners and Asians	28	1.54	Disagree	0.64	27	1.44	Strongly Disagree	0.64	0.28	0.60
	Central and South Americans	17	1.35	Strongly Disagree	0.70	10	2.00	Disagree	1.41	2.55	0.12
	Islanders	8	1.25	Strongly Disagree	0.46	5	1.80	Disagree	1.30	1.23	0.29
	All Students	79	1.37	Strongly Disagree	0.60	60	1.68	Disagree	0.98	5.38	0.02

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 16.

agricultural majors, respectively. For the statement developing countries should "depend on foreign aid to supplement food and fiber needs", except for the Middle-Easterners and Asians agricultural majors respondents who had "disagree", respondents from all the other regions of the world had the "strongly disagree" mean response category. For the non-agricultural respondents, except for the Middle-Easterners and Asians who had the "strongly disagree" mean response categories, respondents from all the regions of the world had the "disagree" mean response category. The Middle-East and Asia and the Central and South America had the highest mean (1.54 and 2.00) for the agricultural and non-agricultural majors, respectively, while the respondents from the Islands and the Middle-East and Asia had the lowest mean (1.23 and 1.44) for the agricultural and non-agricultural majors, respectively.

The analysis of variance between the means of the agricultural and non-agricultural respondents indicates a significant difference for the statements that developing countries should "depend on foreign aid to supplement food and fiber needs". The mean of the African respondents was significantly different from the mean of respondents from all the other regions.

Analysis of the comparison of the attitudes of students on the importance of the different agricultural production factors by students from the different regions of the world and by agricultural and non-agricultural fields of study.

The regional comparisons presented in Table XVII, for question # 22, how important is that agriculture in the developing countries "be labor intensive?". The mean response categories were "very important" for the Middle-Easterners and Asians and

TABLE XVII

COMPARISON OF THE ATTITUDES OF STUDENTS FROM DIFFERENT REGIONS OF THE WORLD
ON THE IMPORTANCE OF THE DIFFERENT AGRICULTURAL PRODUCTION FACTORS.

How important is it that agriculture in the developing countries* ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
be labor intensive?	Africans	44	3.30	Important	1.30	1.09	0.36	
	Middle Easterners and Asians	55	3.53	Very Important	1.12			
	Central and South Americans	27	3.52	Very Important	0.94			
	Islanders	13	3.23	Important	0.93			
be capital intensive?	Africans	44	3.19	Important	1.12	1.28	0.28	
	Middle Easterners and Asians	55	2.84	Important	0.92			
	Central and South Americans	27	3.37	Important	0.93			
	Islanders	13	2.92	Important	0.49			
be mechanized or use technology intensively?	Africans	44	3.53	Very Important	1.08	0.05	0.98	
	Middle Easterners and Asians	55	4.45	Very Important	0.83			
	Central and South Americans	27	3.44	Important	1.09			
	Islanders	13	3.38	Important	1.04			
use chemicals to control insects and weeds?	Africans	44	2.88	Important	1.03	0.10	0.96	
	Middle Easterners and Asians	55	3.85	Very Important	1.19			
	Central and South Americans	27	2.85	Important	1.20			
	Islanders	13	2.69	Important	1.18			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 22.

Central and South Americans and "important" for the Africans and the Islanders. The Middle-Easterners and Asian respondents had the highest mean (4.51), while the Africans had the lowest mean (3.91). On the question, "be capital intensive?", the mean response categories for all the regions of the world were "important". Central and South Americans (3.37) and the Islanders (2.92) had the highest and lowest means respectively. On the question, "be mechanized or use technology intensively?", the mean response categories were "very important" for the Africans and the Middle-Easterners and Asians and "important" for the Central and South Americans and Islanders. Middle-Easterners and Asians respondents had the highest mean (4.45), while the Islanders had the lowest mean (3.38). On the question, "use chemicals to control insects and weeds?", the mean response categories were "important" for all the regions of the world, except "very important" for the Middle-Easterners and Asians. Middle-Easterners and Asians respondents had the highest mean (3.85), while the Islanders had the lowest mean (2.69).

The comparisons between agricultural and non-agricultural students presented in Table XVIII, for question # 22, on how important is it that agriculture in the developing countries " be labor intensive?", for the agricultural majors the mean responses categories were "very important" for students from all the regions of the world combined, the Africans, the Central and South Americans, and "important" for the Middle-Easterners and Asians and the Islanders. For the non-agricultural majors the mean responses categories were "important" for the students from all the regions of the world combined, the Africans, the Middle-Easterners and Asians, and "very important" for the Central and South Americans and the Islanders. The largest and smallest mean were 3.63 and 3.00

TABLE XVIII

AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF DEVELOPING COUNTRIES
ATTITUDES ABOUT THE IMPORTANCE OF AGRICULTURAL PRODUCTION FACTORS.

How important is it that agriculture in the developing countries* ...	Regions	Agricultural Students				Non Agricultural Students					
		n	Mean	Category	SD	n	Mean	Category	SD	F	Pr>F
be labor intensive?	Africans	26	3.69	Very Important	1.29	18	2.76	Important	1.15	5.96	0.02 *
	Middle Easterners and Asians	28	3.11	Important	1.03	27	2.96	Important	1.09	0.25	0.62
	Central and South Americans	17	3.53	Very Important	0.94	10	3.50	Very Important	0.97	0.01	0.93
	Islanders	8	3.00	Important	0.93	5	3.60	Very Important	0.89	1.32	0.27
	All Students	79	3.38	Very Important	1.11	60	3.05	Important	1.08	3.08	0.08
be capital intensive?	Africans	26	2.96	Important	1.04	18	3.59	Very Important	1.06	2.03	0.16
	Middle Easterners and Asians	28	3.04	Important	1.00	27	2.93	Important	0.92	0.18	0.67
	Central and South Americans	17	3.24	Important	1.03	10	3.60	Very Important	0.70	0.98	0.33
	Islanders	8	2.75	Important	0.46	5	3.20	Important	0.45	2.98	0.11
	All Students	79	3.03	Important	0.97	60	3.22	Important	0.98	1.32	0.25
be mechanized or use technology intensively?	Africans	26	3.27	Important	1.12	18	3.88	Very Important	0.93	3.82	0.06
	Middle Easterners and Asians	28	3.04	Important	1.17	27	4.04	Very Important	0.81	13.54	0.00 *
	Central and South Americans	17	3.35	Important	1.17	10	3.60	Very Important	0.97	0.32	0.57
	Islanders	8	3.00	Important	0.76	5	4.00	Very Important	1.22	3.38	0.09
	All Students	79	3.18	Important	1.11	60	3.92	Very Important	0.89	17.60	0.00
use chemicals to control insects and weeds?	Africans	26	2.65	Important	1.02	18	3.12	Important	0.99	2.77	0.10
	Middle Easterners and Asians	28	2.75	Important	1.00	27	2.93	Important	0.83	0.50	0.48
	Central and South Americans	17	2.71	Important	1.10	10	3.10	Important	1.37	0.67	0.42
	Islanders	8	2.75	Important	0.89	5	2.60	Important	1.67	0.05	0.83
	All Students	79	2.71	Important	1.00	60	3.00	Important	1.04	2.73	0.10

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 22.

for the agricultural majors from Africa and the Islands, while the mean were 3.60 and 2.76 for the non-agricultural majors from the Islands and Africa, respectively.

For question on how important is it that agriculture in the developing countries, "be capital intensive?" the agricultural majors mean responses categories were "important" for students from each of the different regions of the world. For the non-agricultural majors the mean responses categories were "important" for the students from all the regions of the world combined, the Middle-Easterners and Asians and the Islanders, and "very important" for the Africans and Central and South Americans. The largest and smallest means were 3.24 and 2.96 for the agricultural majors from Central and South America and the Islands, while 3.60 and 2.93 for the non-agricultural majors were from Central and South America and Mid-East and Asia, respectively. For question on how important is it that agriculture in the developing countries, "be mechanized or use technology intensively?" from each of the different regions of the world, the mean response categories for the agricultural majors respondents were "important" and "very important" for the non-agricultural majors respondents. The largest and smallest means for the agricultural majors were 3.27 and 2.75 for the Africans and the Islanders, while largest and smallest means for the non-agricultural majors were 4.04 and 3.60 for the Middle-Easterners and Asians and the Central and South Americans, respectively. For the question on, "use of chemicals to control insects and weeds?" the mean responses categories for both the agricultural and the non-agricultural majors were "important", for each of the different regions of the world. The largest and smallest means were 2.75 and 2.65 for the agricultural majors from both the Middle-East and Asia and the Islands, while

3.12 and 2.60 for the non-agricultural majors were from Africa and the Islands, respectively.

The analysis of variance indicated there was a significant mean difference between the attitudes of the agricultural and non-agricultural majors respondents. These were on the questions, how important is it that agriculture in the developing countries, "be labor intensive?" for the Africans, and "be mechanized or use technology intensively?" for the Middle-Easterners and Asians and the Islanders.

Analysis of the comparison of the perceived extent of agreement about investments of resources in the developing countries by students from the different regions of the world and by student majoring in agricultural and non-agricultural fields of study.

In Table XIX, for the statements in question # 17, that in the developing countries "government should not invest in the agricultural sector", the Middle-Easterners and Asians were in the "agree" category, both the Islanders and the Africans were in the "disagree" category and the Central and South Americans were in the "strongly disagree" mean response category. The highest (2.96) and lowest (1.26) means were for the Middle-Easterners and Asians and Central and South Americans, respectively. For the other three statements, "government should invest resources in the industrial sectors", "individuals should invest in the agricultural sectors", and "individuals should invest in the industrial sectors", all the respondents from each of the regions of the world were in the "agree" mean response category. For each of the three respective statements, Middle-Easterners and Asians had the highest mean (3.02, 3.33, 3.35), and lowest means were for Central and South Americans (2.85), the Islands (2.85) and (3.30) for both the Middle-Easterners and Asians and Central and South Americans, respectively.

TABLE XIX

COMPARISON OF THE PERCEIVED EXTENT OF AGREEMENT ABOUT INVESTMENT OF RESOURCES
IN THE DEVELOPING COUNTRIES BY STUDENTS FROM DIFFERENT REGIONS OF THE WORLD.

In the developing countries [#] ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
government should not invest resources in the agricultural sectors.	Africans	44	1.47	Strongly Disagree	0.80	0.97	0.41	
	Middle Easterners and Asians	55	1.96	Disagree	0.47			
	Central and South Americans	27	1.26	Strongly Disagree	0.71			
	Islanders	13	1.69	Disagree	1.18			
government should invest resources in the industrial sectors.	Africans	44	2.93	Agree	0.83	0.17	0.91	
	Middle Easterners and Asians	55	3.02	Agree	0.62			
	Central and South Americans	27	2.85	Agree	0.99			
	Islanders	13	3.00	Agree	0.82			
individuals should invest in the agricultural sectors.	Africans	44	3.33	Agree	0.64	4.46	0.00	*
	Middle Easterners and Asians	55	3.33	Agree	0.67			
	Central and South Americans	27	3.30	Agree	0.61			
	Islanders	13	2.85	Agree	0.69			
individuals should invest invest in the industrial sectors.	Africans	44	3.30	Agree	0.67	2.06	0.11	
	Middle Easterners and Asians	55	3.35	Agree	0.52			
	Central and South Americans	27	3.26	Agree	0.59			
	Islanders	13	3.00	Agree	0.71			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. [#] Question 17.

Analysis of variance calculations determined that there was a significant mean difference between respondents from the different regions of the world on the statement that "individuals should invest in the agricultural sectors", the African and Middle-Easterners and Asians were significantly different from Central and South Americans and the Islanders.

In Table XX, for the statements in the question # 17, that in the developing countries "government should not invest resources in the agricultural sectors", both the agricultural and non-agricultural majors respondents from the Middle-Easterners and Asians and Central and South Americans were in the "strongly disagree", while the Africans, Islanders, and for all students from the different regions of the world combined, agricultural majors were in the "disagree" and non-agricultural majors were in the "strongly disagree" mean response categories. The Islanders, and the Africans had the highest means (2.00 and 1.88) for the agricultural and non-agricultural majors, respectively, while the respondents from Africa and the Islands had the lowest means (1.19 and 1.20) for the agricultural and non-agricultural majors, respectively. For the statement "government should invest resources in the industrial sectors" both the agricultural and non-agricultural majors respondents from each of the regions of the world were in the "agree" category. The Central and South Americans and the Islanders had the highest means (2.88 and 3.40) for the agricultural and non-agricultural majors, respectively, while the respondents from Africa and the Central and South America had the lowest means (2.65 and 2.80) for the agricultural and non-agricultural majors, respectively. For the statement "individuals should invest in the agricultural sectors" both the agricultural and non-agricultural majors all respondents from the each of different

TABLE XX

PERCEIVED EXTENT OF AGREEMENT ABOUT INVESTMENT OF RESOURCES IN THE DEVELOPING COUNTRIES
BY AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD.

In the developing countries* ...	Regions	Agricultural Students				Non Agricultural Students				F	Pr>F
		n	Mean	Category	SD	n	Mean	Category	SD		
government should not invest . resources in the agricultural sectors.	Africans	26	1.19	Strongly Disagree	0.49	18	1.88	Disagree	0.99	8.14	0.01 *
	Middle Easterners and Asians	28	1.46	Strongly Disagree	0.69	27	1.44	Strongly Disagree	0.58	0.01	0.91
	Central and South Americans	17	1.24	Strongly Disagree	0.75	10	1.30	Strongly Disagree	0.67	0.05	0.82
	Islanders	8	2.00	Disagree	1.41	5	1.20	Strongly Disagree	0.45	1.46	0.23
	All Students	79	1.38	Strongly Disagree	0.77	60	1.52	Disagree	0.75	1.10	0.30
government should invest resources in the industrial sectors.	Africans	26	2.65	Agree	0.89	18	3.24	Agree	0.75	5.90	0.02 *
	Middle Easterners and Asians	28	2.82	Agree	0.90	27	2.89	Agree	0.64	0.10	0.75
	Central and South Americans	17	2.88	Agree	0.93	10	2.80	Agree	1.14	0.04	0.84
	Islanders	8	2.75	Agree	0.89	5	3.40	Agree	0.55	2.13	0.17
	All Students	79	2.77	Agree	0.89	60	3.02	Agree	0.77	3.20	0.08
individuals should invest in the agricultural sectors.	Africans	26	3.31	Agree	0.62	18	3.24	Agree	0.75	0.02	0.89
	Middle Easterners and Asians	28	3.00	Agree	0.47	27	2.93	Agree	0.47	0.34	0.56
	Central and South Americans	17	3.12	Agree	0.60	10	3.60	Strongly Agree	0.52	4.49	0.04 *
	Islanders	8	2.75	Agree	0.71	5	3.00	Agree	0.71	0.38	0.55
	All Students	79	3.10	Agree	0.59	60	3.15	Agree	0.63	0.23	0.63
individuals should invest in the industrial sectors.	Africans	26	3.08	Agree	0.74	18	3.53	Strongly Agree	0.51	5.60	0.02 *
	Middle Easterners and Asians	28	2.96	Agree	0.64	27	3.07	Agree	0.62	0.42	0.52
	Central and South Americans	17	3.12	Agree	0.60	10	3.50	Strongly Agree	0.53	2.78	0.11
	Islanders	8	3.13	Agree	0.64	5	2.80	Agree	0.84	0.63	0.44
	All Students	79	3.05	Agree	0.66	60	3.27	Agree	0.63	3.88	0.05

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 17.

regions of the world, were in the "agree" category, except for the non-agricultural majors Central and South Americans who were in the "strongly agree" mean response categories. The Africans and the Central and South Americans had the highest means (3.31 and 3.60) for the agricultural and non-agricultural majors, respectively, while the respondents from the Islands and the the Middle-Easterners and Asians had the lowest means (2.75 and 2.93) for the agricultural and non-agricultural majors, respectively.

For the statement "individuals should invest in the industrial sectors" both the agricultural and non-agricultural majors respondents from each of the different regions of the world, were in the "agree", except for the African and Central and South Americans non-agricultural majors who were in the "strongly agree" mean response category. The Africans had the highest means (2.00 and 1.88) for both the agricultural and non-agricultural majors, respectively, while the respondents from the Middle-Easterners and Asians and the Islanders had the lowest means (2.96 and 2.80) for the agricultural and non-agricultural majors, respectively.

The analysis of variance between the means of the agricultural and non-agricultural respondents indicates significant difference for the statements that in the developing countries "government should not invest resources in the agricultural sectors", "government should invest resources in the industrial sectors" and "individuals should invest in the industrial sectors" for the Africans, while "individuals should invest in the agricultural sectors" for the Central and South Americans.

Analysis of the comparison of the perceived extent of agreement on the involvement of women in agriculture by students from the different regions of the world and students majoring in agricultural and non-agricultural major fields of study.

In Table XXI, for the statements on question # 20, that in order to have development in the developing countries "women should participate on an equal basis as men in social, political, and economic processes of agricultural / rural development" the African respondents were in the "agree" category, while both the Central and South Americans and the Islanders were in the "strongly agree" category, and Middle-Easterners and Asians were in the "strongly disagree" mean response category. The Central and South Americans had the highest mean (3.67), while the Middle-Easterners and Asians had the lowest mean (1.35). For the statement "the government should support programs for women to participate in agricultural production activities", except for the Central and South American respondents who were in the "strongly agree" category, while all the respondents from the regions of the world were in the "agree" mean response category. The Central and South Americans had the highest mean (3.59), while the Middle-Easterners and Asians had the lowest mean (3.02). While for the statement, "women should not be involved in agriculture", both the African and the Islander respondents were in the "agree" category, the Central and South Americans were in the "strongly disagree" category and the Middle-Easterners and Asians were in the "agree" mean response categories. The Middle-Easterners and Asians had the highest mean (3.04), while the Central and South Americans had the lowest mean (1.19).

TABLE XXI

COMPARISON OF THE PERCEIVED EXTENT OF AGREEMENT ON THE INVOLVEMENT OF WOMEN
IN AGRICULTURE BY STUDENTS FROM DIFFERENT REGIONS OF THE WORLD.

In order to have development in the developing countries:*	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
women should participate on an equal basis as men in social, political, economic processes of agricultural/rural development.	Africans	43	3.42	Agree	0.82	1.11	0.35	
	Middle Easterners and Asians	55	3.04	Agree	0.55			
	Central and South Americans	27	3.67	Strongly Agree	0.55			
	Islanders	13	3.62	Strongly Agree	1.19			
the government should support programs for women to participate in agricultural production activities.	Africans	44	3.40	Agree	1.00	1.75	0.16	
	Middle Easterners and Asians	53	3.02	Agree	0.89			
	Central and South Americans	27	3.59	Strongly Agree	0.50			
	Islanders	13	3.15	Agree	1.21			
women should not be involve in agriculture.	Africans	44	1.60	Disagree	1.09	1.93	0.13	
	Middle Easterners and Asians	55	1.35	Strongly Disagree	1.05			
	Central and South Americans	27	1.19	Strongly Disagree	0.48			
	Islanders	13	1.77	Disagree	1.09			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 20.

Analysis of variance calculations determined that there was no significant mean difference between perception of the respondents from the different regions of the world on the involvement of women in agriculture.

In Table XXII, for the statements in question # 20, that in order to have development in the developing countries "women should participate on an equal basis as men in social, political, and economic processes of agricultural / rural development", both agricultural and non-agricultural majors respondents from Central and South Americans were in the "strongly agree", while the Middle-Easterners and Asians were in the "agree" mean response categories. The agricultural respondents from Africans and all the students combined were in the "agree" category, while the non-agricultural majors were in the "strongly agree" mean response category. The Islanders agricultural majors were in the "strongly agree" and the non-agricultural majors were in the "agree" mean response category. For the agricultural and non-agricultural majors, the highest means were for the Islanders (3.75) and Central and South Americans (3.60), while the lowest means were for the Africans (3.23) and the Islanders (3.20), respectively. For the statement, "the government should support programs for women to participate in agricultural production", both agricultural and non-agricultural majors respondents were in the "agree" category for the Middle-Easterners and Asians and were in the "strongly agree" category for the Central and South Americans, while agricultural respondents from Africa and the students from all the regions of the world combined were in the "agree" and the non-agricultural majors were in the "strongly agree" mean response categories. The Islanders agricultural majors were in the "strongly agree" and the non-agricultural majors were in the "agree" mean response categories. For the agricultural and non-agricultural majors, the

TABLE XXII

PERCEIVED EXTENT OF AGREEMENT ON THE INVOLVEMENT OF WOMEN IN AGRICULTURE BY AGRICULTURAL
AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD.

In order to have development in the developing countries:*	Regions	Agricultural Students				Non Agricultural Students				F	Pr>F
		n	Mean	Category	SD	n	Mean	Category	SD		
women should participate on an equal basis as men in social, political and economic processes of agricultural/rural development.	Africans	26	3.23	Agree	0.95	18	3.53	Strongly Agree	1.01	4.11	0.05 *
	Middle Easterners and Asians	28	3.36	Agree	0.73	27	3.41	Agree	0.80	0.06	0.81
	Central and South Americans	17	3.71	Strongly Agree	0.47	10	3.60	Strongly Agree	0.70	0.22	0.64
	Islanders	8	3.75	Strongly Agree	1.04	5	3.20	Agree	1.30	0.10	0.76
	All Students	79	3.41	Agree	0.79	60	3.52	Strongly Agree	0.75	0.91	0.34
the government should support programs for women to participate in agricultural production activities.	Africans	26	3.27	Agree	0.96	18	3.65	Strongly Agree	1.06	4.09	0.05 *
	Middle Easterners and Asians	28	3.18	Agree	0.67	27	3.41	Agree	0.57	1.85	0.18
	Central and South Americans	17	3.59	Strongly Agree	0.51	10	3.60	Strongly Agree	0.52	0.00	0.95
	Islanders	8	3.50	Strongly Agree	0.93	5	3.20	Agree	1.30	0.01	0.92
	All Students	79	3.34	Agree	0.80	60	3.55	Strongly Agree	0.65	3.59	0.06
women should not be involve in agriculture .	Africans	26	1.08	Strongly Disagree	0.27	18	2.24	Disagree	1.48	20.84	0.00 *
	Middle Easterners and Asians	28	1.39	Strongly Disagree	0.50	27	1.30	Strongly Disagree	0.61	0.42	0.52
	Central and South Americans	17	1.12	Strongly Disagree	0.49	10	1.30	Strongly Disagree	0.48	0.89	0.35
	Islanders	8	1.63	Disagree	1.06	5	1.40	Strongly Disagree	0.55	0.19	0.67
	All Students	79	1.34	Strongly Disagree	0.75	60	1.60	Disagree	0.98	7.77	0.00

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at $\alpha=0.05$. * Question 20.

highest means were for the Central and South Americans (3.59) and Africa (3.65), while the lowest means were for the Middle-Easterners and Asians (3.18) and the Islanders (3.20), respectively. For the statement, "women should not be involve in agriculture", both agricultural and non-agricultural major respondents from the Central and South Americans and Middle-Easterners and Asians were in the "strongly disagree" category, while the agricultural respondents from Africans and all the students combined were in the "strongly disagree" category and the non-agricultural majors were in the "disagree" mean response categories. The Islanders agricultural majors were in the "disagree" category and the non-agricultural majors were in the "strongly agree" mean response category. For the agricultural and non-agricultural majors, the highest means were for the Islanders (1.63) and Africans (2.24), while the lowest means were for the Africans (1.08) and both the Middle-Easterners and Asians and Central and South Americans (1.30), respectively.

The analysis of variance indicated a significant difference between the means of the agricultural and non-agricultural respondents from Africa, for all the three statements that "women should participate on an equal basis as men in social, political, and economic processes of agricultural / rural development", "the government should support programs for women to participate in agricultural production" and "women should not be involve in agriculture".

Analysis of the comparison of the perceived extent of agreement on how agriculture can improve life of the people in the rural areas by students from the different regions of the world and by students in agricultural and non-agricultural major fields of study.

In Table XXIII, for the statement in question # 21, that "it is within the scope of agriculture to improve the life of people living in the rural areas" all the respondents from each of the regions of the world were in the "agree" mean response categories. The Africans had the highest mean (3.49), while the Middle-Easterners and Asians had the lowest mean (2.98).

Analysis of variance calculations indicated a significant mean difference between the perceptions of the Africans and the Middle-Easterners and Asians as compared to the Central and South Americans and the Islanders on the statement that "it is with in the scope of agriculture to improve the life of the people living in the rural areas".

In Table XXIV, for the statement in question # 21, that "it is within the scope of agriculture to improve the life of people living in the rural areas", both the agricultural and non-agricultural majors respondent from the Middle-Easterners and Asians, the Islanders, all the students from the regions of the world combined had "agree" mean response categories. The Africans agricultural majors respondents had "agree", while the non-agricultural majors were in "strongly agree" mean response categories. The Central and South Americans agricultural majors were in the "strongly agree" category and the non-agricultural majors were in the "agree" mean response category. For both the agricultural and non-agricultural majors, the highest means were for the Africans (3.46 and 3.59) and Middle-Easterners and Asians (3.11 and 2.89) had the lowest means, respectively.

The analysis of variance indicated no significant difference between the means of the agricultural and non-agricultural respondents on the statement that "it is within the scope of agriculture to improve the life of the people living in the rural areas".

TABLE XXIII

COMPARISON OF THE PERCEIVED EXTENT OF AGREEMENT BY STUDENTS FROM DIFFERENT REGIONS OF THE OF THE WORLD ON HOW AGRICULTURE CAN IMPROVE LIFE OF THE PEOPLE IN THE RURAL AREAS.

	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
It is within the scope of agriculture to improve the life of people in rural areas.*	Africans	44	3.49	Agree	0.74	3.24	0.02	*
	Middle Easterners and Asians	55	2.98	Agree	0.95			
	Central and South Americans	27	3.44	Agree	0.58			
	Islanders	12	3.25	Agree	0.75			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 21.

TABLE XXIV

PERCEIVED EXTENT OF AGREEMENT ON HOW AGRICULTURE CAN IMPROVE LIFE OF THE PEOPLE IN THE RURAL AREAS BY AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD.

	Regions	Agricultural Students				Non Agricultural Students					
		n	Mean	Category	SD	n	Mean	Category	SD	F	Pr>F
It is within the scope of agriculture to improve the life of people in rural areas.*	Africans	26	3.46	Agree	0.81	17	3.59	Strongly Agree	0.62	0.17	0.68
	Middle Easterners and Asians	28	3.11	Agree	0.96	27	2.89	Agree	0.8	0.36	0.55
	Central and South Americans	17	3.53	Strongly Agree	0.51	10	3.30	Agree	0.67	0.99	0.33
	Islanders	8	3.38	Agree	0.74	5	3.00	Agree	0.71	0.81	0.39
	All Students	79	3.29	Agree	0.88	60	3.22	Agree	0.76	1.08	0.30

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. # Question 21.

Attitudes toward studying agricultural sciences and natural resources

In the presentation of the analyzed data in this section, the numbering order of the questions were changed in comparison to the questionnaire for ease of reading and organizing the responses into similar groupings. However, the original question numberings were signified in the footnotes of each table.

International students from developing countries perceptions and attitudes toward studying agricultural sciences and natural resources were presented by regions and between the agricultural and non-agricultural majors in Tables XXV through Table XLVII. In each of the tables, comparisons of the respondents perceptions or attitudes were presented in terms of the extent of agreement or level of importance towards statements or questions on studying agricultural sciences and natural resources. The means, analysis of variance and Tukey's Post-hoc comparisons were calculated. The mean responses for each category was determined.

Analysis of the comparison of the attitudes of students on the importance of investment in education and training by the different regions of the world and by students majoring in agricultural and non-agricultural fields of study.

In Table XXV, for question # 27 on how important is the investment in education and training at "the primary education level?", "the secondary education level?", "the higher education level?" and "the vocational technical education level?", respondents from

TABLE XXV

COMPARISON OF THE ATTITUDES OF THE STUDENTS FROM DIFFERENT REGIONS OF THE WORLD ON THE IMPORTANCE OF INVESTMENT IN EDUCATION AND TRAINING.

How important is the investment in education and training at* ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
the Primary Education level?	Africans	44	4.21	Very Important	0.99	0.83	0.48	
	Middle Easterners and Asians	55	3.75	Very Important	0.99			
	Central and South Americans	27	4.07	Very Important	1.27			
	Islanders	13	4.46	Very Important	0.78			
the Secondary Education level?	Africans	44	4.33	Very Important	0.78	0.98	0.40	
	Middle Easterners and Asians	55	4.38	Very Important	0.80			
	Central and South Americans	27	4.26	Very Important	1.10			
	Islanders	13	4.23	Very Important	0.60			
the Higher Education level?	Africans	44	3.93	Very Important	0.94	0.70	0.55	
	Middle Easterners and Asians	54	2.87	Important	1.26			
	Central and South Americans	27	3.93	Very Important	0.92			
	Islanders	13	4.08	Very Important	0.86			
the Vocational/Technical level?	Africans	44	4.35	Very Important	0.87	0.13	0.94	
	Middle Easterners and Asians	55	3.85	Very Important	1.06			
	Central and South Americans	27	4.33	Very Important	0.68			
	Islanders	13	4.31	Very Important	0.85			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 27.

all the different regions of the world were in the "very important" mean response categories, except for the Middle-Easterners and the Asian respondents which had the "important" mean response category on the question of "the higher education level?". The highest mean for the question on both "the primary education level?" (4.46) and the "higher education level?" (4.08) were for the Islanders, on "the secondary education level?" (4.23) were for the Middle-Easterners and the Asians, and on "the vocational education level?" (4.35) were for the Africans, while the lowest mean for the question on "the primary education level?" (3.75), "the higher education level?" and the "vocational education level?" (3.85) were for the Middle-Easterners and the Asians and on "the secondary education level?" (4.23) were for the Islanders.

Analysis of variance calculations determined that there was no significant mean difference between respondents from the different regions of the world on all the questions on investment in education and training.

In Table XXVI, for question # 27, on how important is the investment in education and training at "the primary education level?", both the agricultural and non-agricultural majors respondents from all the different regions of the world combined, Central and South Americans, had the "very important", while the Middle Easterners and Asians had the "important" mean response categories. The mean response categories for the Africans were "extremely important" and "very important" and for the Islanders were "very important" and "extremely important", for the agricultural and non-agricultural majors, respectively. The highest means were for Africans (4.58) and Islanders (4.60), while the Central and South Americans (4.24) and Middle Easterners and Asians (3.41) had the lowest means for the agricultural and non-agricultural majors, respectively. For the

TABLE XXVI

ATTITUDES OF THE AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT
REGIONS OF THE WORLD ON INVESTMENT IN EDUCATION AND TRAINING.

How important is the investment in education and training at* ...	Regions	Agricultural Students				Non Agricultural Students				F		Pr>F
		n	Mean	Category	SD	n	Mean	Category	SD			
the Primary Education level?	Africans	26	4.58	Extremely Important	0.70	18	3.53	Very Important	1.07	12.77	0.00	*
	Middle Easterners and Asians	28	4.39	Important	0.92	27	3.41	Important	1.28	10.85	0.00	*
	Central and South Americans	17	4.24	Very Important	1.20	10	3.80	Very Important	1.40	0.73	0.40	
	Islanders	8	4.38	Very Important	0.92	5	4.60	Extremely Important	0.55	0.24	0.63	
	All Students	79	4.42	Very Important	0.91	60	3.63	Very Important	1.22	18.70	0.00	
the Secondary Education level?	Africans	26	4.50	Extremely Important	0.71	18	4.06	Very Important	0.83	3.76	0.06	
	Middle Easterners and Asians	28	4.36	Important	0.68	27	3.59	Very Important	1.19	8.70	0.00	*
	Central and South Americans	17	4.24	Very Important	1.20	10	4.30	Very Important	0.95	0.02	0.88	
	Islanders	8	4.00	Very Important	0.53	5	4.60	Extremely Important	0.55	3.81	0.08	
	All Students	79	4.34	Very Important	0.81	60	3.93	Very Important	1.04	6.74	0.01	
the Higher Education level?	Africans	26	4.00	Very Important	0.94	18	3.82	Very Important	0.95	0.34	0.56	
	Middle Easterners and Asians	28	3.61	Important	1.03	27	3.89	Very Important	0.93	1.13	0.29	
	Central and South Americans	17	3.76	Very Important	0.90	10	4.20	Very Important	0.92	1.44	0.24	
	Islanders	8	4.00	Very Important	0.76	5	4.20	Very Important	1.10	0.15	0.70	
	All Students	79	3.81	Very Important	0.95	60	3.95	Very Important	0.93	0.75	0.39	
the Vocational/Technical level?	Africans	26	4.73	Extremely Important	0.53	18	3.82	Very Important	1.01	15.24	0.00	*
	Middle Easterners and Asians	28	4.50	Very Important	0.69	27	4.26	Very Important	0.90	1.24	0.27	
	Central and South Americans	17	4.29	Very Important	0.69	10	4.40	Very Important	0.70	0.15	0.70	
	Islanders	8	4.38	Very Important	0.92	5	4.20	Very Important	0.84	0.12	0.74	
	All Students	79	4.52	Extremely Important	0.68	60	4.15	Very Important	0.90	7.48	0.01	

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 27.

questions on "the secondary education level?", both the agricultural and non-agricultural majors respondents from all the different regions of the world combined, Central and South Americans, had the "very important" mean response categories. The mean response categories for the Africans were "extremely important" and "very important" and for the Middle Easterners and Asians were "important" and "very important", for the Islanders were "very important" and "extremely important" for the agricultural and non-agricultural majors, respectively. The highest means were for the Africans (4.50) and the Islanders (4.60), while the Islanders (4.00) and the Middle Easterners and Asians (3.59) had the lowest means for the agricultural and non-agricultural majors, respectively. For the questions on "the higher education level?", except for the Middle Easterners and Asians agricultural respondents who were in the "important" mean response category, both the agricultural and non-agricultural majors respondents from each of the different regions of the world were in the "very important" mean response categories. The highest means were for the Africans (4.50) and Islanders (4.50) and the lowest means were for the Central and South Americans (4.20) and Islander (4.20) for the agricultural and non-agricultural majors, respectively. While the Middle Easterners and Asians (3.61) agricultural majors and Africans (3.82) non-agricultural majors had the lowest means. For the questions on "the vocational education level?", except for the Africans and all the regions of the world combined respondents who were in the "extremely important" and "very important" mean response categories, for the agricultural and non-agricultural majors respondents, respectively, all the respondents from each of the different regions of the world were in the "very important" mean response categories. The highest means were for the Africans

(4.73) and Central and South Americans (4.40) and the lowest mean were for the Central and South Americans (4.29) and Africans (3.82) for the agricultural and non-agricultural majors, respectively.

Analysis of variance calculations determined that there was a significant mean difference between agricultural majors and non-agricultural majors respondents on the questions of investment in education and training. The differences between the agricultural majors and non-agricultural majors respondents from African were for both the "the primary education and the vocational education levels?" and for the Middle Easterners and Asians were for both the "primary and secondary education levels?".

Analysis of the comparison of the perceived extent of agreement about a career in agriculture in the developing countries by students from the different regions and by students majoring in agricultural and non-agricultural fields of study.

Table XXVII presents data for the statements in question # 10, that a career in agriculture is as prestigious as compared to these professions. For the statement on, "law", except for the African respondents who were in the "strongly disagree" mean response category, respondents from all the different regions of the world were in the "disagree" mean response categories. The highest mean was for the Islander (2.08), while the lowest mean was for the Africans (1.91). For the "social sciences", with the exception of the Middle Easterners and Asian respondents who were in the "strongly disagree" mean response category, respondents from all the different regions of the world were in the "agree" mean response category. The highest mean was for the Africans (2.70), while the

TABLE XXVII

COMPARISON OF THE PERCEIVED EXTENT OF AGREEMENT ABOUT A CAREER IN AGRICULTURE
IN THE DEVELOPING COUNTRIES BY STUDENTS FROM DIFFERENT REGIONS OF THE WORLD.

A career in agriculture is as prestigious as compared to these professions# ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
Law.	Africans	44	1.91	Disagree	0.95	0.39	0.76	
	Middle Easterners and Asians	54	1.94	Disagree	0.83			
	Central and South Americans	27	2.00	Disagree	1.04			
	Islanders	13	2.08	Disagree	1.04			
Social Sciences.	Africans	44	2.70	Agree	0.83	2.43	0.07	
	Middle Easterners and Asians	54	1.67	Disagree	0.89			
	Central and South Americans	27	2.74	Agree	0.86			
	Islanders	13	2.69	Agree	0.75			
Business.	Africans	44	2.37	Disagree	1.05	1.98	0.12	
	Middle Easterners and Asians	54	1.83	Disagree	0.93			
	Central and South Americans	27	2.22	Disagree	0.89			
	Islanders	13	2.38	Disagree	0.87			
Medicine.	Africans	44	1.77	Disagree	1.00	0.92	0.43	
	Middle Easterners and Asians	55	1.95	Disagree	0.87			
	Central and South Americans	27	1.89	Disagree	0.93			
	Islanders	13	2.08	Disagree	1.04			
Engineering.	Africans	44	1.86	Disagree	0.89	0.67	0.57	
	Middle Easterners and Asians	55	1.71	Disagree	0.83			
	Central and South Americans	27	2.07	Disagree	0.92			
	Islanders	13	2.08	Disagree	0.95			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. # Question 10.

lowest mean was for the Middle Easterners and Asians (1.67). For the statement on "business", all respondents from the different regions of the world were in the "disagree" mean response category. The highest mean was for the Islanders (2.38), while the lowest mean was for the Middle Easterners and Asians (1.83). For both "medicine and engineering", except for the Middle Easterners and Asian respondents who were in the "agree" mean response category, respondents from all the different regions of the world were in the "disagree" mean response category. The Middle Easterners and Asians had the highest means for both medicine (2.95) and engineering (2.71), while the Africans had the lowest means for both medicine (1.77) and engineering (1.86).

Analysis of variance calculations determined that there were no significant mean differences between different regions of the world on all the statement about comparing a career in agriculture to the other professions.

In Table XXVIII, for the statements in question # 10, that a career in agriculture is as prestigious as compared to these professions, for the statements on "law", "medicine" and "engineering" both agricultural and non-agricultural major respondents from all the different regions of the world were in the "disagree" mean response categories. For the "law", the highest means were for the Islanders (2.13) and the Africans (2.18) while the lowest means were for the Africans (1.73) and the Middle Easterners and Asians (1.63) for the agricultural and non-agricultural majors, respectively. For the statement, on "medicine" the highest means were for the Islanders (2.00 and 2.20), while the lowest mean were for the Africans (1.50) and the Middle Easterners and Asians (1.67) agricultural and non-agricultural majors, respectively. For the statement on, "engineering" the highest means were for the Islander (2.00) and the Central and South Americans

TABLE XXVIII

PERCEIVED EXTENT OF AGREEMENT ABOUT A CAREER IN AGRICULTURE IN THE DEVELOPING COUNTRIES BY
AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD.

A career in agriculture is as prestigious as compared to these professions* ...	Regions	Agricultural Students				Non Agricultural Students					
		n	Mean	Category	SD	n	Mean	Category	SD	F	Pr>F
Law.	Africans	26	1.73	Disagree	0.78	18	2.18	Disagree	1.13	2.38	0.13
	Middle Easterners and Asians	28	2.00	Disagree	0.86	27	1.63	Disagree	0.74	2.91	0.09
	Central and South Americans	17	2.00	Disagree	1.06	10	2.00	Disagree	1.05	0.00	1.00
	Islanders	8	2.13	Disagree	1.13	5	2.00	Disagree	1.00	0.04	0.84
	All Students	79	1.92	Disagree	0.90	60	1.90	Disagree	0.95	0.07	0.79
Social Sciences.	Africans	26	2.54	Agree	0.71	18	2.94	Agree	0.97	1.94	0.17
	Middle Easterners and Asians	28	2.36	Disagree	0.95	27	2.26	Disagree	0.76	0.18	0.68
	Central and South Americans	17	2.82	Agree	0.81	10	2.60	Agree	0.97	0.42	0.52
	Islanders	8	2.75	Agree	0.71	5	2.60	Agree	0.89	0.11	0.74
	All Students	79	2.56	Agree	0.83	60	2.55	Agree	0.89	0.03	0.87
Business.	Africans	26	2.23	Disagree	1.07	18	2.65	Agree	1.00	1.44	0.23
	Middle Easterners and Asians	28	2.00	Disagree	0.77	27	1.89	Disagree	0.89	0.11	0.75
	Central and South Americans	17	2.29	Disagree	0.85	10	2.10	Disagree	0.99	0.29	0.59
	Islanders	8	2.50	Agree	0.93	5	2.20	Disagree	0.84	0.35	0.57
	All Students	79	2.19	Disagree	0.91	60	2.17	Disagree	0.96	0.00	0.96
Medicine.	Africans	26	1.50	Disagree	0.76	18	2.18	Disagree	1.19	5.37	0.02 *
	Middle Easterners and Asians	28	1.71	Disagree	0.85	27	1.67	Disagree	0.96	0.12	0.73
	Central and South Americans	17	1.82	Disagree	0.88	10	2.00	Disagree	1.05	0.22	0.64
	Islanders	8	2.00	Disagree	0.93	5	2.20	Disagree	1.30	0.11	0.75
	All Students	79	1.70	Disagree	0.84	60	1.90	Disagree	1.05	1.61	0.21
Engineering.	Africans	26	1.85	Disagree	0.88	18	1.88	Disagree	0.93	0.02	0.88
	Middle Easterners and Asians	28	1.89	Disagree	0.88	27	1.78	Disagree	0.97	0.37	0.55
	Central and South Americans	17	1.94	Disagree	0.90	10	2.30	Disagree	0.95	0.96	0.34
	Islanders	8	2.00	Disagree	0.76	5	2.20	Disagree	1.30	0.13	0.73
	All Students	79	1.90	Disagree	0.86	60	1.93	Disagree	0.97	0.01	0.91

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. # Question 10.

(2.30), while the lowest means were for the Africans (1.85) and the Middle Easterners and Asians (1.78) for the agricultural and non-agricultural majors, respectively. For the statement on, "social sciences", except for both of the Middle Easterners and Asians agricultural and non-agricultural majors respondents who were in the "disagree" mean response category, respondents from all the different regions of the world were in the "agree" mean response categories. The highest means were for the Central and South Americans (2.82) and the Africans (2.94), while the lowest means were both for the Middle Easterners and Asians (2.36) and (2.26) for the agricultural and non-agricultural majors, respectively. For the statement on, "business", except for the Islanders agricultural and Africans non-agricultural majors respondents who were in the "agree" mean response category, respondents from all the different regions of the world were in the "disagree" mean response categories. The highest means were for the Islanders (2.50) and the Africans (2.65), while the lowest means were both for the Middle Easterners and Asians (2.00 and 2.26) for the agricultural and non-agricultural majors, respectively.

Analysis of variance calculations determined that there was a significant mean difference between agricultural and non-agricultural respondents from Africa, on the statement that a career in agriculture is as prestigious as compared to the "law" professions.

Analysis of the comparison of the attitudes toward the importance of exposure of students to agriculturally related areas of studies by students from the different regions of the world and by students majoring in agricultural and non-agricultural students fields of study.

In Table XXIX, for question # 27, problems of education related to agriculture as to how important is it that students be exposed to agriculturally related areas of studies at "primary school level", except for the African respondents who were in the "important" mean response category, respondents from all the different regions of the world were in the "very important" mean response category. The highest means were for both the Africans and the Middle Easterners and Asians (3.56), while the lowest mean was for the Islanders (3.38). For both the questions, at the "secondary school level" and "vocational / technical schools, respondents from all the different regions of the world were in the "very important" mean response categories. The highest means for the "secondary school level" were for the Middle Easterners and Asians (4.13) and for the "vocational / technical schools" were Central and South Americans (4.37), while the lowest means for both the "secondary school level" (3.60) and the "vocational / technical schools"(4.37) were for the Africans. For the question at "the university level", except for the Middle Easterners and Asians respondents who were in the "important" mean response category, respondents from all the different regions of the world were in the "very important" mean response categories. The highest mean was for the Central and South Americans (3.89), while the lowest means were for the Middle Easterners and Asians (3.09). For the question at "all levels", except for the African respondents who were in the "important" mean response category, respondents from all the different regions of the world were in the "very important" mean response category. The highest means were for the Middle Easterners and Asians (4.07), while the lowest mean was for the Africans (3.40).

Analysis of variance calculations determined that there was a significant mean difference between different regions of the world. The Tukey's Post hoc analysis indicated

Table XXIX

COMPARISON OF THE STUDENTS FROM DIFFERENT REGIONS OF THE WORLD ATTITUDES TOWARD THE IMPORTANCE OF EXPOSURE OF STUDENTS TO AGRICULTURALLY RELATED AREAS OF STUDIES.

How important is it that students be exposed to agriculturally related areas of studies at# ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
the Primary School level?	Africans	44	3.56	Very Important	1.30	2.39	0.07	
	Middle Easterners and Asians	55	3.56	Very Important	1.07			
	Central and South Americans	27	3.52	Very Important	1.34			
	Islanders	13	3.38	Important	1.26			
the Secondary School level?	Africans	44	3.60	Very Important	1.07	1.74	0.16	
	Middle Easterners and Asians	54	4.13	Very Important	1.03			
	Central and South Americans	27	4.07	Very Important	0.92			
	Islanders	13	3.62	Very Important	0.96			
the University level?	Africans	44	3.63	Very Important	1.07	0.61	0.61	
	Middle Easterners and Asians	54	3.09	Important	1.12			
	Central and South Americans	27	3.89	Very Important	1.09			
	Islanders	13	3.85	Very Important	1.07			
the Vocational/Technical Schools?	Africans	44	3.88	Very Important	1.14	1.32	0.27	
	Middle Easterners and Asians	55	4.13	Very Important	0.82			
	Central and South Americans	27	4.37	Very Important	0.69			
	Islanders	13	4.00	Very Important	0.82			
all Levels?	Africans	44	3.40	Important	1.09	2.67	0.50	*
	Middle Easterners and Asians	55	4.07	Very Important	0.90			
	Central and South Americans	27	3.85	Very Important	1.13			
	Islanders	13	3.54	Very Important	1.27			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 27.

that the attitudes of the Central and South Americans and the Islanders respondents were significantly different from the attitudes of the Africans and the Middle Easterners and the Asian, on the question how important is it to expose students to agriculturally related areas of studies at "all levels".

In Table XXX, for question # 27, problems of education related to agriculture as to how important is it that students be exposed to agriculturally related areas of studies at "primary school level?", except for the Africans agricultural and Central and South Americans non-agricultural majors respondents who were in the "very important" mean response category, respondents from all the different regions of the world were in the "important" mean response categories. The highest means were for the Africans (3.69) and the Central and South Americans (3.60), while the lowest means were for the Middle Easterners and Asians (2.86 and 2.96) for the agricultural and non-agricultural majors, respectively. For the question, at the "secondary school level?", except for the Middle Easterners and Asian agricultural and Africans non-agricultural major respondents who were in the "important" mean response category, respondents from all the different regions of the world were in the "very important" mean response categories. The highest means were both for the Central and South Americans (4.00 and 4.20), while the lowest means were for the Middle Easterners and Asians (3.46) and for the Africans (3.35) for the agricultural and non-agricultural majors, respectively. For the question, at "the university level?", except for the Middle Easterners and Asian non-agricultural majors respondents who were in the "important" mean response category, respondents from all the different regions of the world were in the "very important" mean response categories. The highest means were for the Central and South Americans (4.00) and the Islanders (4.20), while the

TABLE XXX

AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD ATTITUDES TOWARDS
THE IMPORTANCE OF EXPOSURE OF STUDENTS TO AGRICULTURALLY RELATED AREAS OF STUDIES.

How important is it that students be exposed to agriculturally related areas of studies at* ...	Regions	Agricultural Students				Non Agricultural Students					
		n	Mean	Category	SD	n	Mean	Category	SD	F	Pr>F
the Primary School level?	Africans	26	3.69	Very Important	1.26	18	3.29	Important	1.36	0.83	0.34
	Middle Easterners and Asians	28	2.86	Important	1.18	27	2.96	Important	1.40	0.09	0.76
	Central and South Americans	17	3.47	Important	1.28	10	3.60	Very Important	1.51	0.06	0.81
	Islanders	8	3.38	Important	1.41	5	3.40	Important	1.14	0.00	0.97
	All Students	79	3.32	Important	1.28	60	3.22	Important	1.37	0.20	0.65
the Secondary School level?	Africans	26	3.81	Very Important	0.98	18	3.35	Important	1.17	2.18	0.15
	Middle Easterners and Asians	28	3.46	Important	1.14	27	3.56	Very Important	1.12	0.09	0.77
	Central and South Americans	17	4.00	Very Important	0.94	10	4.20	Very Important	0.92	0.29	0.59
	Islanders	8	3.63	Very Important	0.92	5	3.60	Very Important	1.14	0.00	0.96
	All Students	79	3.71	Very Important	1.03	60	3.60	Very Important	1.11	0.36	0.54
the University level?	Africans	26	3.69	Very Important	0.84	18	3.71	Very Important	1.21	0.17	0.68
	Middle Easterners and Asians	28	3.71	Very Important	1.12	27	3.41	Important	1.01	1.14	0.29
	Central and South Americans	17	4.00	Very Important	1.12	10	3.70	Very Important	1.06	0.47	0.49
	Islanders	8	3.63	Very Important	1.19	5	4.20	Very Important	0.84	0.88	0.34
	All Students	79	3.76	Very Important	1.03	60	3.57	Very Important	1.11	1.11	0.29
the Vocational/Technical Schools?	Africans	26	4.27	Very Important	0.83	18	3.41	Important	1.37	7.31	0.01 *
	Middle Easterners and Asians	28	4.21	Very Important	0.99	27	4.00	Very Important	1.07	0.82	0.37
	Central and South Americans	17	4.53	Extremely Important	0.51	10	4.10	Very Important	0.88	2.61	0.12
	Islanders	8	3.88	Very Important	0.83	5	4.20	Very Important	0.84	0.47	0.51
	All Students	79	4.29	Very Important	0.83	60	3.85	Very Important	1.13	6.67	0.01
all Levels?	Africans	26	3.58	Very Important	0.95	18	3.29	Important	1.16	1.54	0.22
	Middle Easterners and Asians	28	3.18	Important	1.09	27	3.04	Important	1.16	0.34	0.56
	Central and South Americans	17	3.76	Very Important	1.20	10	4.00	Very Important	1.05	0.26	0.61
	Islanders	8	3.63	Very Important	1.41	5	3.40	Important	1.14	0.09	0.77
	All Students	79	3.48	Very Important	1.11	60	3.27	Important	1.19	1.37	0.24

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 27.

lowest means were for the Islanders (3.63) and the Middle Easterners and Asians (3.41) for the agricultural and non-agricultural majors, respectively. For the question, at the "vocational / technical schools?", with the exception of the Central and South American agricultural majors who were in the "extremely important" and the Africans non-agricultural major respondents who were in the "important" mean response category, respondents from all the different regions of the world were in the "very important" mean response categories. The highest means were for the Central and South Americans (4.53) and the Islanders (4.20), while the lowest means were for the Islanders (3.88) and the Africans (3.41) for the agricultural and non-agricultural majors, respectively. For the question, at "all levels", the Africans, the Islanders and all the regions combined, agricultural majors were in the "very important" mean response category and non-agricultural major respondents were in the "important" mean response category. Both the agricultural and non-agricultural major respondents from the Middle Easterners and Asians were in the "important" and the Central and South Americans respondents were in the "very important" mean response categories. The highest means were both for the Central and South Americans (3.76 and 4.00), while the lowest means were both for the Middle Easterners and Asians (3.18 and 3.04) for the agricultural and non-agricultural majors, respectively.

Analysis of variance calculations determined that there was a significant mean difference between the African agricultural and non-agricultural respondents, on the question, how important is it to expose students to agriculturally related areas of studies at "vocational / technical schools?".

Analysis of the comparison of the perceived extent of agreement about problems of education related to agriculture by students from the different regions of the world and by students majoring in agricultural and non-agricultural fields of study.

In Table XXXI, for the statements in question # 11, that the problem of education related to agriculture is due to a lack of "schools / facilities", "teachers", "planning by national / local agencies and "administrator", respondents from all the different regions of the world were in the "agree" mean response categories, except for the African respondents who were in the "disagree" mean response category for the statement on the "teachers". For the "schools / facilities", Middle Easterners and the Asians had the highest mean (3.18) and the Africans had the lowest means (2.72), for the "teachers" Middle Easterners and Asians (3.04) had the highest mean and the Africans had the lowest means (2.35), for the "planning by national / local agencies, Middle Easterners and the Asians had the highest mean (3.53) and the Islanders had the lowest mean (3.15) and for the "administrator" Islanders had the highest mean (3.23) and the Middle Easterners and the Asians had the lowest means (2.60).

Analysis of variance calculations determined that there was no significant mean difference between different regions of the world on all the statements about the problem of education related to agriculture.

In Table XXXII, for the statements in question # 11, that the problem of education related to agriculture is due to a lack of "schools / facilities" and "administrators", both the agricultural and non-agricultural majors respondents from all the different regions of the

TABLE XXXI

COMPARISON OF THE PERCEIVED EXTENT OF AGREEMENT ABOUT PROBLEMS OF EDUCATION RELATED TO AGRICULTURE IN THE DEVELOPING COUNTRIES BY STUDENTS FROM DIFFERENT REGIONS OF THE WORLD.

The problem of education related to agriculture is due to a lack of# ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
schools/facilities.	Africans	44	2.72	Agree	0.91	1.04	0.37	
	Middle Easterners and Asians	55	3.18	Agree	0.75			
	Central and South Americans	27	3.07	Agree	1.04			
	Islanders	13	2.92	Agree	0.86			
teachers.	Africans	44	2.35	Disagree	0.97	2.37	0.07	
	Middle Easterners and Asians	55	3.04	Agree	0.84			
	Central and South Americans	27	2.89	Agree	0.97			
	Islanders	13	3.00	Agree	0.82			
planning by national/local agencies.	Africans	44	3.26	Agree	0.90	0.10	0.96	
	Middle Easterners and Asians	55	3.53	Agree	0.63			
	Central and South Americans	27	3.19	Agree	0.96			
	Islanders	13	3.15	Agree	0.80			
administrators.	Africans	44	3.00	Agree	0.72	0.22	0.88	
	Middle Easterners and Asians	55	2.60	Agree	0.78			
	Central and South Americans	27	3.04	Agree	1.02			
	Islanders	13	3.23	Agree	0.73			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 11.

TABLE XXXII

PERCEIVED EXTENT OF AGREEMENT ABOUT PROBLEMS OF EDUCATION RELATED TO AGRICULTURE IN THE DEVELOPING COUNTRIES
BY AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD.

The problem of education related to agriculture is due to a lack of# ...	Regions	Agricultural Students				Non Agricultural Students					
		n	Mean	Category	SD	n	Mean	Category	SD	F	Pr>F
schools/facilities.	Africans	26	2.54	Agree	0.99	18	3.00	Agree	0.71	2.20	0.15
	Middle Easterners and Asians	28	2.89	Agree	0.79	27	3.00	Agree	0.96	0.21	0.65
	Central and South Americans	17	2.94	Agree	1.03	10	3.30	Agree	1.06	0.75	0.39
	Islanders	8	3.13	Agree	0.83	5	2.60	Agree	0.89	1.16	0.30
	All Students	79	2.81	Agree	0.92	60	3.02	Agree	0.89	1.48	0.23
teachers.	Africans	26	2.27	Disagree	1.04	18	2.59	Agree	0.94	1.26	0.27
	Middle Easterners and Asians	28	2.57	Agree	0.69	27	2.85	Agree	0.95	1.58	0.21
	Central and South Americans	17	2.82	Agree	0.88	10	3.00	Agree	1.15	0.20	0.66
	Islanders	8	3.13	Agree	0.83	5	2.80	Agree	0.84	0.47	0.51
	All Students	79	2.58	Agree	0.90	60	2.80	Agree	0.95	1.95	0.16
planning by national/local agencies.	Africans	26	3.23	Agree	0.82	18	3.24	Agree	1.03	0.03	0.87
	Middle Easterners and Asians	28	2.96	Agree	0.84	27	3.41	Agree	0.57	5.20	0.03 *
	Central and South Americans	17	3.00	Agree	0.94	10	3.50	Strongly Agree	0.97	1.75	0.20
	Islanders	8	3.38	Agree	0.74	5	2.80	Agree	0.84	1.68	0.22
	All Students	79	3.10	Agree	0.84	60	3.35	Agree	0.82	2.61	0.11
administrators.	Africans	26	3.08	Agree	0.74	18	2.94	Agree	0.66	0.01	0.92
	Middle Easterners and Asians	28	2.93	Agree	0.86	27	3.15	Agree	0.82	0.94	0.34
	Central and South Americans	17	2.94	Agree	0.90	10	3.20	Agree	1.23	0.40	0.53
	Islanders	8	3.38	Agree	0.52	5	3.00	Agree	1.00	0.81	0.39
	All Students	79	3.03	Agree	0.80	60	3.10	Agree	0.86	0.41	0.52

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. # Question 11.

world were in the "agree" mean response categories. For the "schools / facilities" the highest means were for the Islanders (3.13) and the Central and South Americans (3.30) and the lowest were the Africans (2.54) and the Islanders (2.60) for the agricultural and non-agricultural majors, respectively, while for the "administrators" the highest means were for the Islanders (3.38) and the Central and South Americans (3.20) and the lowest means were for the Middle Easterners and Asians (2.93) and the Africans (2.94) for the agricultural and non-agricultural majors, respectively. For the statements on the "teachers", except for the Africans agricultural majors respondents who were in the "disagree" mean response categories, respondents from all the different regions of the world were in the "agree" mean response categories. For the "planning by national / local agencies", except for the Central and South Americans non-agricultural majors respondents who were in the "strongly agree" mean response categories, respondents from all the different regions of the world were in the "agree" mean response categories. For the "teachers" the highest means were for the Islanders (3.13) and the Central and South Americans (3.00) and the lowest means were both for the Africans (2.27 and 2.59) agricultural and non-agricultural majors, respectively, while for the "planning by national / local agencies", the highest means were for the Islanders (3.38) and the Central and South Americans (3.50) and the lowest were for the Middle Easterners and Asians (2.96) and the Islanders (2.80) for the agricultural and non-agricultural majors, respectively.

Analysis of variance calculations determined that there were significant mean differences between the Middle Easterners and Asians agricultural and non-agricultural respondents, on the statement, problems of education related to agriculture were due to lack of "planning by national / local agencies".

Analysis of the comparison of the perceived extent of agreement on who can improve the agriculture productivity in the developing countries by students from the different regions of the world and by students majoring in agricultural and non-agricultural fields of study.

In Table XXXIII, for the statements in question # 12, that agricultural productivity can be improved by "training and educating the people living in the rural areas", respondents from all the different regions of the world were in the "strongly agree" mean response categories, except for the Middle Easterners and Asians respondents who were in the "disagree" mean response category. The highest mean was for the Central and South Americans (3.74), while the lowest mean was for the Middle Easterners and Asians (3.11). For the statement, agricultural productivity can be improved by "training and educating the people living in the urban areas", respondents from all the different regions of the world were in the "agree" mean response category. The highest mean was for the Middle Easterners and Asians (3.25), while the lowest mean was for the Islanders (2.77).

Analysis of variance calculations determined that there was no significant mean difference between different regions of the world on the statements of how agricultural productivity can be improved through training and education.

In Table XXXIV, for the statements in question # 12, that agricultural productivity can be improved by "training and educating the people living in the rural areas", both the agricultural and non-agricultural respondents from all the different regions of the world were in the "strongly agree" mean response categories, except for the Middle Easterners and Asians agricultural respondents who were in the "agree" mean response category. The highest means were for the Central and South Americans (3.74) and Middle Easterners and Asians (3.63), while the lowest means were for the Middle Easterners and Asians

TABLE XXXIII

COMPARISON OF THE PERCEIVED EXTENT OF AGREEMENT ON WHO CAN IMPROVE THE AGRICULTURAL PRODUCTIVITY
IN THE DEVELOPING COUNTRIES BY STUDENTS FROM DIFFERENT REGIONS OF THE WORLD.

Agricultural productivity can be improved by* ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
training and educating the people living in the rural areas.	Africans	44	3.60	Strongly Agree	0.54	0.97	0.41	
	Middle Easterners and Asians	55	3.11	Agree	0.81			
	Central and South Americans	27	3.74	Strongly Agree	0.45			
	Islanders	13	3.54	Strongly Agree	0.52			
training and educating the people living in the urban areas.	Africans	44	2.79	Agree	0.94	0.74	0.53	
	Middle Easterners and Asians	55	3.25	Agree	0.64			
	Central and South Americans	27	2.89	Agree	0.97			
	Islanders	13	2.77	Agree	1.01			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 12.

TABLE XXXIV

PERCEIVED EXTENT OF AGREEMENT ON WHO CAN IMPROVE THE AGRICULTURAL PRODUCTIVITY IN THE DEVELOPING COUNTRIES
BY AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD.

Agricultural productivity can be improved by* ...	Regions	Agricultural Students				Non Agricultural Students					
		n	Mean	Category	SD	n	Mean	Category	SD	F	Pr>F
training and educating the people living in the rural areas.	Africans	26	3.62	Strongly Agree	0.50	18	3.59	Strongly Agree	0.62	0.00	0.98
	Middle Easterners and Asians	28	3.43	Agree	0.57	27	3.63	Strongly Agree	0.69	1.39	0.24
	Central and South Americans	17	3.82	Strongly Agree	0.39	10	3.60	Strongly Agree	0.52	1.61	0.22
	Islanders	8	3.50	Strongly Agree	0.53	5	3.60	Strongly Agree	0.55	0.11	0.75
	All Students	79	3.58	Strongly Agree	0.52	60	3.62	Strongly Agree	0.61	0.13	0.72
training and educating the people living in the urban areas.	Africans	26	2.85	Agree	0.92	18	2.65	Agree	0.93	0.19	0.67
	Middle Easterners and Asians	28	2.61	Agree	0.74	27	2.59	Agree	0.84	0.00	0.94
	Central and South Americans	17	2.88	Agree	0.86	10	2.90	Agree	1.20	0.00	0.96
	Islanders	8	2.63	Agree	1.06	5	3.00	Agree	1.00	0.40	0.54
	All Students	79	2.75	Agree	0.85	60	2.72	Agree	0.94	0.04	0.84

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 12.

(3.43) and the Africans (3.59), for the agricultural and non-agricultural majors, respectively. For the statement, agricultural productivity can be improved by "training and educating the people living in the urban areas", respondents from all the different regions of the world were in the "agree" mean response categories. The highest means were for the Central and South Americans (2.88) and Islanders (3.00), while the lowest means were both for the Middle Easterners and Asians (2.61 and 2.59), for the agricultural and non-agricultural majors, respectively.

Analysis of variance calculations determined that there was no significant mean differences between different regions of the world on the statements on how agricultural productivity can be improved through training and education.

Analysis of the comparison of the attitudes towards the importance of how developing countries institutions evolve technology by students from the different regions of the world and by students majoring in agricultural and non-agricultural major fields of study.

In Table XXXV, for question # 28, on how important is it that developing countries' institutions evolve technology for agricultural development through "research?" respondents from all the different regions of the world were in the "very important" mean response categories. The highest means were for the Central and South Americans and the Middle Easterners and Asians (3.64). For the question on "agricultural extension?", except for the Middle Easterners and Asians respondents who were in the "important" mean response category, respondents from all the different regions of the world were in the "very important" mean response categories. The highest means were for the Africans (4.16), while the lowest mean was for the Middle Easterners and Asians (3.38). For the

TABLE XXXV

COMPARISON OF THE STUDENTS' FROM DIFFERENT REGION OF THE WORLD ATTITUDES TOWARDS THE IMPORTANCE OF HOW DEVELOPING COUNTRIES INSTITUTIONS EVOLVE TECHNOLOGY FOR AGRICULTURAL DEVELOPMENT.

How important is it that developing countries' institution evolve technology for agricultural development through* ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
research programs?	Africans	44	4.14	Very Important	0.94	0.40	0.75	
	Middle Easterners and Asians	55	3.64	Very Important	1.01			
	Central and South Americans	27	4.30	Very Important	0.72			
	Islanders	13	4.00	Very Important	0.82			
agricultural extension?	Africans	44	4.16	Very Important	1.00	0.05	0.98	
	Middle Easterners and Asians	55	3.38	Important	0.76			
	Central and South Americans	27	4.15	Very Important	0.77			
	Islanders	13	4.08	Very Important	0.95			
technology transfer from other countries?	Africans	44	3.33	Important	1.02	1.87	0.14	
	Middle Easterners and Asians	55	3.29	Important	0.63			
	Central and South Americans	27	3.44	Important	0.93			
	Islanders	13	4.00	Very Important	1.00			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 28.

question on "technology transfer from other countries?", except for the Islanders respondents who were in the "very important" mean response category, respondents from all the different regions of the world were in the "important" mean response categories. The highest means were for the Islanders (4.00), while the lowest means was for the Middle Easterners and Asians (3.29).

Analysis of variance calculations determined that there was no significant mean difference between different regions of the world on the question of how institutions should evolve technology for agricultural development.

In Table XXXVI, for question # 28, on how important is it that developing countries' institutions evolve technology for agricultural development through "research programs?" and "agricultural extension?", except for the Middle Easterners and Asians agricultural respondents who were in the "important" mean response categories, respondents from all the different regions of the world were in the "very important" mean response categories. For the statement on the "research programs?" highest means were both for the Central and South Americans (4.35 and 4.20) and the lowest means were for the Middle Easterners and Asians (4.11) and for the Africans (3.94) for the agricultural and non-agricultural respondents respectively. For the statement on the "agricultural extension?" highest means were for the Africans (4.38) and Central and South Americans (4.20) and the lowest means were for Central and South Americans (4.24) and for the Islanders (3.80) for the agricultural and non-agricultural respondents, respectively. For the question on "technology transfer from other countries?", for both the agricultural and non-agricultural majors respondents from Africa were in the "very important" category, while both the Islanders agricultural and non-agricultural respondents were in the "very

TABLE XXXVI

ATTITUDES OF AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD ON
HOW DEVELOPING COUNTRIES INSTITUTIONS EVOLVE TECHNOLOGY FOR AGRICULTURAL DEVELOPMENT.

How important is it that developing countries' evolve technology for agricultural development through* ...	Regions	Agricultural Students				Non Agricultural Students					
		n	Mean	Category	SD	n	Mean	Category	SD	F	Pr>F
research programs?	Africans	26	4.27	Very Important	0.92	18	3.94	Very Important	0.97	1.31	0.26
	Middle Easterners and Asians	28	4.11	Important	0.88	27	4.15	Very Important	0.77	0.03	0.85
	Central and South Americans	17	4.35	Very Important	0.61	10	4.20	Very Important	0.92	0.27	0.61
	Islanders	8	4.13	Very Important	0.64	5	3.80	Very Important	1.10	0.47	0.51
	All Students	79	4.22	Very Important	0.81	60	4.07	Very Important	0.86	1.07	0.30
agricultural extension?	Africans	26	4.38	Very Important	0.90	18	3.94	Very Important	0.97	3.51	0.07
	Middle Easterners and Asians	28	4.25	Important	0.80	27	3.89	Very Important	0.97	2.27	0.14
	Central and South Americans	17	4.24	Very Important	0.75	10	4.00	Very Important	0.82	0.58	0.45
	Islanders	8	4.25	Very Important	0.71	5	3.80	Very Important	1.30	0.67	0.43
	All Students	79	4.29	Very Important	0.80	60	3.88	Very Important	0.98	7.14	0.01
technology transfer from other countries?	Africans	26	3.19	Important	1.02	18	3.47	Important	1.01	0.99	0.32
	Middle Easterners and Asians	28	3.71	Important	1.18	27	3.56	Very Important	0.80	0.34	0.56
	Central and South Americans	17	3.00	Important	0.79	10	4.20	Very Important	0.63	16.67	0.00 *
	Islanders	8	4.00	Very Important	1.20	5	4.00	Very Important	0.71	0.00	1.00
	All Students	79	3.42	Important	1.09	60	3.68	Very Important	0.85	2.47	0.12

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 28.

important" mean response category. The agricultural respondents from all the different regions of the world combined, the Central and South Americans and the Middle Easterners and Asians were in the "important" mean response categories, while the non-agricultural were in the "very important" mean response categories. The highest means were both for the Islanders (4.00) and the lowest means were for Central and South Americans (3.00) and for the Africans (3.47) for the agricultural and non-agricultural respondents, respectively.

Analysis of variance calculations determined that there were significant mean difference between the Central and South Americans agricultural and the non-agricultural respondents, on the question of the how important is it to evolve technology through "technology transfer from other countries?"

Analysis of the comparison of the perceived agreement on how effectively educational institutions should respond to changing rural development needs by students from the different regions of the world and by students majoring in agricultural and non-agricultural major fields of study.

In Table XXXVII, for the statements in question # 19, that educational institutions should respond effectively to changing rural needs through "instruction" except for the Central and South Americans respondents who were in the "strongly agree" mean response category, respondents from all the different regions of the world were in the "agree" mean response categories. The highest means were for the Central and South Americans (3.70) and the Islanders (3.38) had the lowest mean. For the statement on "research" except for the Middle Easterners and Asians respondents who were in the

TABLE XXXVII

COMPARISON OF THE PERCEIVED EXTENT OF AGREEMENT ON HOW EFFECTIVELY EDUCATIONAL INSTITUTIONS SHOULD RESPOND TO CHANGING RURAL DEVELOPMENT NEEDS BY STUDENTS FROM DIFFERENT REGIONS OF THE WORLD.

Educational institutions should respond effectively to changing rural development needs through* ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
instruction.	Africans	44	3.37	Agree	0.79	4.66	0.00	*
	Middle Easterners and Asians	55	3.42	Agree	0.66			
	Central and South Americans	27	3.70	Strongly Agree	0.54			
	Islanders	13	3.38	Agree	0.65			
research.	Africans	44	3.65	Strongly Agree	0.48	2.16	0.09	
	Middle Easterners and Asians	55	3.38	Agree	0.76			
	Central and South Americans	27	3.59	Strongly Agree	0.50			
	Islanders	13	3.54	Strongly Agree	0.66			
extension.	Africans	44	3.42	Agree	0.88	0.29	0.83	
	Middle Easterners and Asians	55	3.29	Agree	0.63			
	Central and South Americans	27	3.59	Strongly Agree	0.57			
	Islanders	13	3.46	Agree	0.66			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location significantly different means. * Indicates means significantly different at alpha=0.05. * Question 19.

"agree" mean response category, respondents from all the different regions of the world were in the "strongly agree" mean response categories. The highest means were for the Africans (3.65) and the Middle Easterners and the Asians (3.38) had the lowest mean. For the statement on "extension", except for the Central and South Americans respondents who were in the "strongly agree" mean response category, respondents from all the different regions of the world were in the "agree" mean response categories. The highest means were for the Central and South Americans (3.59) and the Middle Easterners and the Asians (3.29) had the lowest mean.

Analysis of variance calculations determined that there were significant mean difference between different regions of the world. The Tukeys' post hoc analysis indicated that the attitudes of the the Middle Easterners and the Asians, and Central and South American respondents were significantly different from the attitudes of the Africans and the Islanders on the statement on how important educational institutions should effectively respond to changing rural needs.

In Table XXXVIII, for the statements in question # 19, that educational institutions should respond effectively to changing rural need through "instruction", the Middle Easterners and Asians and the Islanders were in the "agree" and the Central and South Americans were in the "strongly agree" mean response categories. The agricultural respondents from all regions of the world combined and the Africans had the "agree", while the non-agricultural majors respondents had the "strongly agree" mean response categories. The highest means were both for the Central and South Americans (3.71 and 3.70) and the Middle Easterners and Asians (2.82) and the Islanders (3.40) had the lowest mean. For the statement on "research", for both the agricultural and non-agricultural

TABLE XXXVIII

PERCEIVED EXTENT OF AGREEMENT ON HOW EFFECTIVELY EDUCATIONAL INSTITUTIONS RESPOND TO CHANGING RURAL DEVELOPMENT NEEDS BY AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD.

Educational institutions should respond effectively to changing rural development needs through* ...	Regions	Agricultural Students				Non Agricultural Students				F	Pr>F
		n	Mean	Category	SD	n	Mean	Category	SD		
instruction.	Africans	26	3.23	Agree	0.91	17	3.59	Strongly Agree	0.51	2.60	0.11
	Middle Easterners and Asians	28	2.82	Agree	0.77	27	3.48	Agree	0.58	12.77	0.00 *
	Central and South Americans	17	3.71	Strongly Agree	0.47	10	3.70	Strongly Agree	0.67	0.00	0.99
	Islanders	8	3.38	Agree	0.74	5	3.40	Agree	0.55	0.00	0.95
	All Students	79	3.20	Agree	0.82	60	3.55	Strongly Agree	0.57	8.51	0.00
research.	Africans	26	3.65	Strongly Agree	0.49	17	3.65	Strongly Agree	0.49	0.01	0.93
	Middle Easterners and Asians	28	3.29	Agree	0.46	27	3.56	Strongly Agree	0.58	3.69	0.06
	Central and South Americans	17	3.47	Agree	0.51	10	3.80	Strongly Agree	0.42	2.93	0.10
	Islanders	8	3.50	Strongly Agree	0.76	5	3.60	Strongly Agree	0.55	0.07	0.80
	All Students	79	3.47	Agree	0.53	60	3.63	Strongly Agree	0.52	3.47	0.60
extension.	Africans	26	3.73	Strongly Agree	0.45	17	2.94	Agree	1.14	8.80	0.01 *
	Middle Easterners and Asians	28	3.46	Agree	0.51	27	3.37	Agree	0.79	0.28	0.60
	Central and South Americans	17	3.59	Strongly Agree	0.51	10	3.60	Strongly Agree	0.70	0.00	0.96
	Islanders	8	3.75	Strongly Agree	0.46	5	3.00	Agree	0.71	5.44	0.04 *
	All Students	79	3.61	Strongly Agree	0.49	60	3.27	Agree	0.90	8.03	0.00

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. # Question 19.

majors respondents from the Africa and the Islands were in the "strongly agree" mean response category, while the Middle Easterners and Asians, the Central and South Americans and all the regions of the world combined, agricultural majors were in the "agree", while the non-agricultural majors were in the "strongly agree" mean response categories. The highest means were for the Africans (3.65) and the Central and South Americans (3.80) and the lowest means were both for the Middle Easterners and Asians (3.29 and 3.56) for the agricultural and non-agricultural respondents, respectively. For the statement on "extension", for both the agricultural and non-agricultural majors respondents from the Central and South Americans were in the "strongly agree" and the Middle Easterners and Asians "were in the "agree" mean response category. The Africans, the Islanders and all the regions of the world combined, agricultural majors were in the "strongly agree", while the non-agricultural majors were in the "agree" mean response categories. The highest means were for the Islanders (3.75) and the Central and South Americans (3.70) and the lowest means were both for the Middle Easterners and Asians (3.46) and Africans (2.94) for the agricultural and non-agricultural respondents, respectively

Analysis of variance calculations determined that there were significant mean differences between agricultural and non-agricultural majors respondents, for the statements that educational institutions should respond effectively for changing rural needs through "instruction" for the Middle Easterners and Asians and "extension" for the Africans and the Islanders.

Analysis of the comparison of perceived extent of agreement on the involvement of agricultural institutions by the different regions of the world and by students majoring in agricultural and non-agricultural fields of study.

In Table XXXIX, for the statements in question # 18, that agricultural institutions should be involved in "the formulation of policies that involves agricultural and rural development" except for the Middle Easterners and the Asians respondents who were in the "agree" mean response category, respondents from all the different regions of the world were in the "strongly agree" mean response categories. The highest means were for the Africans (3.63) and the Middle Easterners and the Asians (3.29) had the lowest mean. For both the statements on "conducting agricultural pilot programs and demonstrations for the public" and "the development of community-based development strategies the Africans and Islander respondents who were in the "strongly agree" mean response category, while the Middle Easterners and the Asians and the Central and South Americans were in the "agree" mean response categories. The highest means were for the Africans (3.65), the Islanders (3.54) and the Central and South Americans (3.38) and the Middle Easterners and the Asians (3.15) had the lowest means, respectively. For the statement on "monitoring and evaluation of government agricultural projects", respondents from all the different regions of the world were in the "agree" mean response categories. The highest means (3.42) were for both the Africans and the Middle Easterners and the Asians and the lowest means (3.30) were for the Central and South Americans.

Analysis of variance calculations determined that there were significant mean differences between different regions of the world. The Tukeys' Post Hoc analysis indicated that the perceptions of the Africans and the the Middle Easterners and the Asians

TABLE XXXIX

COMPARISON OF THE PERCEIVED EXTENT OF AGREEMENT ON THE INVOLVEMENT OF AGRICULTURAL INSTITUTIONS BY STUDENTS FROM DIFFERENT REGIONS OF THE WORLD.

Agricultural institutions should be involved in [#] ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
the formulation of policies that involves agricultural and rural development.	Africans	44	3.63	Strongly Agree	0.66	2.04	0.11	
	Middle Easterners and Asians	55	3.29	Agree	0.60			
	Central and South Americans	27	3.56	Strongly Agree	0.64			
	Islanders	13	3.62	Strongly Agree	0.51			
conducting agricultural pilot programs and demonstrations for the public.	Africans	44	3.65	Strongly Agree	0.57	3.11	0.03	*
	Middle Easterners and Asians	55	3.42	Agree	0.50			
	Central and South Americans	27	3.33	Agree	0.55			
	Islanders	13	3.46	Strongly Agree	0.66			
the development of community-based development strategies.	Africans	44	3.51	Strongly Agree	0.55	2.03	0.11	
	Middle Easterners and Asians	55	3.15	Agree	0.76			
	Central and South Americans	27	3.22	Agree	0.58			
	Islanders	13	3.54	Strongly Agree	0.52			
monitoring and evaluation of government agricultural projects.	Africans	44	3.42	Agree	0.66	0.36	0.78	
	Middle Easterners and Asians	55	3.42	Agree	0.53			
	Central and South Americans	27	3.30	Agree	0.61			
	Islanders	13	3.38	Agree	0.65			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. [#] Question 18.

respondent were significantly different from the perceptions of the Central and South Americans the Islanders on the statement of what agricultural institutions should be involved in.

In Table XL, for the statements in question # 18, that agricultural institutions should be involved in "the fomulation of policies that involves agricultural and rural development" both the agricultural and non-agricultural majors respondents from Africa and the Islands were in the "strongly agree" and the Middle Easterners and Asians were in the "agree" mean response categories. The Central and South Americans and all the regions of the world combined agricultural majors were in the "strongly agree" and the non-agricultural majors were in the "agree" mean response categories. The highest means were for the Africans and the Central and South Americans (3.65) and the Islanders (3.60) and the lowest means were both for the Middle Easterners and Asians (3.36 and 3.30) for the agricultural and non-agricultural respondents, respectively. For the statements on "conducting agricultural pilot programs and demonstrations for the public", except for the Islanders agricultural majors respondents who were in the " agree" and non-agricultural majors who were in the "strongly agree" mean response category, both the agricultural and non-agricultural respondents from the Africans were in the "strongly agree" and the Middle Easterners and the Asians, the Central and South Americans and all the regions of the world combined were in the "agree" mean response categories. The highest means were both for the Africans (3.58 and 3.76) and the lowest means were for the Central and South Americans (3.29) and the Middle Easterners and the Asians (3.22) for the agricultural and non-agricultural majors, respectively. For the statements on "the development of community-based development strategies", except for the Islanders

TABLE XL

PERCEIVED EXTENT OF AGREEMENT ON THE INVOLVEMENT OF AGRICULTURAL INSTITUTIONS BY AGRICULTURAL
AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD.

Agricultural institutions should be involved in* ...	Regions	Agricultural Students				Non Agricultural Students					
		n	Mean	Category	SD	n	Mean	Category	SD	F	Pr>F
the formulation of policies that involves agricultural and rural development.	Africans	26	3.65	Strongly Agree	0.69	18	3.59	Strongly Agree	0.62	0.04	0.83
	Middle Easterners and Asians	28	3.36	Agree	0.68	27	3.30	Agree	0.67	0.11	0.74
	Central and South Americans	17	3.65	Strongly Agree	0.49	10	3.40	Agree	0.84	0.93	0.34
	Islanders	8	3.63	Strongly Agree	0.52	5	3.60	Strongly Agree	0.55	0.01	0.93
	All Students	79	3.54	Strongly Agree	0.64	60	3.43	Agree	0.67	1.01	0.32
conducting agricultural pilot programs and demonstrations for the public.	Africans	26	3.58	Strongly Agree	0.64	18	3.76	Strongly Agree	0.44	1.34	0.25
	Middle Easterners and Asians	28	3.46	Agree	0.51	27	3.22	Agree	0.51	3.13	0.08
	Central and South Americans	17	3.29	Agree	0.59	10	3.40	Agree	0.52	0.22	0.64
	Islanders	8	3.38	Agree	0.74	5	3.60	Strongly Agree	0.55	0.34	0.57
	All Students	79	3.46	Agree	0.59	60	3.45	Agree	0.53	0.00	0.95
the development of community-based development strategies.	Africans	26	3.46	Agree	0.58	18	3.59	Strongly Agree	0.51	0.31	0.58
	Middle Easterners and Asians	28	3.36	Agree	0.56	27	3.22	Agree	0.64	0.69	0.41
	Central and South Americans	17	3.35	Agree	0.49	10	3.00	Agree	0.67	2.49	0.13
	Islanders	8	3.63	Strongly Agree	0.52	5	3.40	Agree	0.55	0.56	0.47
	All Students	79	3.42	Agree	0.55	60	3.30	Agree	0.62	1.45	0.23
monitoring and evaluation of government agricultural projects.	Africans	26	3.50	Agree	0.65	18	3.35	Agree	0.70	0.67	0.42
	Middle Easterners and Asians	28	3.46	Agree	0.51	27	3.37	Agree	0.49	0.48	0.49
	Central and South Americans	17	3.24	Agree	0.56	10	3.40	Agree	0.70	0.45	0.51
	Islanders	8	3.38	Agree	0.74	5	3.40	Agree	0.55	0.00	0.95
	All Students	79	3.42	Agree	0.59	60	3.37	Agree	0.58	0.25	0.61

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 18.

agricultural majors respondents who were in the "strongly agree" and non-agricultural majors who were in the "agree" and the African agricultural majors who were in the "agree" and non-agricultural majors who were in the "strongly agree" mean response category. Both the agricultural and non-agricultural respondents from the Middle Easterners and Asians, the Central and South Americans, and all the regions of the world combined were in the "agree" mean response categories. The highest means were for the Islanders (3.63) and for the Africans (3.59) and the lowest means were both for the Central and South Americans (3.35 and 3.00) for the agricultural and non-agricultural majors, respectively. For the statement on "monitoring and evaluation of government agricultural projects", both the agricultural and non-agricultural majors respondents from all the different regions of the world were in the "agree" mean response categories. The highest means were for the Africans (3.50) for the Central and South Americans and the Islanders (3.40) and the lowest means were for the Central and South Americans (3.24) and the Africans (3.35) for the agricultural and non-agricultural majors, respectively.

Analysis of variance calculations determined that there was no significant mean difference between the agricultural and non-agricultural respondents on the involvement of agricultural institutions in different programs.

Analysis of the comparison of the perceived extent of agreement on building educational facilities in rural areas by students from the different regions of the world and by students majoring in agricultural and non-agricultural and major fields of study.

In Table XLI, for the statements in question # 15, that developing countries must build facilities in the rural areas "to provide extension programs both "the Africans and

TABLE XLI

COMPARISON OF THE PERCEIVED EXTENT OF AGREEMENT ON BUILDING EDUCATIONAL FACILITIES IN THE RURAL AREAS OF THE DEVELOPING COUNTRIES BY STUDENTS FROM DIFFERENT REGIONS OF THE WORLD.

Developing countries must build educational facilities in rural areas* ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
to provide extension programs.	Africans	44	3.58	Strongly Agree	0.76	0.89	0.45	
	Middle Easterners and Asians	55	2.82	Agree	0.86			
	Central and South Americans	27	3.48	Agree	0.51			
	Islanders	13	3.54	Strongly Agree	0.78			
to conduct short-term non-degree courses .	Africans	44	3.47	Aagree	0.77	2.46	0.06	
	Middle Easterners and Asians	55	2.82	Agree	0.88			
	Central and South Americans	27	3.07	Agree	0.73			
	Islanders	13	3.38	Agree	0.96			
that conduct basic research.	Africans	44	3.02	Agree	1.03	2.25	0.08	
	Middle Easterners and Asians	55	2.93	Agree	0.77			
	Central and South Americans	27	2.81	Agree	0.83			
	Islanders	13	3.46	Agree	1.05			
that engage in advanced or applied research.	Africans	44	3.05	Agree	1.05	2.07	0.11	
	Middle Easterners and Asians	55	2.96	Agree	0.69			
	Central and South Americans	27	2.70	Agree	0.99			
	Islanders	13	3.38	Agree	1.04			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at $\alpha=0.05$. # Question 15.

Islanders respondents who were in the "strongly agree" mean response category, while both the Middle Easterners and the Asians were in the "agree" mean response categories. The highest mean was for the Africans (3.58) and the Middle Easterners and the Asians (2.82) had the lowest mean. For both the statements, "to conduct short-term non-degree courses and provide extension programs" and "to conduct basic research" all the different regions of the world were in the "agree" mean response categories. The highest means were for the Africans (3.58) and the Islanders (3.47), while the Middle Easterners (2.82) and the Central and South Americans (2.81) had the lowest means, respectively. For the statement, "that engage in advanced or applied research", except for the Middle Easterners and the Asians respondents who were in the "disagree" mean response category, respondents from all the different regions of the world were in the "agree" mean response categories. The highest mean was for the Islanders (3.38) and the Middle Easterners and the Asians (1.96) had the lowest mean.

Analysis of variance calculations determined that there was no significant mean difference between different regions of the world, on the statement of where to involve educational facilities in the rural areas.

In Table XLII, for the statements in question # 15, that developing countries must build facilities in the rural areas "to provide extension programs" both agricultural and non-agricultural majors respondents from each of the different regions of the world were in "agree" mean response category, except for the Islanders agricultural majors, Africans and Central and South Americans non-agrcultural majors who were in the "strongly agree" mean response categories. The highest means were for the Islanders (3.75) and Africans (3.76) and the lowest means were for the Middle Easterners and Asians (3.39) and for

TABLE XLII

PERCEIVED EXTENT OF AGREEMENT ON BUILDING EDUCATIONAL FACILITIES IN THE RURAL AREAS OF THE DEVELOPING COUNTRIES
BY AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD.

Developing countries must build educational facilities in rural areas* ...	Regions	Agricultural Students				Non Agricultural Students					
		n	Mean	Category	SD	n	Mean	Category	SD	F	Pr>F
to provide extension programs.	Africans	26	3.42	Agree	0.64	18	3.76	Strongly Agree	0.90	2.40	0.13
	Middle Easterners and Asians	28	3.39	Agree	0.57	27	3.33	Agree	0.62	0.14	0.71
	Central and South Americans	17	3.47	Agree	0.51	10	3.50	Strongly Agree	0.53	0.02	0.88
	Islanders	8	3.75	Strongly Agree	0.89	5	3.20	Agree	0.45	1.63	0.23
	All Students	79	3.46	Agree	0.62	60	3.48	Agree	0.70	0.06	0.80
to conduct short-term non-degree courses .	Africans	26	3.23	Agree	0.71	18	3.82	Strongly Agree	0.73	7.68	0.01 *
	Middle Easterners and Asians	28	3.25	Agree	0.59	27	3.04	Agree	0.71	1.49	0.23
	Central and South Americans	17	3.00	Agree	0.79	10	3.20	Agree	0.63	0.46	0.50
	Islanders	8	3.63	Strongly Agree	1.06	5	3.00	Agree	0.71	1.34	0.27
	All Students	79	3.23	Agree	0.73	60	3.30	Agree	0.77	0.33	0.57
that conduct basic research.	Africans	25	2.60	Agree	0.96	18	3.65	Strongly Agree	0.86	14.36	0.00 *
	Middle Easterners and Asians	28	2.82	Agree	0.90	27	2.81	Agree	0.83	0.00	0.98
	Central and South Americans	17	2.65	Agree	0.86	10	3.10	Agree	0.74	1.92	0.18
	Islanders	8	3.63	Strongly Agree	1.30	5	3.20	Agree	0.45	0.48	0.50
	All Students	79	2.80	Agree	0.98	60	3.15	Agree	0.86	5.05	0.03 *
that engage in advanced or applied research.	Africans	26	2.81	Agree	1.02	18	3.41	Agree	1.00	4.26	0.05 *
	Middle Easterners and Asians	28	2.79	Agree	0.83	27	2.85	Agree	0.95	0.08	0.78
	Central and South Americans	17	2.59	Agree	1.00	10	2.90	Agree	0.99	0.61	0.44
	Islanders	8	3.50	Strongly Agree	1.20	5	3.20	Agree	0.84	0.24	0.64
	All Students	79	2.82	Agree	0.98	60	3.07	Agree	0.97	2.17	0.14

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 15.

the Islanders (3.20) for the agricultural and non-agricultural major, respectively. For both the statements, "to conduct short-term non-degree courses" and "conduct basic research", both the agricultural and non-agricultural majors respondents from each of the different regions of the world were in the "agree" mean response category, except for the Islanders agricultural and the African non-agricultural majors who were in the "strongly agree" mean response category. The highest means for the statement "to conduct short-term non-degree courses" were for the Islanders (3.63) and Africans (3.82) and the lowest means were for the Central and South Americans (3.00) and for the Islanders (3.00) for the agricultural and non-agricultural majors, respectively. The highest means for the statement "conduct basic research" were for the Islanders (3.63) and Africans (3.65) and the lowest means were for the Africans (2.60) and for the Middle Easterners and Asians (2.81) for the agricultural and non-agricultural majors, respectively. For the statement, "that engage in advance or applied research" both the agricultural and non-agricultural majors respondents from each of the different regions of the world were in the "agree" mean response categories, except for the Islanders agricultural majors who were in the "strongly agree" mean response category. The highest means were for the Islanders (3.50) and Africans (3.41) and the lowest means were for the Central and South Americans (2.59) and for the Middle Easterners and Asians (2.85) for the agricultural and non-agricultural majors, respectively.

Analysis of variance calculations determined that there were significant mean differences between the African agricultural and non-agricultural majors. The differences were on the three statements, that educational facilities in the rural areas to "conduct

short-term courses", "that conduct basic research" and that engage in advance or applied research".

Analysis of the comparison of the perceived extent of agreement on how developing countries institutions should evolve technologies by students from the different regions of the world and students majoring in agricultural and non-agricultural fields of study.

In Table XLIII, for both of the statements in question # 14, that developing countries institutions should evolve "technologies to solve agricultural problems" and "practical technologies to disseminate new information to farmers", except for the Middle Easterners and the Asians respondents who were in the "agree" mean response category, respondents from all the different regions of the world were in the "strongly agree" mean response categories. The highest means were both for the Africans and Central and South Americans (3.63) and Africans (3.81) and the lowest means were for the Middle Easterners and the Asians (3.36 and 3.15) for each statements, respectively.

Analysis of variance calculations determined that there were no significant mean differences between different regions of the world, on the statement of what technologies developing countries' institutions should evolve to solve agricultural problems.

In Table XLIV, for the statements in question # 14, that developing countries institutions should evolve "technologies to solve agricultural problems", both agricultural and non-agricultural majors were in the "strongly agree" mean response categories, except for the Middle Easterners and the Asians agricultural and non-agricultural majors and the Islanders non-agricultural major respondents who were in the "agree" mean response category, respondents from each of the different regions of the world were in the "strongly

TABLE XLIII

COMPARISON OF THE PERCEIVED EXTENT OF AGREEMENT ON HOW DEVELOPING COUNTRIES' INSTITUTIONS SHOULD EVOLVE TECHNOLOGIES BY STUDENTS FROM DIFFERENT REGIONS OF THE WORLD.

Developing countries' institutions should evolve [#] ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
technologies to solve agricultural problems.	Africans	44	3.63	Strongly Agree	0.58	1.59	0.19	
	Middle Easterners and Asians	55	3.36	Agree	0.59			
	Central and South Americans	27	3.63	Strongly Agree	0.56			
	Islanders	13	3.62	Strongly Agree	0.51			
practical technologies to disseminate new information to farmers.	Africans	44	3.81	Strongly Agree	0.39	2.48	0.06	
	Middle Easterners and Asians	55	3.15	Agree	0.65			
	Central and South Americans	27	3.67	Strongly Agree	0.48			
	Islanders	13	3.54	Strongly Agree	0.52			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. [#] Question 14.

TABLE XLIV

PERCEIVED EXTENT OF AGREEMENT ON HOW DEVELOPING COUNTRIES INSTITUTIONS SHOULD EVOLVE TECHNOLOGIES BY AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD.

Developing countries' institutions should evolve* ...	Regions	Agricultural Students				Non Agricultural Students					
		n	Mean	Category	SD	n	Mean	Category	SD	F	Pr>F
technologies to solve agricultural problems.	Africans	26	3.65	Strongly Agree	0.63	18	3.59	Strongly Agree	0.51	0.06	0.81
	Middle Easterners and Asians	28	3.39	Agree	0.74	27	3.41	Agree	0.50	0.01	0.93
	Central and South Americans	17	3.59	Strongly Agree	0.62	10	3.70	Strongly Agree	0.48	0.24	0.63
	Islanders	8	3.75	Strongly Agree	0.46	5	3.40	Agree	0.55	0.56	0.47
	All Students	79	3.56	Strongly Agree	0.66	60	3.52	Strongly Agree	0.50	0.07	0.78
practical technologies to disseminate new information to farmers.	Africans	26	3.81	Strongly Agree	0.40	18	3.82	Strongly Agree	0.39	0.04	0.83
	Middle Easterners and Asians	28	3.54	Strongly Agree	0.51	27	3.63	Strongly Agree	0.49	0.48	0.49
	Central and South Americans	17	3.71	Strongly Agree	0.47	10	3.60	Strongly Agree	0.52	0.30	0.59
	Islanders	8	3.63	Strongly Agree	0.52	5	3.40	Agree	0.55	0.56	0.47
	All Students	79	3.67	Strongly Agree	0.47	60	3.67	Strongly Agree	0.48	0.00	0.96

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 14.

agree" mean response categories. The highest means were for the Islanders and Africans (3.59) and the lowest means were for the Middle Easterners and the Asians (3.39) and the Islanders (3.40) for the agricultural and non-agricultural majors, respectively.

For the statements, "practical technologies to disseminate new information to farmers", both agricultural and non-agricultural majors respondents from each of the different regions of the world were in the "strongly agree" mean response categories, except for the Islanders non-agricultural majors respondents who were in the "agree" mean response category. The highest means were both for the Africans (3.81 and 3.82) and the lowest means were for the Middle Easterners and the Asians (3.54) and the Islanders (3.40) for the agricultural and non-agricultural majors, respectively.

Analysis of variance calculations determined that there were no significant mean differences between agricultural and non-agricultural majors, on the statement of what technologies developing countries institutions should evolve to solve agricultural problems.

Analysis of the comparison of the perceived extent of agreement on the investments in non-formal education in the developing countries by students from the different regions of the world and by the students majoring in agricultural and non-agricultural fields of study.

In Table XLV, for the statements in question # 13, that investment in non-formal education can "be used to reduce adult literacy", except for the African respondents who were in the "strongly agree" mean response category, respondents from all the different regions of the world were in the "agree" mean response categories. The highest means were for the Africans (3.51) and the lowest means were for the Islanders (3.23). For the

TABLE XLV

COMPARISON OF THE PERCEIVED EXTENT OF AGREEMENT ON THE INVESTMENTS IN NON-FORMAL EDUCATION
IN THE DEVELOPING COUNTRIES BY STUDENTS FROM THE DIFFERENT REGIONS OF THE WORLD.

Investments in non-formal education can [#] ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
be used to reduce adult illiteracy.	Africans	44	3.51	Strongly Agree	0.74	2.65	0.05	
	Middle Easterners and Asians	55	3.40	Agree	0.63			
	Central and South Americans	27	3.48	Agree	0.64			
	Islanders	13	3.23	Agree	0.93			
get research information to farms through extension.	Africans	44	3.35	Agree	0.72	0.65	0.58	
	Middle Easterners and Asians	55	3.58	Strongly Agree	0.50			
	Central and South Americans	27	3.41	Agree	0.57			
	Islanders	13	3.15	Agree	0.69			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to location of significantly different means. * Indicates means significantly different at alpha=0.05. [#] Question 13.

TABLE XLVI

PERCEIVED EXTENT OF AGREEMENT ON THE INVESTMENT IN NON-FORMAL EDUCATION IN THE DEVELOPING COUNTRIES BY AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD.

Investments in non-formal education can* ...	Regions	Agricultural Students				Non Agricultural Students					
		n	Mean	Category	SD	n	Mean	Category	SD	F	Pr>F
be used to reduce adult illiteracy.	Africans	26	3.38	Agree	0.80	18	3.65	Strongly Agree	0.61	1.60	0.21
	Middle Easterners and Asians	28	3.25	Agree	0.59	27	2.96	Agree	0.98	1.75	0.19
	Central and South Americans	17	3.41	Agree	0.62	10	3.60	Strongly Agree	0.70	0.53	0.47
	Islanders	8	3.13	Agree	1.13	5	3.40	Agree	0.55	0.25	0.62
	All Students	79	3.32	Agree	0.73	60	3.32	Agree	0.85	0.00	0.99
get research information to farms through extension.	Africans	26	3.42	Agree	0.70	18	3.24	Agree	0.75	0.43	0.52
	Middle Easterners and Asians	28	3.29	Agree	0.66	27	3.22	Agree	0.64	0.13	0.72
	Central and South Americans	17	3.29	Agree	0.59	10	3.60	Strongly Agree	0.52	1.86	0.19
	Islanders	8	3.13	Agree	0.64	5	3.20	Agree	0.84	0.03	0.86
	All Students	79	3.32	Agree	0.65	60	3.30	Agree	0.67	0.02	0.88

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 13.

statement, "get research information to farms through extension", except for the Middle Easterners and the Asians respondents who were in the "strongly agree" mean response category, respondents from all the different regions of the world were in the "agree" mean response categories. The highest means were for the Middle Easterners and the Asians (3.58) and the lowest means were for the Islanders (3.15).

Analysis of variance calculations determined that there were no significant mean differences between different regions of the world on the uses of investment in non-formal education.

In Table XLVI, for the statements in question # 13 , that investment in non-formal education can "be used to reduce adult literacy", both the agricultural and non-agricultural majors from each of the regions of the world were in the "agree" mean response categories, except for the African and the Central and South Americans non-agricultural majors respondents who were in the "strongly agree" mean response category. The highest means were for the Central and South Americans (3.41) and for the Africans (3.65) , while the lowest means were for the Islanders (3.13) and for the Middle Easterners and the Asians (2.96) for the agricultural and non-agricultural majors, respectively. For the statement, investment in non-formal education can "get research information to farms through extension", both the agricultural and non-agricultural majors from each of the regions of the world were in the "agree" mean response categories, except for the Central and South Americans non-agricultural majors respondents who were in the "strongly agree" mean response category. The highest means were for the Africans (3.42) and for the Central and South Americans (3.60), while the lowest means were both for the Islanders (3.13 and 3.20).

Analysis of variance calculations determined that there were no significant mean differences between the agricultural and non-agricultural majors on the uses of investment in non-formal education.

Analysis of the comparison of the attitudes on the placement of education and training related to agriculture in certain ministry / departments, by the different regions of the world and by students majoring in agricultural and nonagricultural fields of study.

In Table XLVII, for question # 25, on how important is it that education and training related to agriculture in your country be under the ministry or department of "education?", except for the Middle Easterners and the Asians respondents who were in the "very important" mean response category, respondents from all the different regions of the world were in the "important" mean response categories. The highest means were for the Middle Easterners and the Asians (3.70) and the lowest means were for the Islanders (2.69). For both the questions on, "agriculture?" and "both agriculture and education?", except for the Islanders respondents who were in the "important" mean response category, respondents from all the different regions of the world were in the "very important" mean response categories. The highest means were for the Middle Easterners and the Asians (4.04) and Central and South Americans (3.96) and the lowest means were for the Islanders (3.23) and (3.46) for each of the respective statements.

Analysis of variance calculations determined that there was no significant mean difference between different regions of the world on the importance of placement of education and training related to agriculture under certain ministry / departments.

TABLE XLVII

COMPARISON OF THE ATTITUDES OF STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD ON THE PLACEMENT OF EDUCATION AND TRAINING RELATED TO AGRICULTURE IN CERTAIN MINISTRY/DEPARTMENTS.

How important is it that education and training related to agriculture in your country be under the Ministry or Department of* ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
Education?	Africans	44	2.91	Important	1.17	1.17	0.32	
	Middle Easterners and Asians	54	3.70	Very Important	1.22			
	Central and South Americans	27	3.30	Important	1.23			
	Islanders	13	2.69	Important	1.03			
Agriculture?	Africans	44	3.67	Very Important	1.21	1.16	0.33	
	Middle Easterners and Asians	55	4.04	Very Important	1.25			
	Central and South Americans	27	3.85	Very Important	1.17			
	Islanders	13	3.23	Important	1.09			
both Agriculture and Education?	Africans	44	3.74	Very Important	1.14	0.61	0.61	
	Middle Easterners and Asians	55	3.75	Very Important	0.97			
	Central and South Americans	27	3.96	Very Important	1.09			
	Islanders	13	3.46	Important	1.27			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 25.

In Table XLVIII, for question # 25, on how important is it that education and training related to agriculture in your country be under the ministry or department of "education?", both agricultural and non-agricultural majors respondents from each of the regions of the world were in the "important " mean response category, except for the Islanders agricultural and the Central and South Americans non-agricultural majors who were in the "very important" mean response category. The highest means were both for the Central and South Americans (3.18 and 3.50) and the lowest means were for the Islanders (2.38) and the Middle Easterners and the Asians (3.00) for the agricultural and non-agricultural major, respectively. For the question, under the ministry of "agriculture?", both agricultural and non-agricultural majors respondents from each of the regions of the world were in the "very important " mean response categories, except for the Islanders agricultural and the Central and South Americans and the Islanders non-agricultural majors who were in the "important" mean response categories. The highest means were both for the Middle Easterners and the Asians (3.96) and the Africans (4.00) and the lowest means were for the Islanders (3.13) and the Central and South Americans (3.10) for the agricultural and non-agricultural majors, respectively. For both the questions, "agriculture?" and "both agriculture and education?", all the respondents from different regions of the world were in the "very important" mean response category, except for the Islanders agricultural majors who were in the "important" mean response category. The highest means were for the Central and South Americans (4.12) and the Islanders (4.00) and the lowest means were for the Islanders (3.13) and for the Africans (3.65) for the agricultural and non-agricultural majors, respectively.

TABLE XLVIII

ATTITUDES OF THE AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD ON THE PLACEMENT OF EDUCATION AND TRAINING RELATED TO AGRICULTURE IN CERTAIN MINISTRY/DEPARTMENTS.

How important is it that education and training related to agriculture in your country be under the Ministry or Department of* ...	Regions									
		Agricultural Students				Non Agricultural Students				F
		n	Mean	Category	SD	n	Mean	Category	SD	
Education?	Africans	26	2.81	Important	1.17	18	3.06	Important	1.20	0.48
	Middle Easterners and Asians	28	2.79	Important	1.34	27	3.00	Important	1.18	0.17
	Central and South Americans	17	3.18	Important	1.24	10	3.50	Very Important	1.27	0.42
	Islanders	8	2.38	Somewhat Important	0.74	5	3.20	Important	1.30	2.16
	All Students	79	2.84	Important	1.21	60	3.10	Important	1.22	1.46
Agriculture?	Africans	26	3.54	Very Important	1.39	18	4.00	Very Important	0.79	2.01
	Middle Easterners and Asians	28	3.96	Very Important	1.04	27	3.74	Very Important	1.10	0.61
	Central and South Americans	17	4.29	Very Important	0.69	10	3.10	Important	1.45	8.49
	Islanders	8	3.13	Important	1.25	5	3.40	Important	0.89	0.18
	All Students	79	3.81	Very Important	1.17	60	3.68	Very Important	1.08	0.32
both Agriculture and Education?	Africans	26	3.65	Very Important	1.38	18	3.65	Very Important	0.93	0.03
	Middle Easterners and Asians	28	3.64	Very Important	1.25	27	3.78	Very Important	1.19	0.09
	Central and South Americans	17	4.12	Very Important	0.99	10	3.70	Very Important	1.25	0.92
	Islanders	8	3.13	Important	0.83	5	4.00	Very Important	1.73	1.54
	All Students	79	3.70	Very Important	1.22	60	3.77	Very Important	1.14	0.07

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 25.

Analysis of variance calculations determined that there were significant mean differences between agricultural and non-agricultural majors. The difference were on the questions for, "agriculture?" for the Africans, the Middle Easterners and the Asians and the Central and South Americans, and on "both agriculture and education?" for the Central and South Americans and the Islanders.

Analysis of the comparison of the attitudes towards the importance in the development of different national policy, by the different regions of the world and by students majoring in agricultural and non-agricultural fields of study.

In Table II presents data for question # 26, on how important is the development of national policies that "encourages the reduction in the level of population growth?" and "would subsidize farm input (such as fertilizers)?" The Middle Easterners and the Asians and Central and South American respondents were in the "important" mean response category, while the Africans and the Islanders were in the "very important" mean response categories. The highest means were for the Islanders (4.08 and 3.92) and the Central and South Americans (3.30) and the Middle Easterners and the Asians (2.91) had the lowest means, for each questions respectively. For the question, on "would provide low interest financing to farmers?", except for the Middle Easterners and Asians respondents who were in the "important" mean response category, respondents from all the different regions of the world were in the "very important" mean response category. For the questions on "would promote the redistribution of land holdings?", except for the Middle Easterners and Asians respondents who were in the "very important" mean response category,

TABLE IL

COMPARISON OF THE STUDENTS' FROM DIFFERENT REGIONS OF THE WORLD ATTITUDES TOWARDS
THE IMPORTANCE IN THE DEVELOPMENT OF DIFFERENT NATIONAL POLICIES.

How important is the development of National policies that# ...	Regions	n	Mean	Category	SD			
						F	Pr>F	HSD
encourage the reduction in the level of population growth?	Africans	44	3.51	Very Important	1.44	2.48	0.06	
	Middle Easterners and Asians	53	3.49	Important	1.09			
	Central and South Americans	27	3.30	Important	1.41			
	Islanders	13	4.08	Very Important	1.26			
would provide low interest financing to farmers?	Africans	44	4.30	Very Important	0.94	3.09	0.03	*
	Middle Easterners and Asians	54	3.44	Important	1.37			
	Central and South Americans	27	3.78	Very Important	1.19			
	Islanders	13	4.08	Very Important	0.86			
would subsidize farm input (such as fertilizer)?	Africans	44	3.77	Very Important	1.17	2.72	0.05	
	Middle Easterners and Asians	55	2.91	Important	1.28			
	Central and South Americans	27	3.11	Important	1.05			
	Islanders	13	3.92	Very Important	1.04			
would promote the redistribution of land holdings?	Africans	44	3.14	Important	1.30	0.74	0.53	
	Middle Easterners and Asians	55	3.51	Very Important	1.12			
	Central and South Americans	27	3.19	Important	1.42			
	Islanders	13	3.46	Important	1.27			

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 26.

respondents from all the different regions of the world were in the "important" mean response category.

Analysis of variance calculations determined that there was a significant mean differences between different regions of the world. Tukey's Post Hoc analysis indicated the attitudes of the Middle Easterners and Asians and Central and South Americans were significantly different from those of the Africans and the Islanders, for the question on the importance of national policy that "would provide low interest financing to farmers".

In Table L, for question # 26, on how important is the development of national policies that "encourages the reduction in the level of population growth?", for both the agricultural and non-agricultural majors respondent from all respondents from each of the different regions of the world were in the "very important" mean response categories, except for the Africans and the Central and South Americans agricultural majors and the Central and South Americans non-agricultural majors respondents who were in the "important" mean response categories. The highest means were for the Middle Easterners and the Asians (4.32) and for the Islanders (4.00) and the lowest means were both for the Central and South Americans (3.29 and 3.30) for the agricultural and non-agricultural respondents, respectively. For the questions, "would provide low interest financing to farmers?" for both the agricultural and non-agricultural majors respondents from each of the different regions of the world were in the "very important" mean response categories. The highest means were both for the Africans (4.38 and 4.24) and the lowest means were for the Central and South Americans (3.29) and the Middle Easterners and the Asians (3.70) for the agricultural and non-agricultural respondents, respectively. For the questions, "would subsidize farm input (such as fertilizers)?", for both the agricultural and

TABLE L

**AGRICULTURAL AND NON-AGRICULTURAL STUDENTS' FROM DEVELOPING COUNTRIES ATTITUDES ON THE IMPORTANCE
OF THE DEVELOPMENT OF NATIONAL POLICIES BY DIFFERENT REGIONS OF THE WORLD.**

How important is the development of National policies that* ...	Regions	Agricultural Students				Non Agricultural Students				F	Pr>F
		n	Mean	Category	SD	n	Mean	Category	SD		
encourage the reduction in the level of population growth?	Africans	26	3.35	Important	1.65	18	3.82	Very Important	1.07	1.23	0.27
	Middle Easterners and Asians	28	4.32	Very Important	1.28	27	3.74	Very Important	1.16	3.10	0.80
	Central and South Americans	17	3.29	Important	1.45	10	3.30	Important	1.42	0.00	0.99
	Islanders	8	4.13	Very Important	0.99	5	4.00	Very Important	1.73	0.03	0.87
	All Students	79	3.76	Very Important	1.48	60	3.72	Very Important	1.21	0.03	0.85
would provide low interest financing to farmers?	Africans	26	4.38	Very Important	0.85	18	4.24	Very Important	1.09	0.32	0.59
	Middle Easterners and Asians	28	3.79	Very Important	0.83	27	3.70	Very Important	1.10	0.10	0.76
	Central and South Americans	17	3.65	Very Important	1.17	10	4.00	Very Important	1.25	0.55	0.47
	Islanders	8	4.00	Very Important	0.93	5	4.20	Very Important	0.84	0.15	0.70
	All Students	79	3.97	Very Important	0.96	60	3.95	Very Important	1.10	0.02	0.88
would subsidize farm input (such as fertilizer)?	Africans	26	3.77	Very Important	1.21	18	3.82	Very Important	1.19	0.11	0.75
	Middle Easterners and Asians	28	3.61	Very Important	1.07	27	3.41	Very Important	1.08	0.30	0.58
	Central and South Americans	17	3.00	Important	1.00	10	3.30	Important	1.16	0.50	0.48
	Islanders	8	3.75	Very Important	1.16	5	4.20	Very Important	0.84	0.56	0.47
	All Students	79	3.54	Very Important	1.13	60	3.58	Very Important	1.11	0.14	0.70
would promote the redistribution of land holdings?	Africans	26	3.19	Important	1.30	18	3.00	Important	1.41	0.56	0.46
	Middle Easterners and Asians	28	3.54	Very Important	1.40	27	3.37	Important	1.33	0.30	0.58
	Central and South Americans	17	2.94	Important	1.34	10	3.60	Extremely Important	1.51	1.38	0.25
	Islanders	8	3.50	Very Important	1.31	5	3.40	Important	1.34	0.02	0.90
	All Students	79	3.29	Important	1.34	60	3.28	Important	1.37	0.03	0.86

n=number of observations within the sample. SD=standard deviation. HSD (Honestly Significant Difference - Tukey post hoc comparison) test statistic to determine location of significantly different means. * Indicates means significantly different at alpha=0.05. * Question 26.

non-agricultural majors respondent from all respondents from each of the different regions of the world were in the "very important", except for the Central and South Americans who were in the "important" mean response categories. The highest means were both for the Africans (4.38) and for the Islanders (4.20) and the lowest means were both for the Central and South Americans (3.00 and 3.30) for the agricultural and non-agricultural respondents, respectively. For the question, "would promote the redistribution of land holdings?", for both the agricultural and non-agricultural majors respondent from all respondents from each of the different regions of the world were in the "important" mean response categories, except for the Middle Easterners and the Asians and the Islanders agricultural majors and the Central and South Americans non-agricultural majors who were in the "extremely important" mean response categories. The highest means were for the Middle Easterners and the Asians (3.54) and the Central and South Americans (3.60) and the lowest means were for the Central and South Americans (2.94) and for the Africans (3.00) for the agricultural and non-agricultural respondents, respectively.

Analysis of variance calculations determined that there were no significant mean differences between different agricultural and non-agricultural majors respondents, for the questions on the development of national policies.

Qualitative responses to the open-end questions.

The details for the four open-ended questions are presented in Appendix C. For the question, "what unique features or programs in your country encourages involvement in agriculture?", there were a wide variety of responses including government, agricultural,

institutional, financial, and women programs and government policies that encourages involvement in agriculture in their countries.

For the question, "are there any youth training programs that encourage involvement in agriculture", many of the respondents signified that there are various agricultural programs that encourage youth involvement in agriculture in the developing countries. Many of these programs are similar to the 4-H and youth development programs in the United States.

For the question, "how farmers needs and problems were addressed by educational institutions" overall the responses were mixed. Many of the respondents signified that the problems and needs of farmers are addressed in a variety of approaches by the educational institutions but in some of the developing countries the needs and problems of farmers were not well addressed by the educational institutions.

Many different responses were given for the question, "what should be included in the strategies for agricultural and rural development". Overall the respondents agreed that strategies for agricultural and rural development should include development of appropriate technology to assist in the modernization of agriculture in the developing countries.

A wide variety of suggestions were given, on the question requesting additional comments and suggestions, overall the responses to the study were very positive.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction and Rationale for the Study

In the developing countries, the majority of the people live in the rural areas and large percentages of their livelihood and their economies depend on agriculture. To solve the problems in areas such as food supply to the current and fast growing populations, alleviating hunger and poverty, providing raw materials for industrialization, earning foreign exchange, improving the quality of living through equitable distribution of income, and increasing agricultural production, modernization of agriculture is essential. One of the ways to develop agriculture is through education and training.

Around the world, over a million post secondary students (1,261,964) were studying in countries other than their own in 1990; 66 percent or two thirds of these students were from the developing countries (UNESCO, 1992). In 1990, the United States of America hosted 407,529 or thirty two percent, by far the largest number of international students than any other country.

In the United States, nearly 22 percent (88,120) of international students majored in business and management, followed by engineering with 77,280 students or 18.9%, physical and life sciences, 39,490 or 9.0%, computer and mathematical sciences, 36,980 or 9.07%, social sciences, 33,260 or 8.1%, fine and applied arts, 2,550 or 5.5%, health

sciences, 18,180 or 4.5%, humanities, 16,800 or 4.1%, education, 12,160 or 2.9% and agriculture with 8,960 or 2.2% (Zikopoulos, 1993).

Problem of the Study.

This study was needed to find out why a very small percentage of international students from the developing countries in the United States are studying agriculture, when a large sector of the economies of their countries and livelihood depends on agriculture. It was deemed necessary to conduct this study, to better understand the attitudes and perceptions of international students from developing countries toward agriculture and toward studying agriculture.

Purpose

The purpose of the study was to determine the attitudes and perceptions of selected international students from developing countries toward agriculture and studying agriculture.

Objectives of the Study

To achieve the purpose of this study, the following objectives were established.

1. To determine international students' demographic information regarding the:
 - a. Gender of the students.
 - b. Country and region of origin.
 - c. Rural / urban background and intended place of domicile when the students return to their home country.

- d. Reason why the students chose to study their current major field of study.
 - e. levels of enrollment.
2. To determine and compare the attitudes and perceptions of international students from different regions of the world toward agriculture and studying agriculture
 3. To determine and compare the attitudes and perceptions of international students majoring in agriculture to the international students majoring in other fields of study toward agriculture and studying agriculture.
 4. To determine qualitative responses of international students from developing countries to open-end questions on education, agriculture, rural / agricultural development.

Design and Conduct of the Study

The population of the study included international students at member universities of Mid-America International Agriculture Consortium (MIAC): Iowa State University, Kansas State University, Oklahoma State University, the University of Missouri-Columbia, and the University of Nebraska-Lincoln. Purposive sampling was used in conducting this study. For this study 200 international students, 40 students from each of the universities, were selected.

Development and Validating the Questionnaire

The researcher developed the survey instrument - a questionnaire. The questionnaire was submitted to faculty members of the Agricultural Education and the Agricultural Economics Departments at Oklahoma State University for their evaluation and recommendations. As a pilot test, the questionnaire was administered to selected international students to assess the clarity of the questions and suggestions for changes and improvements. The instrument validation was done through pilot testing, and a panel of experts including the researcher's committee. The final version of the questionnaire was approved by the Institutional Review Board.

Data Collection Procedure

The researcher was provided with names and addresses of selected international students from the various institutions by the Director of the Office of International Programs from each of the five Universities included in the study. After the IRB's approval of the questionnaires, 40 questionnaires were mailed to students at each of the five institutions, with a self-addressed stamped envelope for the return of the completed questionnaire.

At each institution, 20 international students majoring in agriculture, and 20 non-agricultural majors from Africa, Asia, Latin America and the Islands, were selected. A follow-up was conducted of the respondents who did not return the questionnaire by the set deadline date.

Method of Data Analysis

The Statistical Analysis Program (SAS) was used to analyze the data. Means, analysis of variance and a post hoc analysis were conducted to determine the difference in perceptions and attitudes between (a) the students in the agricultural and non-agricultural majors and (b) the students from different regions of the world.

Summary of Findings.

The summary of the major findings of the study were presented in three sections: demographics, attitudes and perceptions toward agriculture, and attitudes and perceptions toward studying agriculture.

Demographics

Seventy and one half percent of the questionnaires were returned by the cutoff deadline. Out of the total returned questionnaires, 69.5 percent of the returned questionnaires were valid.

The gender of the respondents included 96 males and 60 females. Fifty six male and 40 female students were agricultural majors, while 40 males and 20 females were majoring in non-agricultural fields of studies.

The regional distribution included, 44 respondents from Africa, 26 agricultural and 18 non-agricultural majors. The Middle East and Asia had 55 respondents, 28 agricultural and 27 non-agricultural majors. Central and South America had 27 respondents, 17

agricultural and 10 non-agricultural majors. Thirteen respondents, 8 agricultural and 5 non-agricultural majors were from the Islands.

A total of 56 developing countries worldwide were represented in the survey. These included 23 African countries, 16 Middle East and Asian countries, 11 Central and South American countries and 6 Island countries.

Seventy-three of the respondents were doctoral degree students. Of those students, 45 were agricultural majors and 28 were non-agricultural majors. Forty-nine masters students included twenty-four agricultural majors and twenty-five non-agricultural majors. Seventeen bachelors degree students, included 10 agricultural majors and 7 non-agricultural majors.

A total of fifty-seven major fields of study were represented in the responses. These included 29 agricultural major fields of study and 28 non-agricultural major fields of studies. In analyzing why the respondents were in their major fields, 77 percent of the graduate respondents and 5 percent of the undergraduate respondents stated that they selected their major fields of study due to interest; 6.5 percent of the graduate respondents and 5.7 percent of the undergraduate respondents major fields of study were selected by their governments; and 3.6 percent of the graduate respondents and 1.4 percent of the undergraduate respondents stated that companies and international development organizations selected their major fields of study for them.

The summary of the distribution of the sizes of the towns where the respondents were born and respondents plan to live upon returning to their countries are as follows, 16.5 percent of the respondents were born in a town with a population of more than one thousand but with less than five thousand people, while upon returning back to their

countries, 3.6 percent of the respondents plan to live in a town with a population of more than one thousand but with less than five thousand people. Over 12.2 percent of the respondents were born in towns with a population of more than five thousand but with less than fifty thousand people, while 5.7 percent of the respondents plan to live in towns with a population of more than five thousand but with less than fifty thousand people upon returning back to their home countries. Nearly fourteen and a half or 14.4 percent of the respondents were born in a town with a population of more than fifty thousand but with less than one hundred thousand people and 10.1 percent of the respondents upon returning home plan to live in a town with a population of more than fifty thousand but with less than one hundred thousand people. Nearly twenty-one or 20.9 percent of the respondents were born in a town with a population of more than one hundred thousand but with less than one million people, while upon returning back to their countries 29.5 percent of the respondents plan to live in a town with a population of more than one hundred thousand but with less than one million people. Thirty-six percent of the respondents were born in a town with a population of more than one million people, while upon returning back to their countries 51.1 percent of the respondents plan to live in a town with a population of more than one million people.

Summaries of the Attitudes and Perceptions Toward Agriculture.

Summaries of the perceptions of the international students from the developing countries toward agriculture are presented in Table LI. The table compares the mean

TABLE LI
SUMMARY OF PERCEPTIONS ABOUT AGRICULTURE
BY THE EXTENT OF AGREEMENT.

Statements	REGIONS				AG	NAG
	AFR	MEA	CSA	ISD		
In the developing countries modern agriculture...						
...is more than farming.	A	A	A	A	A	A
...is very science oriented.	A	A	D	D	A	A
...involves small farms.	A	A	A	A	A	A
...is a big business.	A*	D	A*	D	A	A
Problems of agriculture in my country are mainly due to ...						
...government policies.	A	A*	SA*	A	A	A
...land tenure.	A	A	A	A	A	A
...credit and financing.	A	A	SA	A	A	A
...level of education of the farmers.	A	A	A	SA	A	A
Developing countries should...						
...concentrate on producing food and fiber.	A	A	A	A	A	A
...produce other products and buy food and fiber from other countries.	D	SD	D	D	D	D
...produce anything a country produce best.	A	A	A	SA	A	A
...depends on foreign aid to supplement food and fiber needs.	SD	D	D	SD	SD	D*
In the developing countries ...						
...government should not invest resources in the agricultural sectors.	D	D	SD	D	SD	D
...government should invest resources in the industrial sectors.	A	A	A	A	A	A
...individuals should invest in the agricultural sectors.	A*	A*	A	A	A	A
...individuals should invest in the industrial sectors.	A	A	A	A	A	A*
In order to have development in the developing countries:						
...women should participate on an equal basis as men in social, political, economic processes of agricultural/rural development	A	A	SA	SA	A	SA
...the government should support programs for women to participate in agricultural production activities.	A	A	SA	A	A	SA
...women should not be involve in agriculture .	D	SD	SD	D	SD	D*
It is within the scope of agriculture to improve the life of people in rural areas.	A*	A*	A	A	A	A

SA=strongly agree, A=agree, D=disagree, SD=strongly disagree. *Indicates significant difference.

AFR=Africans, MEA=Middle-easterners and Asians, CSA=Central and South Americans, ISD=Islanders.

AG=Combined total of all agricultural students. NAG=Combined total of all non-agricultural students.

response categories for the regions and also compares the students' in agricultural and non-agricultural majors mean response categories.

For the statements, in the developing countries modern agriculture "is more than farming" and "involves small farms", the responses for all the regions of the world were in the "agree" mean response category, while the responses were mixed "agree and disagree" for the statements that in the developing countries modern agriculture "is very science oriented" and "is a big business".

When the respondents majoring in the agricultural and non-agricultural fields of study were compared for the statements that modern agriculture "is more than farming", "agriculture is very science oriented", "involves small farms" and "is a big business", a majority of the respondents were in the "agree" mean response category

For the statements that problems of agriculture in their country are mainly due to "government policies", "land tenure", "credit and financing" and "level of education of the farmers", responses for all the regions of the world were in the "agree or strongly agree" mean response categories. Also, for these statements all the responses were "agree" mean response categories for both the students majoring in agricultural and non-agricultural fields of study.

For the statements that the developing countries "should concentrate on producing food and fiber" and "produce anything a country produces best", the responses for majority of the regions of the world and for both the students majoring in agricultural and non-agricultural fields of study were in the "agree or strongly agree" mean response categories.

For the statements that the developing countries should “produce other products and buy food and fiber from other countries” and “depend on foreign aid to supplement food and fiber needs”, the responses for all the regions of the world and for both the students majoring in agricultural and non-agricultural fields of study were in the “disagree or strongly disagree” mean response categories, respectively.

For the statements that the developing countries “government should not invest in the agricultural sector”, responses for all the regions of the world and for both the students majoring in agricultural and non-agricultural fields of study were in the “disagree or strongly disagree” mean response categories, while on the statements that in the developing countries “government should invest resources in the industrial sectors”, “government should invest resources in the agricultural sectors” and “individuals should invest in the industrial sectors” the responses for all the regions of the world and for both the students majoring in agricultural and non-agricultural fields of study were in the “agree or strongly agree” mean response category.

On the statements that in order to have development in the developing countries, “women should participate on an equal basis as men in social, political, economic processes of agricultural / rural development” and “the government should support programs for women to participate in agricultural production activities”, the responses for all the regions of the world and both the students majoring in agricultural and non-agricultural fields of study were in the “agree or strongly agree” mean response category, while for the statements “women should not be involve in agriculture”, the responses for all the regions of the world and for the students majoring in agricultural and non-

agricultural fields of study were in the "disagree or strongly disagree" mean response categories.

For the statements, "it is within the scope of agriculture to improve the life of people in the rural areas" the responses for all the regions of the world and for both the students majoring in agricultural and non-agricultural fields of study were in the "strongly agree" mean response categories.

Table LII presents the summaries of international students' from developing countries attitudes toward agriculture. The tables include the comparisons of the mean response categories for all the regions of the world and comparison of the mean response categories for both the agricultural and non-agricultural majors' respondents.

TABLE LII
SUMMARY OF ATTITUDES TOWARDS AGRICULTURE
BY LEVELS OF IMPORTANCE.

Questions	REGIONS				AG	NAG
	AFR	MEA	CSA	ISD		
In the developing countries how important is agriculture to the National economy in terms of ...						
...producing food to feed the nation?	EI	VI	VI	VI	EI	VI*
...producing cash/export crops for earning foreign exchange?	VI	VI	VI	VI	VI	VI*
...providing raw materials to industries?	VI	VI	VI	VI	VI	VI*
...providing employment for the rural people?	VI	VI	VI	VI	VI	VI
How important is it that agriculture in the developing countries ...						
...be labor intensive?	I	VI	VI	I	VI	I
...be capital intensive?	I	I	I	I	I	I
...be mechanized or use technology intensively?	VI	VI	I	I	I	VI*
...use chemicals to control insects and weeds?	I	VI	I	I	I	I

*Indicates significant difference.

EI=extremely important, VI=very important, I=important, SI=somewhat important NI=not important.

AG=Combined total of all agricultural students. NAG=Combined total of all non-agricultural students.

For the questions, in the developing countries, how important is agriculture to the national economy in terms of "producing food to feed the nation?", "produce cash/export crop for earning foreign exchange?", "provide raw materials to industries" and "provide employment for the rural people?" a majority of the responses for all the regions of the world and for both the students majoring in agricultural and non-agricultural fields of study were in the "extremely important, very important or important" mean response categories". For the questions, how important is it that agriculture in the developing countries "be labor intensive?", "be capital intensive?", "be mechanized or use technology intensively?" and "use chemicals to control insects and weeds?", a majority of the responses from all the regions of the world and for both the students majoring in agricultural and non-agricultural fields of study the mean response categories were "very important or important".

Summaries of Attitudes and Perceptions Toward Studying Agriculture.

The summaries of the perceptions of international students from developing countries toward studying agriculture were presented in Table LIII. The mean response category for comparisons between the different regions of the world and between the agricultural and non-agricultural majors were also presented in the table.

For the statements that, a career in agriculture is as prestigious as compared to professions such as "law", "social sciences", "business", "medicine" and "engineering", when comparing the responses by the regions, with the exception of the statement on "social sciences", which had "agree" mean response category for the Africans, Central and

TABLE LIII

SUMMARY OF PERCEPTIONS ABOUT STUDYING AGRICULTURE
BY THE EXTENT OF AGREEMENTS.

Statements	REGIONS				AG	NAG
	AFR	MEA	CSA	ISD		
A career in agriculture is as prestigious as compared to these professions ...						
... Law.	D	D	D	D	D	D
... Social Sciences.	A	D	A	A	A	A
... Business.	D	D	D	D	D	D
... Medicine.	D	D	D	D	D	D
... Engineering.	D	D	D	D	D	D
The problem of education related to agriculture is due to a lack of ...						
... schools/facilities.	A	A	A	A	A	A
... teachers.	D	A	A	A	A	A
... planning by national/local agencies.	A	A	A	A	A	A
... administrators.	A	A	A	A	A	A
Agricultural productivity can be improved by ...						
... training and educating the people living in the rural areas.	SA	A	SA	SA	SA	SA
... training and educating the people living in the urban areas.	A	A	A	A	A	A
Educational institutions should respond effectively to changing rural development needs through ...						
... instruction.	A	A	SA	A	A	SA*
... research.	SA	A	SA	SA	A	SA
... extension.	A	A*	SA*	A	SA	A*
Agricultural institutions should be involved in ...						
... the formulation of policies that involves agricultural and rural development.	SA	A	SA	SA	SA	A
... conducting agricultural pilot programs and demonstrations for the public.	SA*	A*	A	SA	A	A
... the development of community-based development strategies.	SA	A	A	SA	A	A*
... involves monitoring and evaluation of government agricultural projects.	A	A	A	A	SA	A
Developing countries must build educational facilities in rural areas ...						
... to provide extension programs.	SA	A	A	SA	SA	A
... to conduct short-term non-degree courses.	A	A	A	A	A	A
... that conduct basic research.	A	A	A	A	A	A
... that engage in advanced or applied research.	A	A	A	A	A	A
Developing countries' institutions should evolve ...						
... technologies to solve agricultural problems.	SA	A	SA	SA	SA	SA
... practical technologies to disseminate new information to farmers	SA	A	SA	SA	SA	SA
Investments in non-formal education can ...						
... be used to reduce adult illiteracy.	SA	A	A	A	A	A
... get research information to farms through extension.	A	SA	A	A	A	A

SA=strongly agree, A=agree, D=disagree, SD=strongly disagree. *Indicates significant difference.

AFR=Africans, MEA=Middle-easterners and Asians, CSA=Central and South Americans, ISD=Islanders.

AG=Combined total of all agricultural students. NAG=Combined total of all non-agricultural students.

South Americans and the Islanders , the responses for all the different regions were in the "disagree" mean response category. Also, for the statements that a career in agriculture is as prestigious as to other profession, when comparing the prestige of a career in agriculture with "social sciences" a majority of the responses were in the "agree" mean response category, while for the statements on "law", "business", "medicine" and "engineering", a majority of the responses were in the "disagree" mean response category for both agricultural and non-agricultural majors.

On the statements that the problems of education related to agriculture are due to a lack of "school/facilities", "teachers", "planning by national/local agencies" and "administrators", with the exception of the Africans "disagree" for "teachers", when comparing the responses by the regions and the responses for both the agricultural and non-agricultural majors, a majority of the responses were in the "agree" mean response category.

For the statements that agricultural productivity can be improved by "training and educating the people living in the rural areas" and "training and educating the people living in the urban areas" all the of the responses were in the "strongly agree and agree" mean response categories for all the regions of the world and for both the agricultural and non-agricultural majors.

On the statements that the educational institutions should respond effectively to changing rural development needs through "instruction", "research" and "extension", the responses among the regions of the world were mixed "agree and strongly agree" mean response categories. When the agricultural and non-agricultural majors responses were

compared, a majority of the responses were in the "strongly agree" and "agree" mean response category.

For the statements that agricultural institutions should be involved in "the formulation of policies that involves agricultural and rural development", a majority of the responses were in the "strongly agree" mean response category, while for the statements "conducting agricultural pilot programs and demonstrations for the public", "the development of community based development strategies" and "involves in monitoring and evaluation of government agricultural projects", when responses are compared by the regions, a majority of the responses for the different regions of the world were in the "agree" mean response category. When the agricultural and non-agricultural majors responses were also compared, the majority of the responses were in the "agree" mean response categories.

On the statements that developing countries must build facilities in rural areas" to provide extension programs", "to conduct short-term non-degree courses", "that conduct basic research" and "that engage in advanced or applied research", a majority of the responses for the different regions and the agricultural and non-agricultural majors were in the "agree" mean response category.

For the statements that developing countries' institutions should evolve "technologies to solve agricultural problems" and "practical technologies to disseminate new information to farmers", when the different regions of the world and both the agricultural and non-agricultural majors respondents were compared, a majority of the responses were in the "strongly agree" mean response category.

For the statements that investments in non-formal education can "be used to reduce adult illiteracy" and "get research information to farmers through extension", when comparing the responses by the regions, a majority of the responses for the different regions were in the "agree" mean response category. Also when the agricultural and non-agricultural majors respondents were compared, a majority of the responses were in the "agree" mean response category.

The summaries of the mean response categories for the regions and the agricultural and non-agricultural majors were presented in Table LIV. This summary table is for the attitudes of international students from developing countries toward studying agriculture.

For the questions, how important is the investment in education and training at "the primary education level?", "the secondary education level?", "the higher education level?", and "the vocational/technical level?", a majority of the responses by the different regions of the world and by both the students in agricultural and non agricultural majors were in the "very important" mean response categories for all the questions.

For the questions, how important is it that students be exposed to agriculturally related areas of studies at "the primary school level?", "the secondary school level", "the university level", "the vocational/technical schools?" and "all levels?", a majority of the responses for all the regions of the world were in the "very important" mean response category. The responses were mixed, "important and very important" mean response categories for the students in the agricultural and non-agricultural major fields of study.

For the questions how important is it that developing countries institutions evolve technology for agricultural development through "research programs?" and "agricultural

TABLE LIV
SUMMARY OF ATTITUDES TOWARDS STUDYING AGRICULTURE
BY LEVELS OF IMPORTANCE.

Questions	REGIONS				AG	NAG
	AFR	MEA	CSA	ISD		
How important is the investment in education and training at ...						
...the Primary Education level?	VI	VI	VI	VI	VI	VI*
...the Secondary Education level?	VI	VI	VI	VI	VI	VI*
...the Higher Education level?	VI	I	VI	VI	VI	VI
...the Vocational/Technical level?	VI	VI	VI	VI	EI	VI*
How important is it that students be exposed to agriculturally related areas of studies at ...						
...the Primary School level?	VI	VI	VI	VI	I	I
...the Secondary School level?	VI	VI	VI	VI	VI	VI
...the University level?	VI	I	VI	VI	VI	VI
...the Vocational/Technical Schools?	VI	VI	VI	VI	VI	VI*
...all Levels?	I	VI	VI*	VI*	VI	I
How important is it that developing countries' institution evolve technology for agricultural development through ...						
...research programs ?	VI	VI	VI	VI	VI	VI
...agricultural extension ?	VI	I	VI	VI	VI	VI*
...technology transfer from other countries?	I	I	I	VI	I	VI
How important is it that education and training related to agriculture in your country be under the Ministry or Department of ...						
...Education?	I	VI	I	I	I	I
...Agriculture?	VI	VI	VI	I	VI	VI
...both Agriculture and Education?	VI	VI	VI	I	VI	VI
How important is the development of National policies that ...						
...encourage the reduction in the level of population growth?	VI	I	I	VI	VI	VI
...would provide low interest financing to farmers?	VI	I*	VI*	VI	VI	VI
...would subsidize farm input (such as fertilizer)?	VI	I	I	VI	VI	VI
...would promote the redistribution of land holdings?	I	VI	I	I	I	I

*Indicates significant difference.

EI=extremely important, VI=very important, I=important, SI=somewhat important NI=not important.

AFR=Africans, MEA=Middle-easterners and Asians, CSA=Central and South Americans, ISD=Islanders.

AG=Combined total of all agricultural students. NAG=Combined total of all non-agricultural students.

extension?", the responses were in the "very important" mean response category for all the regions of the world except one and for the students in agricultural and non-agricultural fields of studies. On the transfer of technology from other countries, the responses for all the regions of the world and for the students in agricultural and non-agricultural majors were mixed.

On the question, how important is placing education and training under the ministry of "education", "agriculture" or "both ministries", a majority of the responses for all the regions of the world were in the "very important" mean response categories for placing the ministry under "agriculture or under both of the ministries", except for the Islanders who were in the "important" mean response category. The responses for placing education and training related to agriculture under the education ministry were "important" except "very important" for the Middle-Easterners and Asians, and also for both the students in agricultural and non-agricultural fields of studies.

For the questions, how important is the development of national policies that "encourage the reduction in the level of population growth", "would provide low interest financing to farmers?", "would subsidize farm input (such as fertilizer)?" and "would promote the redistribution of land holdings?", the responses for all the regions of the world and for both the students in agricultural and non-agricultural fields of study were mixed, "important and very important" for all the questions.

Qualitative responses to the open-end questions.

The details for the four open-ended questions were presented in Appendix C. For the question, "what unique features or programs in your country encourages involvement

in agriculture?", there were a wide variety of responses including government, agricultural, institutional, financial, women's programs and government policies that encourage involvement in agriculture in their countries.

For the question, "are there any youth training programs that encourage involvement in agriculture", many of the respondents signified that there are various agricultural programs that encourage youth involvement in agriculture in the developing countries. Many of these programs are similar to the 4-H and youth development programs in the United States.

For the question, "how farmers' needs and problems were addressed by educational institutions", overall the responses were mixed. Many of the respondents signified that the problems and needs of farmers are addressed in a variety of approaches by the educational institutions, but in some of the developing countries the needs and problems of farmers were not well addressed by the educational institutions.

Many different responses were given for the question, "what should be included in the strategies for agricultural and rural development". Overall the respondents agreed that strategies for agricultural and rural development should include development of appropriate technology to assist in the modernization of agriculture in the developing countries.

A wide variety of suggestions were given, on the question requesting additional comments and suggestions. Overall the responses to the study were very positive.

Conclusions

From the analysis and interpretation of the data, the following conclusions were established:

1. It was concluded that the respondents were predominantly male, from a wide range of developing countries, with almost equal representation from agricultural and non-agricultural respondents. It was also concluded that the respondents were predominantly doctoral students who chose their fields of study and who would return to large cities upon completion of their studies

2. Essentially the students' attitudes and perceptions about agriculture were positive concerning developing the infrastructure and support for producing food and fiber in the developing countries and for involving women in agriculture. The respondents felt the developing countries should be independent from other countries for food and fiber.

3. It was concluded that there were significant mean differences among the regions at $\alpha = 0.05$:

a.) Perceptions about agriculture: That in the developing countries modern agriculture is big business" between the African and Central and South Americans, as compared to the Middle-Easterners and Asians and the Islanders; The African and Middle-Easterners and Asians perceptions compared to the Central and South Americans and the Islanders on the statements, "individuals should invest in agriculture" and "that it is within scope of agriculture to improve life of the rural people"; and the Africans and Islanders'

perceptions compared to the Middle-Easterners and Asians and Central and South Americans, “that the problems of agriculture were due to government policies”. With these minor differences, it was concluded the perceptions about agriculture among the regions were essentially the same.

b.) Perceptions toward studying agriculture: The perceptions of the Africans and the Islanders compared to the Middle-Easterners and Asians and the Central and South Americans on the statement, that “educational institutions should respond to changing rural needs through extension”, and the Africans and the Middle-Easterners and Asians perceptions compared to the Central and South Americans and the Islanders on the statement that, “agricultural institutions should conduct pilot and demonstration projects”.

The attitudes of the Africans and the Middle-Easterner and Asian compared to the Central and South Americans and the Islanders on “the exposure of students to agriculturally related areas of studies at all the levels of education”; and the African and the Islanders responses compared to the Central and South Americans and Middle-Easterners and Asians on “the importance of developing national policies that will encourage providing low interest financing to the farmers”. These minimal differences lead to the conclusion that the perceptions and attitudes about studying agriculture among the regions were essentially the same.

4. From the results of the study it was concluded that there were significant mean differences at $\alpha = 0.05$, for the statements about perceptions toward agriculture between agricultural and non-agricultural students.

a.) The agricultural and non agricultural respondent perceptions about agriculture were significantly different for following statements: “developing countries should supplement food and fiber needs”, “invest in the industrial sectors” and “exclude women in agriculture”, “that agriculture is important to the national economy in terms of producing food to feed the nation”, “producing cash and export crops for earning foreign exchange”, “providing raw materials for the industries”, and “should use technology intensively”. With only these minor differences, it was concluded the perceptions of the agricultural and non agricultural respondents about agriculture were essentially the same.

b.) The agricultural and non agricultural respondent perceptions towards studying agriculture were significantly different for the following statements: “that educational institutions respond to rural needs through instruction”, and “extension and that educational facilities should be built in the rural areas to conduct basic research”.

Significantly different attitudes of the agricultural and non-agricultural majors toward studying agriculture were as follows: “that developing countries should invest in primary, secondary and vocational / technical levels”, “expose students to agriculture at the vocational technical schools”, and “evolve technology for agricultural development through agricultural extension”.

It was concluded the attitudes and perceptions of the agricultural and non-agricultural respondents about studying agriculture were essentially the same.

5.) In many of the developing countries there were several programs that encouraged adults and youth involvement in agriculture. The responses were mixed on the question about educational institutions addressing the needs of the farmers. Overall, the

respondents agreed on the need for appropriate technology for rural and agricultural development.

Recommendations

1. Taking into account large percentages of the developing countries' people live in the rural areas and their livelihood depends on agriculture, the government and the private investors should focus more attention on the agricultural sector.

A special campaign and enlightenment is needed to emphasize the importance of a career in the agriculture, that agricultural professions offer an exciting, fulfilling career and is as prestigious as any other profession.

2. The governments of developing countries should develop the infrastructures and create opportunities in the rural areas that are found in the urban areas, so that the educated citizen can return to the rural areas and engage in agriculture.

Also, the government should provide special incentives and programs for educated people who go back to agriculture and the rural areas.

3. The government in the developing countries should educate and train the people of the urban areas on the importance of agriculture and that their countries' prosperity, self-sufficiency, industrial development and the feeding of a growing population depends on agriculture.

4. Government, educational and research institutions in the developing countries need to pay close attention to the problems and needs of rural / agricultural sectors. These institutions need to make policies taking agriculture into context.

5. The governments of the developing countries must create or improve extension agencies in the rural areas, so that farmers' problems are addressed, agents get information to the farmers, and the people are educated and trained in the rural areas.

There is a need for further study in terms of specific regions or countries to determine precise needs, attitudes and perceptions toward agriculture and / or toward studying agriculture in specific developing countries.

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APPENDIX A

Letters

Oklahoma State University

COLLEGE OF AGRICULTURAL SCIENCES AND NATURAL RESOURCES

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May 2, 1994

Dr. Arthur Klatt, Director,
Office of International Programs,
307 Center for International Trade Development,
Oklahoma State University,
Stillwater, OK. 74078.

Dear Dr. Klatt:

Since 1950's the International Institute of Education (IIE) kept the statistics of foreign students studying in the United States of America (USA). In the 1992/93 academic year, over 356,000 students from over 150 countries are studying in the USA.

About 80 percent of these students are from the developing countries. Even though over 60 percent of the developing countries' people still live in the rural areas and most of their economies depend on agriculture, the IIE historic record shows that on the average only 2 to 3 percent of foreign students study Agricultural Sciences and Natural Resources.

We are conducting a doctoral dissertation study on the "Attitudes and Perceptions of International Students from Developing Countries Toward Studying Agricultural Sciences and Natural Resources". For this study we selected the Mid-America International Agriculture Consortium (MIAC) institutions : Iowa State University, Kansas State University, Oklahoma State University, University of Missouri-Columbia and University of Nebraska-Lincoln.

We need your assistance to conduct the study. In addition to your assistance, we also need the assistance of your colleagues, the Director's of International Programs at the MIAC institutions.

To conduct the study we need the following from each MIAC member institution:

1) Names and addresses of at least 40 International students from developing countries. These can be graduate or undergraduate students and the distribution of the students needs to be:

a) 20 students majoring any areas of Agricultural Sciences and Natural Resources.

b) And 20 students from any majors other than Agricultural Sciences and Natural Resources.



2) We would like to have a wide geographic distribution of the students from as many regions/countries of developing countries as possible.

a) We would like to contact students from countries of Africa, Latin/Central America, Asia and any of the developing country Island nations.

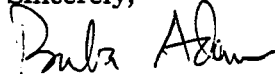
b). This study excludes students from any of the developed countries: these include all the European countries, Japan, Australia, New Zealand, Canada, the Commonwealth of Independent States (CIS) and all of the former eastern European countries.

All responses will be kept strictly confidential. Information will be reported in the aggregate only.

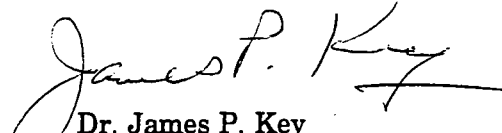
We believe this study will be valuable for International Development agencies, governments of both developing and developed nations, Institutions of Higher Education in the United States, Manpower planning, and Agricultural and Industrial development planning.

We appreciate your assistance and support, with your help we are sure the study will be successful.

Sincerely,



Baba M. Adam
Doctoral Student.



Dr. James P. Key
Professor and Research Adviser

cc: Copy of Research questionnaire attached.



Oklahoma State University

OFFICE OF INTERNATIONAL PROGRAMS

STILLWATER, OKLAHOMA 74078-0437
307 CITD
405-744-6535
TELEX: 160274 OSU UT
709606 OSU INTL PROG
FAX: 405-744-7529

May 16, 1994

Dr. Harold Crawford,
Associate Dean
117 Curtiss Hall
Iowa State University
Ames, Iowa 50011

Dear Harold:

I would like to draw your attention to the attached letter and questionnaire from Mr. Baba Adam and Dr. James Key. Mr. Adam is a Ph.D. student from Nigeria and is attempting to complete the project described in the letter as part of his dissertation.

Your assistance to Mr. Adam and the project would be appreciated. I would suggest that you furnish the names and addresses of 50 international students, in order to give him some degree of security in regard to sample size.

If you have any questions, please give me a call. Thanks again.

Sincerely yours,

Arthur Klatt
Director
International Programs

AK/df
Attachment

cc: Mr. Baba Adam
Dr. James Key



Oklahoma State University

OFFICE OF INTERNATIONAL PROGRAMS

STILLWATER, OKLAHOMA 74078-0437
307 CTD
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FAX: 405-744-7529

May 16, 1994

Dr. Janice Swanson,
Assistant Professor of Animal Science
134 Webber Hall
Kansas State University
Manhattan, KS 66506

Dear Dr. Swanson:

I would like to draw your attention to the attached letter and questionnaire from Mr. Baba Adam and Dr. James Key. Mr. Adam is a Ph.D. student from Nigeria and is attempting to complete the project described in the letter as part of his dissertation.

Your assistance to Mr. Adam and the project would be appreciated. I would suggest that you furnish the names and addresses of 50 international students, in order to give him some degree of security in regard to sample size.

If you have any questions, please give me a call. Thanks again.

Sincerely yours,

Arthur Klatt
Director
International Programs

AK/df

Attachment

cc: Mr. Baba Adam
Dr. James Key

Oklahoma State University

Office of International Programs
307 CITD
Stillwater, Oklahoma 74078-0437
405-744-6535, FAX 405-744-7529
Telex 160274 OSU UT or
709606 OSU INTL PROG
Bitnet oipxksk@osucc

May 16, 1994

Dr. J.E. Osborn
Professor and Head
Agriculture Economics
308A Agriculture Hall
Oklahoma State University

Dear Jim:

I would like to draw your attention to the attached letter and questionnaire from Mr. Baba Adam and Dr. James Key. Mr. Adam is a Ph.D. student from Nigeria and is attempting to complete the project described in the letter as part of his dissertation.

Your assistance to Mr. Adam and the project would be appreciated. I would suggest that you furnish the names and addresses of 50 international students, in order to give him some degree of security in regard to sample size.

If you have any questions, please give me a call. Thanks again.

Sincerely yours,



Arthur Klatt
Director
International Programs

AK/df

Attachment

cc: Mr. Baba Adam
Dr. James Key

Oklahoma State University

Office of International Programs
307 CITD
Stillwater, Oklahoma 74078-0437
405-744-6535, FAX 405-744-7529
Telex 160274 OSU UT or
709606 OSU INTL PROG
Bitnet oipxsk@osucc

May 26, 1994

Mr. Glenn Jones
Office of the Registrar
103 Whitehurst
CAMPUS

Dear Mr. Jones:

I would like to draw your attention to the attached letter and questionnaire from Mr. Baba Adam and Dr. James Key. Mr. Adam is a Ph.D. student from Nigeria and is attempting to complete the project described in the letter as part of his dissertation.

Your assistance to Mr. Adam and the project would be appreciated. I would suggest that you furnish the names and addresses of 50 international students, in order to give him some degree of security in regard to sample size.

If you have any questions, please give me a call. Thanks again.

Sincerely yours,



Arthur Klatt
Director
International Programs

AK/df

Attachment

cc: Mr. Baba Adam
Dr. James Key



Oklahoma State University

OFFICE OF INTERNATIONAL PROGRAMS

SILLWATER, OKLAHOMA 74078-0437
307 CITD
405-744-6535
TELEX: 160274 OSU UT
709606 OSU INTL PROG
FAX: 405-744-7529

May 16, 1994

Dr. Mike Nolan,
Associate Dean
2-69 Agriculture Building
University of Missouri
Columbia, MO 65211

Dear Mike:

I would like to draw your attention to the attached letter and questionnaire from Mr. Baba Adam and Dr. James Key. Mr. Adam is a Ph.D. student from Nigeria and is attempting to complete the project described in the letter as part of his dissertation.

Your assistance to Mr. Adam and the project would be appreciated. I would suggest that you furnish the names and addresses of 50 international students, in order to give him some degree of security in regard to sample size.

If you have any questions, please give me a call. Thanks again.

Sincerely yours,

Arthur Klatt
Director
International Programs

AK/df

Attachment

cc: Mr. Baba Adam
Dr. James Key



Oklahoma State University

OFFICE OF INTERNATIONAL PROGRAMS

STILLWATER, OKLAHOMA 74078-0437
307 CITT
405-744-6535
TELEX: 160274 OSU UT
709606 OSU INTL PROC
FAX: 405-744-7529

May 16, 1994

Dr. Glen Vollmar,
Dean and Director
International Programs
110 Ag Hall
University of Nebraska
Lincoln, Nebraska 68583-0706

Dear Glen:

I would like to draw your attention to the attached letter and questionnaire from Mr. Baba Adam and Dr. James Key. Mr. Adam is a Ph.D. student from Nigeria and is attempting to complete the project described in the letter as part of his dissertation.

Your assistance to Mr. Adam and the project would be appreciated. I would suggest that you furnish the names and addresses of 50 international students, in order to give him some degree of security in regard to sample size.

If you have any questions, please give me a call. Thanks again.

Sincerely yours,

Arthur Klatt
Director
International Programs

AK/df
Attachment

cc: Mr. Baba Adam
Dr. James Key

Oklahoma State University

COLLEGE OF AGRICULTURAL SCIENCES AND NATURAL RESOURCES

Department of Agricultural Education
448 Agricultural Hall
Stillwater, Oklahoma 74078-0484
405-744-5129, FAX 405-744-5176

August 16th 1994

**Dr. Arthur Klatt, Director
Office of International Programs
307 Center for International Trade Development
Oklahoma State University
Stillwater, OK 74078**

Dear Dr. Klatt:

This is a letter to express our thanks and appreciation to you and your staff for providing us with assistance to the doctoral dissertation research we conducted on the attitudes and perceptions of international students toward studying agricultural sciences and natural resources.

We also, received a lot of support and cooperation from your colleagues at the other MidAmerica International Agriculture Consortium (MIAC) universities which you contacted: the Directors of International Programs at Iowa State University, Kansas State University, University of Nebraska at Lincoln and University of Missouri at Columbia

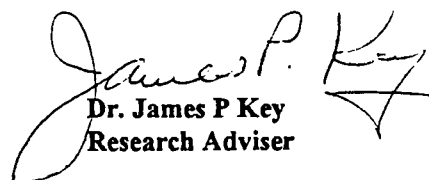
So far the partial analysis of the responses have been very encouraging and given us some good insights about the attitudes and perceptions of international students. We will let you know about the findings when we complete the full analysis of the responses.

On behalf of myself, Dr. James P. Key and my entire doctoral committee we thank you very much again for all your help.

Sincerely,



**Baba M. Adam
Doctoral Student**



**Dr. James P Key
Research Adviser**

APPENDIX B

Survey Instrument

Oklahoma State University

COLLEGE OF AGRICULTURAL SCIENCES AND NATURAL RESOURCES

Department of Agricultural Education
448 Agricultural Hall
Stillwater, Oklahoma 74078-0484
405-744-5129, FAX 405-744-5176

June 17th, 1994

Fellow Student:

Currently, over 419,500 International Students are studying in the United States of America (USA). Over the years, thousands of International Students have studied here in the USA, and many of these students have returned home to contribute to the development of our countries.

In many developing countries, agriculture is an important sector of the economy. We believe agriculture will continue to play an important role in the future as many of our countries move towards a more industrial and manufacturing economy.

I am a graduate student from Nigeria, conducting this study: "Attitudes and Perceptions of International Students from Developing Countries toward Studying Agricultural Sciences and Natural Resources" as a part of my doctoral dissertation.

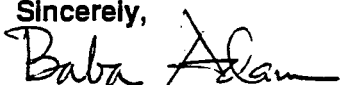
You have been specially selected for this study. The study involves both graduate and undergraduate students, and also involves both agricultural and non-agricultural majors. All your individual responses will be kept strictly confidential. Information will only be reported in the aggregate.

We believe this research will contribute to Agricultural and Industrial Development. Also, it will contribute to Manpower Planning and Development in our countries. Your input is vital and with your help, the success of the study will be assured.

We would like to take few minutes of your time to get your responses to the attached questionnaire. We have enclosed a self-addressed stamped envelope for returning the questionnaire.

Thank you.

Dr. James P. Key
Professor and Research Adviser

Sincerely,

Baba M. Adam
Doctoral Student

**ATTITUDES AND PERCEPTIONS OF INTERNATIONAL STUDENTS FROM
DEVELOPING COUNTRIES TOWARD STUDYING
AGRICULTURAL SCIENCES AND NATURAL RESOURCES**

Code Number _____

The following questionnaire seeks your responses. All your individual responses will remain strictly confidential. Only an aggregate of all responses will be reported as the findings of this research. The above code number is used for mailing and follow-up purposes only.

Demographic information:

Please answer the following questions.

1. Gender: Male _____ Female _____
2. University: _____
3. Major Field of Study: _____
4. Country of Origin: _____
5. Enrollment Status: Graduate _____ Doctoral _____ Masters _____ Undergraduate _____ Other (list) _____
6. Why did you choose the field you are studying?
Interest _____ Selected by the government _____ Other(specify) _____
7. What is the size of city in which you were born?

_____ >1,000	but	<5,000
_____ >5,000	but	<50,000
_____ >50,000	but	<100,000
_____ >100,000	but	<1,000,000
_____ >1,000,000		

When you return home, what is the size of the city in which you will be living?

_____ >1,000	but	<5,000
_____ >5,000	but	<50,000
_____ >50,000	but	<100,000
_____ >100,000	but	<1,000,000
_____ >1,000,000		

Extent of Agreement:

1 = Strongly Disagree 2 = Disagree 3 = Agree 4 = Strongly Agree

Please circle the number corresponding to your extent of agreement with the following statements:

8. In the developing countries modern agriculture...

	Strongly Disagree	Disagree	Agree	Strongly Agree
a. is more than farming.	1	2	3	4
b. is very science oriented.	1	2	3	4
c. involves small farms.	1	2	3	4
d. is a big business.	1	2	3	4

9. Problems of agriculture in my country are mainly due to ...

a. government policies.	1	2	3	4
b. land tenure.	1	2	3	4
c. credit and financing.	1	2	3	4
d. level of education of the farmers.	1	2	3	4

10. A career in agriculture is as prestigious as compared to these professions ...

a. Law.	1	2	3	4
b. Social Sciences.	1	2	3	4
c. Business.	1	2	3	4
d. Medicine.	1	2	3	4
e. Engineering.	1	2	3	4

11. The problem of education related to agriculture is due to a lack of ...

a. schools/facilities.	1	2	3	4
b. teachers.	1	2	3	4
c. planning by national/local agencies.	1	2	3	4
d. administrators.	1	2	3	4

12. Agricultural productivity can be improved by ...

a. training and educating the people living in the rural areas.	1	2	3	4
b. training and educating the people living in the urban areas.	1	2	3	4

13. Investments in non-formal education can ...

a. be used to reduce adult illiteracy.	1	2	3	4
b. get research information to farms through extension.	1	2	3	4

14. Developing countries' institutions should evolve ...

a. technologies to solve agricultural problems.	1	2	3	4
b. practical technologies to disseminate new information to farmers	1	2	3	4

Extent of Agreement:

1 = Strongly Disagree 2 = Disagree 3 = Agree 4 = Strongly Agree

Please circle the number corresponding to your extent of agreement with the following statements:

15. Developing countries must build educational facilities in rural areas ...

	Strongly Disagree	Disagree	Agree	Strongly Agree
a. to provide extension programs.	1	2	3	4
b. to conduct short-term non-degree courses .	1	2	3	4
c. that conduct basic research.	1	2	3	4
d. that engage in advanced or applied research.	1	2	3	4

16. Developing countries should ...

a. concentrate on producing food and fiber.	1	2	3	4
b. produce other products and buy food and fiber from other countries.	1	2	3	4
c. produce anything a country can produce best.	1	2	3	4
d. depends on foreign aid to supplement food and fiber needs.	1	2	3	4

17. In the developing countries ...

a. government should not invest resources in the agricultural sectors.	1	2	3	4
b. government should invest resources in the industrial sectors.	1	2	3	4
c. individuals should invest in the agricultural sectors.	1	2	3	4
d. individuals should invest in the industrial sectors.	1	2	3	4

18. Agricultural institutions should be involved in ...

a. the formulation of policies that involves agricultural and rural development.	1	2	3	4
b. conducting agricultural pilot programs and demonstrations for the public.	1	2	3	4
c. the development of community-based development strategies.	1	2	3	4
d. monitoring and evaluation of government agricultural projects.	1	2	3	4

19. Educational institutions should respond effectively to changing rural development needs through ...

a. instruction.	1	2	3	4
b. research.	1	2	3	4
c. extension.	1	2	3	4

20. In order to have development in the developing countries:

a. women should participate on an equal basis as men in social, economic, and political processes of agricultural/rural development .	1	2	3	4
b. the government should support programs for women to participate in agricultural production activities.	1	2	3	4
c. women should not be involve in agriculture .	1	2	3	4

21. It is within the scope of agriculture to improve the life of people in rural areas.

1 2 3 4

Level of Importance

1 = Not Important 2 = Somewhat Important 3 = Important 4 = Very Important
5 = Extremely Important

Please circle the number corresponding to the level of importance for the following questions.

22. How important is it that agriculture in the developing countries ...

	Not Important	Somewhat Important	Important	Very Important	Extremely Important
a. be labor intensive?	1	2	3	4	5
b. be capital intensive?	1	2	3	4	5
c. be mechanized or use technology intensively?	1	2	3	4	5
d. use chemicals to control insects and weeds?	1	2	3	4	5

23. In the developing countries how important is agriculture to the National economy in terms of ...

a. producing food to feed the nation?	1	2	3	4	5
b. producing cash/export crops for earning foreign exchange?	1	2	3	4	5
c. providing raw materials to industries?	1	2	3	4	5
d. providing employment for the rural people?	1	2	3	4	5

24. How important is the investment in education and training at ...

a. the Primary Education level?	1	2	3	4	5
b. the Secondary Education level?	1	2	3	4	5
c. the Higher Education level?	1	2	3	4	5
d. the Vocational/Technical level?	1	2	3	4	5

25. How important is it that education and training related to agriculture in your country be under the Ministry or Department of ...

a. Education?	1	2	3	4	5
b. Agriculture?	1	2	3	4	5
c. both Agriculture and Education?	1	2	3	4	5

26. How important is the development of National policies that ...

a. encourage the reduction in the level of population growth?	1	2	3	4	5
b. would provide low interest financing to farmers?	1	2	3	4	5
c. would subsidize farm input (such as fertilizer)?	1	2	3	4	5
d. would promote the redistribution of land holdings?	1	2	3	4	5

27. How important is it that students be exposed to agriculturally related areas of studies at ...

a. the Primary School level?	1	2	3	4	5
b. the Secondary School level?	1	2	3	4	5
c. the University level?	1	2	3	4	5
d. the Vocational/Technical Schools?	1	2	3	4	5
e. all Levels?	1	2	3	4	5

Level of Importance

1 = Not Important 2 = Somewhat Important 3 = Important 4 = Very Important
 5 = Extremely Important

Please circle the number corresponding to the level of importance for the following questions.

28. How important is it that developing countries' institutions evolve technology for agricultural development through ...

	Not Important	Somewhat Important	Important	Very Important	Extremely Important
a. research programs ?	1	2	3	4	5
b. agricultural extension ?	1	2	3	4	5
c. technology transfer from other countries?	1	2	3	4	5

29. What unique features or programs in your country encourage involvement in agriculture?
 Please write your response in the space below.

30. Are there any youth agricultural training programs (such as Young Farmer club(s)) in your country that encourage involvement in agriculture?

Yes / No If yes, please list

What do these training programs do? Please write your response in the space below.

**31. How are farmers needs and problems addressed by educational institutions in your country?
Please write your response in the space below.**

**32. Strategies for agricultural and rural development should include development
of appropriate technology to assist modernization of agriculture? Why or Why not.**

**33. Please feel free to write any additional comment or suggestions pertinent to study
in the space below.**

Thank You.

Please return Questionnaire to
Baba Adam
PO Box 2733 Stillwater, OK. 74076-2733

Oklahoma State University

COLLEGE OF AGRICULTURAL SCIENCES AND NATURAL RESOURCES

Department of Agricultural Education
448 Agricultural Hall
Stillwater, Oklahoma 74078-0484
405-744-5129, FAX 405-744-5176

August 15th 1994

Fellow Student:

This is a follow-up letter to the research questionnaire we mailed you about a month ago. So far the responses have been very encouraging. The responses thus far have given us some good insights into the attitudes and perceptions of international students from developing countries toward studying agricultural sciences and natural resources.

In order to get accurate results in this study, we need 100% return of questionnaires. We are still waiting for your response. We realize you are very busy at this time of the year. However, we will greatly appreciate your taking a few minutes of your time to share your perceptions with us.

Please complete and mail back the enclosed questionnaire by August 29th 1994, so we can complete the analysis of the attitudes and perceptions. Your input is crucial to the success of this study.

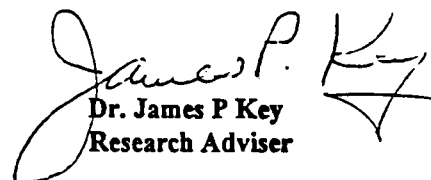
For your reply we enclosed another questionnaire and self-addressed stamped envelope. If you have already mailed your first questionnaire by the time you get this letter, please disregard this request and accept our appreciation for your prompt response.

Thank you.

Sincerely,



**Baba M. Adam
Doctoral Student**



**Dr. James P Key
Research Adviser**

APPENDIX C
Response to questions 29 - 33

RESPONSES TO QUESTION 29.

What unique features or programs in your country encourages involvement in agriculture?.

PROGRAMS

Self-help programs whereby members of the community plan and execute ways and methods to solve their problems. For example soil conservation for each locality.

A program called "return to agriculture".

Agriculture self-sufficiency program. Return of youth to agriculture (program).

TV programs "good land", "Agricultural grants.

National programs emphasize on cash crops, (coffee, tea, and cotton) and neglect the crops of necessity. The new government was to allocate more than 50% of its budget to agriculture. It was the first measure feature to encourage agriculture development. Unfortunately the president was killed in October 1993, and the program was dead with him. I hope it will be revived soon or later.

Agricultural Cooperatives.

Co-operative societies.

Extension.

Y.F. Clubs.

Fish-Rice integrate cultivation.

Training and visit extension system.

As of now encouragement is given more to energy industry compared to agriculture, but as usual, the subsidies on fertilizer, high yielding varieties plant protein measures are being continued, small farmers are given more benefits, but are not being utilized completely.

Land redistribution from absentee landlords to “landless” peasant farmers. Government has liberalized trade in agricultural commodities, there is a very strong research department of agriculture and agricultural services and extension.

Adult literacy programs--reading textbooks emphasize agriculture related to one or two key crops for each area/region.

Radio programs.

Arable Land Development program--to increase grain production towards the goal of national self-sufficiency in food production.

EPID-Extension Program and Implementation Department.

Students enrolled with schools for agricultural training are automatically awarded a nominal scholarship.

Government started a few years ago to give to the farmers private lands. Increased the productivity. We have the National Agricultural Cooperative Federation that directly connects farmers to consumers in order to reduce intermediate margins. It also provides finances and introduces new technologies.

No unique features or programs in my country that encourage agriculture.

Encourage youth to farm programs.

Nepal, though being agricultural country, does not have any special programs as far as I know to actively encourage people to be in agricultural field. But few programs to help farmers are low interest loan, subsidy in fertilizers, pesticides, equipment and free technical assistance are quote worthy.

Many programs are done by my government. Such as subsidy program, infrastructure program, etc. The unique program is: Increasing farmer's income. Last two decades my government forgot to do income distribution. It is caused the government assuming that increasing GDP or GNP will affect income distribution. This program was launched since 1990.

Integrated agricultural program--It means all sectors in agriculture which have the same business must work cooperatively.

100% retention of foreign exchange gained from export of crops such as coffee and tea.

International programs like USAID and FAO (mainly).

Effective Agricultural extension programs.

NGO's (non-governmental organizations) in extension.

Export based programs.

Revision of land holding.

Improvement in the land holding of farmers.

The youth farming programs. Vocational-schools are being opened for people who are more interested in this held.

A subsidize program called "PROCAMPO" was established last year. This program pays a guarantee price to all the agricultural products, but mainly to the basic products such as maize, beans, and other products.

I am not aware of any program involving agriculture that is not politicized or corrupted or both.

There are official programs that are searching higher levels at productivity in the main crop plants like maize and common bean. Besides, some farmers with enough resources are investing in the agricultural sector to provide raw materials to food industries.

Extension-- Field and visit program.

Teaching and research programs.

Secondary education programs specific for agriculture (animals and plants).

GOVERNMENT POLICIES

Availability of interest free loans.

National policy emphasizes agriculture

Government loan schemes.

Job situation in the country.

Subsidies

Government guaranteed minimum prices

“Most Favorite” Policies (to agriculture).

highly subsidized property tax and income tax.

free consultation facility to nearest agricultural extension officer.

The government policy(ies) is very encouraging to farmers.

Basically Pakistan's Economy is Agro Based. There are separate departments in each field by the government--to help the farmers time by time is Agriculture Extension Department. Animal husbandry, Fisheries, and Forest Departments to provide technical knowledge to the farmers. But due to lack of modern agriculture Equipment we could not achieve our goal.

Farmers get low interest bank loans.

Land redistribution laws are enforced.

Agriculture Development projects (bilaterally funded: AID, GTZ, FAO, UNDP and government). Local initiatives such as EPAS-run by Jesuits: (Centre d'Etudes pour le Propos it Action social). Confessional projects (Catholic, Kimbagraist, Protestant).

Land ownership.

Existence of cooperatives.

Education for self-reliance especially at Primary, Secondary school levels, Teacher Training Colleges, and Folk Development Center.

Farmers' Co-operatives (Input distribution, marketing, etc.).

AGRICULTURE

Subsidizing fertilizers.

Subsidies and loans to farmers to get pump sets.

Free supply of good quality seeds.

Good cheap land.

Agricultural products of high price (market exportation etc.).

Liberalization of marketing.

“The Star Project”--introduce new agricultural technology to farmers.

Two agrarian reforms have encouraged involvement of farmer as proprietaries of the land, instead of working as laborer.

Annual National Agricultural and Trade Show where a Farmer of the Year is selected (Two categories: Senior and Junior).

Colonization of new areas in the forests for the poor people who live in highlands. The colonization program depends on Agricultural Department. However, most of the time the colonization of forest is unplanned.

Creation of Farming Systems Approach Teams at District Level involving research extension and farmers. This enables identification of real problems limiting Agricultural Production.

Existence of a “Testing and Liaison unit” in Agronomic research conducting on-farm trials with government extension workers and or with direct farmer involvement.

Range of activities: crops production, livestock, poultry, commerce, fish production, transport, agrochemical use.

Export of farm products and retention of some of the foreign exchange.

Field days/demonstrations.

Agricultural Shows.

The only thing that encourage involvement in agriculture in my country is the picture of thousands of hungry people.!

Sustainable agriculture.

Community horticulture nurseries.

Neighborhood horticulture/fruit nurseries.

Subsidies on farm inputs.

Agriculture in my country is very important because there are no other resources .

The potential of the country is big with good soils and many rivers which can provide enough water for irrigation.

There is really only one efficient and good one which really works is the “EMBRAPA”. It has office all over the country but work only with research.

People who are born and lived in rural areas get priority for agricultural education over the urban people.

Agriculture is the only source of income to the majority of people. Establishment of college of agriculture and research institutions are the source of encouragement.

The government try to encourage farmers that they have to face agriculture in different way. Like business, but they don't. On the other hand, there are some institutions which should develop the agriculture but they do nothing important.

Children are exposed to agriculture related studies at primary and secondary education level.

Technical Schools of Agriculture. They are at the High School level of education and provide students in rural areas with technical knowledge in agriculture.

Creation of the Agricultures' Association with the objective of solving the problems they face.

Training of farmers, extension officers and research officers.

Irrigation schemes.

Mechanization.

Any endeavor to increase agriculture production attract farmers.

INSTITUTIONS

Semi-government institutions do give financial loans to farmers identified by Agricultural professionals to be committed to farming, this does not help much as the interest associated with the loans were usually high. Extension officers do render some services but lack of education do limit their services.

Ministry of Agriculture.

University of Agriculture.

Institute of Agricultural research.

Special secondary schools with an agricultural bias.

Foreign training/scholarship

Government is responsible for the purchase of all the agricultural product.

Job market.

FINANCE

Credit facilities.

Cheap credits.

Flour prices.

Recently small scale credit by institution like Griffin Bank are having very positive effect.

Loans and extension services to farmers.

0% interest long term loans. High demand and reasonable prices.

The features include low interest rate financing, provide marketing and pricing the goods, subsidize fertilizer and equipment, and have government agency to help the farmer include provide high quality seed.

Loans to by farming equipment and lands.

Helping farmers by financially advice.

WOMEN

Women's groups.

Women in Rural Areas.

NEGATIVE

At present everything is discouraging.

Projects aimed at improving the production of specific crops.

I think that if we can somehow educate the rural people with modern agricultural technologies, the people will be interested, because they will see that they can get more money using modern technologies.

OTHERS

Freedom to market your produce anywhere in the country. Good transportation system.

Market for the products.

Help poor plan.

Flame plan.

Future engineering.

Family tradition.

Independent profession.

Family planning. The family planning acceptor got better facilities from the government, including: fertilizer, insecticide, etc.

The prices of the products determine investment.

Good return of investment when properly conducted.

Many festivals or functions.

RESPONSES TO QUESTION 30.

1. Are there any unique agricultural training program (such as Young Farmer club(s) in your country that encourage involvement in agriculture?.
2. List of programs. What does the training program do?

Africans

Botswana

1. 4B.
 2. 4B involves youth in running small agricultural projects such as gardening and livestock production.
-
1. 4B Club.
 2. They train youth to manage vegetable gardens; raising goats, sheep, rabbits; tree planting.

Cameroon

1. Yes in some geographic areas-initiated by government (projects) initiated by religious organizations (missionaries). No in other areas of the country.
2. Governmental projects: -allocate land and credit to young farmers (farm implements, houses, money)-Train them in agricultural production in summary private projects: train and assist farmer in small agricultural project such as poultry, small ruminants, vegetable production.

Cote D'Ivoire

1. SODERA, CIDT.
2. SODERA, CIDT Sodera provide training sessions for young people who want to start their own livestock product activities. CIDT has training sessions for rice and cotton producers.

Egypt

1. Youth clubs
2. Rural Area clubs Involve women; training; create awareness and interest among farmers; adult education.

Ghana

1. Yes and No. It was mandatory for every school to have these clubs but since political leaders are sent to so called penal farms and naughty or late comers are made to work in the school farms, the enthusiasm with which agriculture/farming is embraced is falling.

2. The training programs are trying to raise the self-esteem of the trainees, let the trainees be aware that farming is not for those who could not go to the medical school. And that farming is not punishment. In addition to these modern farming is introduced.

Kenya

1. Young Farmers Clubs for high school and college students.
 2. (modeled after U.S. 4-H which caters for primary (elementary) students). They encourage (recruit) members to form a club. Teach them after school; encourage them to have a project at school site i.e. vegetable or fruit nursery, rabbits, hens, goats. When it succeeds members are encouraged to have individual projects in their homes.
-
1. I was exposed to agriculture when I was very young through agricultural clubs e.g. 4K clubs; locational, district and provincial Agricultural Shows.
 2. Farmers training colleges (FTS). -FTC--mainly are technical agricultural colleges for secondary school leavers and then anything to do with agriculture. 4K Clubs--Young farmers trained how to manage farm animals-poultry, growing horticultural crops etc. in small demonstration fields.
-
1. 4K Club Young Farmers Club Expose high school and primary school pupils to agriculture.
 2. Not anymore, however there are youth training centers for agriculture and other vocational subjects; and a supportive ministry/department of cooperatives. Youth training centres provide practical agricultural training to students not training for management positions in commercial or government farms, but those who will work on rural "peasant" farms.
-
1. 4K Club Farmers organize themselves into groups at sublocation or locational level and farmers training centers.
 2. They lay out their strategies during locational meetings called "barnzas" this guidance of sublocational elder(s) or head(s). They set nurseries individually or as groups through which they grow vegetables and other crops including trees used in forestation.

Tanzania

1. Development Centers have an agricultural bias. Target group are primary school leavers who expect to join or continue farming life in their respective villages. The biggest limitation is a limited number of opportunities that are available, usually during farming season(s). Last 6 to 9 months.
2. They learn the following: -Land tillage and proper planting/sowing techniques. -Seed choice and use of inputs e.g. chemical fertilizers or composite manure (and how to prepare them). -Use of pesticides and farm management techniques. -Livestock and poultry keeping. -Financing of agricultural activities and some book-keeping.

Togo

1. a) Agricultural School of TOVE. b) AGBASSA Project. c). OIC d). Farm of AVETONOU.
2. a) Training of youngs as agricultural engineer assistants. b). Training in irrigated cultivation. c). Vegetable production and poultry breeding. d). Hog and cattle breeding.

Zaire

1. I.T.A / I.T.A.V. Institute Techniques Agricoles/Veterinaires (there are high schools oriented to agricultural training. Cooperatives of livestock producers, crop producers (cattle, goat, hogs, poultry).
 2. ITA and ITAV have 2 degrees (practical and research the latter leading to college and university). The practical degree of ITAV train graduates who will assist farmers in learning new technologies and improving local (traditional) methods, and to start their own enterprises.
1. Agricultural "PILOTE" programs.
 2. Teach young farmers basics in agriculture-Get them interested in with workshops.

Central and South America

Belize.

1. Belize College of agriculture awards a 5-acre parcel of land to the Outstanding Student of Year on an annual basis.
2. 4H Clubs geared towards young adults. 'REAP'- Rural Education and Agricultural Projects for Primary school students. Offer an Associate Degree to students. Emphasis on theory and practical aspects of practical agricultural skills to young adults. REAP- Introductory awareness to outdoor gardening and basic sciences.

Bolivia

1. Several Education this are kind of organizations are private or NGO.
 2. I don't know detail; but basically it search new sources of work for young people in the same rural areas where they were to born to avoid or to diminish the migration rates.
1. No need for it. 50% of the population are farmers.
 2. No besides College of Agriculture and Technical school of Agriculture.
1. Yes, there are many.
 2. But they are small and they don't work in coordination among each other (some programs and some are under the management of religious groups, others are non-government organizations or belong to the local University).

Brazil

1. Primary and secondary education have initiation classes on basic agriculture.

2. Rural areas have degrees in agriculture for secondary level of education. Basic agriculture management/technical skills: -machinery-handling/mechanics. -crop production -animal husbandry -farm management -proficiency in other areas: language, communication, math, biology.

1. There is just one called 4S club, similar to 4H here in the US, but it is not very much important now.
2. In the past they used to promoting training and demonstrations units with crops and animal production.

Costa Rica

1. I don't remember their names but I know that there are at least 3 or 4 training schools that are specialized in agriculture.
2. They basically do research to improve quality and yield of very different crops.

Ecuador

1. There are some, but they do not reach many young people.

El Salvador

1. 4C clubs in rural areas.
2. Mainly train young farmers in alternative crops that could be more profitable. Or help clubs to get loan to develop a different kind of agricultural activity like poultry management, swine production, etc.

Mexico

1. I don't know but maybe there are some youth agricultural training programs.

Middle East and Asia

Bangladesh

1. Yes, but not too many.

India

1. It's called "Keishi Bharan" meaning the "House of Agriculture" headed by an Agriculture Extension officer, imparting knowledge to young, enthusiastic groups of farmers.
 2. They impart knowledge in: 1) Scientific way of farming, 2) How to control pests and diseases 3) How to increase productivity 4) How to get better remuneration for the produce. Youth Farmer's candidate. Farming intensive programs.
1. Yes, but I don't know exactly how many programs are funded by the government.

2. These programs try to teach the illiterate farmers to get acquainted with the recent technologies, as it is hard for the traditional farms to adopt the improved technology.

1. Yes there are. Don't remember them as such.
2. Motivate modernization in agriculture and educate farmers towards facilities available to them.

1. I don't know the names.
2. village levels, -district levels -state levels -some involve in political actions too. Discuss common problems. Suggest solutions. Pose questions to research personnel. Most of the training are conducted on discussion basis (seminar).

Korea

1. Yes. "Ganaam Farmers School"-(non governmental organization) "Saemaeul training institute".
2. Teaching new agricultural techniques -moral education--(thrifty and diligence etc.).

Malaysia

1. Yes. A government support program for fresh graduation who are interested to go into agricultural business.
2. MARDI RISDA. Agricultural University of Malaysia. Agricultural Bank of Malaysia. Subsidize of agricultural input like fertilizer, seeds, etc. 1. Giving opportunity to open government land. Use it for agricultural and earn ownership of land after few years. 2. Some bodies provide advice in marketing and producing research in by-products. 3. Provide some capitals and credits.

1. Yes, organizations like FAMA.
2. Teach youths how to manage, grow, market agricultural products.

1. No. Although my country do not have any training programs.
2. but almost every government school at the secondary level have open a class or two for student who major in this course.

1. Only in certain regions (agriculture regions).
2. Applying the technical knowledge which they get from the training or extension. Regular meeting to discuss the suitable program on innovation for certain place.

Nepal

1. There are certain kinds of programs that involve students of grade 8-12.
2. It involves how to select healthy seeds. Maintains chemical composition of soil. Keeping products from infection.

Oman

1. Yes, there is an institute for youth that are interested in agriculture.
2. They teach them the techniques of agriculture.

Pakistan

1. There are few clubs: Such as Sindh Abadgar Tangum, Sindh Hari Lommittee, Pakistan Farmer Association. But mostly they are under control of big breeder so little farmer can not benefit from them.
2. To inform farmers new techniques to improve their field. Help in control of crop diseases and control of animals epidemic diseases. Use of quantity of fertilizer according to the crop requirement and information about high yielding crops.
1. Agriculture training institute, Rural development academy and Agriculture Cooperative Extension department.
2. Give practical training .Expose to new improved methods of production
1. Yes
2. Provide latest information to farmers.

People Republic of China

1. Varied forms.
2. to educate farmers. 2) to monitor occurrence of pests. 3). to gain information about trade of organic products.

Phillipines

1. None, to my knowledge.
2. Most youth organizations are socio-cultural and only indirectly involves agriculture.

Saudi Arabia

1. Yes, training and advising farmers.
2. These kind of programs encourage non-farmers to farm.

Islanders

Indonesia

1. Yes, Student Islamic Association (HMI).
2. National Youth Association (KNPI) Training, Publications, Exchange Program.
1. Karang tauma. Gerakan Tami Maju.
2. Give knowledge and skill to the young farmer. Give information about Government policy in Agricultural development.
1. Yes-Agricultural practical training.
2. -Information exchange.

Mauritius

1. Yes, the Ministry of Agriculture is encouraging young farmers to grow crops on summer vacations. They are giving them all the help they need through youth clubs.
2. Tell them how to raise cattle. Teach them the importance of farming. Give them land to start. Give them necessary funds at low interest.

RESPONSES TO QUESTION 31.

How are farmers needs and problems addressed by educational institutions in your country?

Some problems are used for studying problem-solving techniques. As for needs, some students/faculty work with the farmers i.e. farmers can't afford fertilizers therefore they are taught to make compost manure.

Through research oriented to solving farmers' problems.

Farmers have never addressed their problems and needs. The government through its sole part assesses policies without farmers consent. If farmers could address their needs and problems, there would not be much the problems we have. Farmers are even forced to produce what they don't consume.

Through research institutions and extension programs.

In my country, there are not strong relationships between farmers and educational institutions and farmers participation in the decision process in community development agencies is very poor.

The educational institutions have no part to play directly to farmers but only train student who later work as extension officers.

Ministry of Agriculture collects data and present them to the institute of Agriculture research and to the University for applied and basic researches. Results submitted to the ministry then to farms through extension programs. This communication has not been practiced as expected.

Extension. Public University would open days to educate farmers. Seminars by farming institutions.

To some extent, they are coincide.

Through the Agricultural Extension who liaison with research/educational institutions.

On the paper they seems very appropriate but in practical very discouraging.

Training personnel's. Research

There are agricultural universities, colleges, research institutions and a big extension department, all under government control.

Land tenure, Finance and Marketing

Most of the Agricultural Universities (one each in each state) have a separate extension wing, where the offices are ready to answer any questions that a farmer might have. (during regular office hours, by phone or in person).

The farmer's problem that I observe is farm managerial. In my country, a lot of farmers have lack education. Furthermore, they are also poor of farming managerial. The education that they need is agricultural business. However, the education is the main problem in agriculture in my country.

Not well correlated and cooperated.

Almost all states have exclusive Agricultural Universities, research stations, and extension services connected to educational institutions. There are vocational institutions too.

By doing extension and investigation in the field then doing research to solve the problems by cooperating with government.

Not handle properly. Information transfer is very slow.

There is relationship between farmers and educational institution or research institution, and these institutions give the information to the farmers regularly.

There are many agricultural technical schools in P.R. China.

Poorly addressed, because usually people in charge of policies just think of small farmers as cash crop farmers. (Lack of knowledge of value of farmers.).

At the educational level, everybody has the same opportunities, so I don't think that there is a special treatment to farmers.

The Belize College of Agriculture provides an extension service to the surround villages. (Entire country is not covered) Farmers from further away may seek help and or information from the College extension services.

Not very well addressed but some work fairly well.

These problems are only studied in 'theory'. No practical influence is recommended. This topic is only related to those students in agricultural laws or agricultural education.

First inquiries and diagnosis surveys are done. Then integral development programs are planned and finally, these programs are executed by both planners and farmers.

The ministry of agriculture and the NGO's through education programs and direct involvement with native organizations.

Unfortunately educational institutions do not do much about farmers needs and problems. Some experimental institutions do through extension programs.

For government programs: through extension. For university programs: through technicians. For non government programs: everything is a total mess (they are not regulated, without any clear objectives or goals and coordination among them).

Develop solutions to farmers problems, developed technology is passed to extension and then passed to farmers.

Educational institutions are primarily involved in training technicians, agronomists and animal scientists. Farmers need and problems are addressed by extension workers, cooperatives and research institutions to government projects and to the ministry of agriculture.

Farmers needs are rarely addressed by educational institutions directly. Their role is through supply. e.g. graduates to the Ministry of Agriculture.

The universities and governments extension agencies work together and link farmers to researchers.

1. Teaching modern ways of production. 2. Through research surveys etc. on specific issues by the education institutions.

In educational institutions the needs and problems of farmers are not addressed at all, at least when I was there it was not addressed. (I am out of my country since January 1990.)

We have Bureau of Agriculture Extension but the government workers are not highly motivated due to low salaries.

Providing farmers with credit, imports at subsidized rates etc. Administering a pension scheme for farmers. also insurance of farmers by farmers insurance coop.

By agricultural extension stations, not university.

There is an Agricultural Ministry and an Extension program. Also there are experimental station and research center for specific problems.

On average not very well synchronized! Research institutions are usually "firemen". Solve ongoing problems. Universities with research programs have a more direct approach: improve crop production through breeding new cultivars, crop management.

I think mostly research is for the sake of research. There is need to do the research on actual problems and educational institution showed more assure the students about the problems of farmers.

Kenya Agricultural Research Institute (KARI) is the leading single agricultural institute in the country and whatever research comes up it is channeled to the extension who relays it to the farmers. However, there is a constant involvement of the farmer through the regional research institutes which conduct adaptive research tailored for a specific agri-ecological zones. Numerous field days are held where farmers are invited and given demonstration; short term courses (2 weeks-2 months) for farmers.

There are many ways but the most common is using questionnaire like this. Other is through extensionist.

Not efficiently, educational institutions concentrate most of their research/extension towards those who use technology intensively, which are the minority of farmers. It may sound as a paradox, but because farmers have low educational level they tend not to accept new/modern technologies.

To ask the question in local agricultural stations.

Through newspapers, radio programs and TV programs

Agricultural Research Institutes much as INERA (Institut National d'Esardes et de Recherche Agronomigres) and BUNASEM (Bureau National Semenciea: seeds) provide farmers with improved seeds, cultivars, fertilizers, tillage methods to implement in their fields.

There is no good canal between them.

There are some agricultural institutions in rural areas that help the farmers to get the information and disseminate technology.

Very slightly. Only real importance at the university level

In my country, such kind of need and problems are addressed by officials and or govern agencies within the Ministry of Agriculture mainly; the educational institutions

don't have a direct participation. However, such attention it's not sufficient and efficient for solving problems and needs.

1. Demonstration plots are set at vantage points e.g. near roadsides to farming communities. 2. Open days--farmers are invited to institutions. 3. Farm visits--farmers are taught 4. Survey/follow ups. etc.

Extension services: but not well organized (not directly linked to agriculture universities!).

Demonstration farms, projects.

Grossly farmer's problems are addressed to a large extent--by Agriculture extension. Universities are playing just as training institutions for agriculture graduates.

I do not think they are address by the education institutions, only contribution, as the research status and not education institutes.

1. Organization of farmers open days and seminars at the institutes. 2. Incorporation of farmers in priority selling and problem identification.

The University of Zimbabwe and the University of Africa have agricultural extension program that conduct research aimed at communicating with farmers. There is however a missing link between the efforts of the universities and those of the Ministry of Agriculture.

Farmers training centers advise on seed and nursery resumes etc. -Extensionists (crops, animal, vets, etc.) with administration to identify farmers problems through barazas and recommend solutions through same barazas.-Through barazas, radio etc., farmers advised on land preparation, inputs and production management practices.- Researchers pass findings to farmers via extension.-Parliamentarians raise issues affecting their constituents in national assembly.

Mainly through informal and formal visits to the villages and, more importantly, through research and provision of extension services.

Training extension Agents. In-service training.

-Classroom -Local Radios. -Nation Radios. -TV programs in school. -Ads. - Community Development Agents in Agriculture.

The farmers needs and problems are handled by their union which deals strictly with the Ministry of Agriculture. Not one single educational institution in involved as a third party. [IMAGINE SUCH A POLICY].

Needs and problems are awkwardly tackled. There is no real cooperation between both farmers and educational institution, and the latter are rather inclined to provide a fundamental and less practical training.

I have not clue! But from what I heard the Institution does not help a lot.

Agricultural field officers are paid to disseminate information to farmers. Banks have special loan officers to help the farmers in terms of finances, which help in the work of educational institution trying to modernize agricultural practices.

TV agricultural programs. Free consultation from the Ministry of Agriculture everywhere. Everybody now aware the crisis caused by Uruguay round of trade(Our agricultural products have to compete chief imported products). The farmers no longer stay behind tax barriers (for imported products).

Farmers need a stable life and fixed income.

In agricultural educational institutions, such as agricultural college. Professors know quite well what techniques farmers need and what problems exist. Most problems addressed by agricultural educational institutions can meet the farmer's needs.

Through extension programs. Also through including agriculture in curriculum. We have the bodies in question so that handle this. Sometimes officers go to rural areas to be with farmers on regular for advice. During disaster or crop failure farmers given help. The educational institutions also help to introduce new technologies and chemical and biological inputs.

Sending graduate students to the remote villages. There is one agriculture university (Bangladesh Agricultural University) engaged in providing education in agri-related fields and also conducting research and training programs to address the problems of agri-sectors.

Not much, educational institutions still take some time to address this problem.

There are agricultural research institutions, funded by the government that do most of the research. Most universities also have agriculture departments. Both of these have outreach programs to pass on research to farmers.

The country has only one Agricultural Institute. Though several of my friends are studying there, I am unable to mention the exact role it is playing. But I am certain it is considering the needs and problems of people in agricultural field.

As for I know, there is nothing that addresses the problem of the farmers in educational institution.

The government have created research centers near to the most important agricultural areas.

We have two universities where all of majors are related to agriculture in one way or another. They also do some research. Those universities and the agriculture department count not help farmer because farmer work in a traditional ways.

I don't know for sure. I suspect they don't do anything about it.

Educational institutions do not pay to much attention on it (unfortunately).

Only at specific schools dedicated to agriculture techniques teaching.

The agricultural schools make research and extension in order to solve some problems.

They are some how addressed by having some seminars once in a while.

Right now farmers are mostly uneducated. They do their job using experiences. With the programs developed by the government this might change: People (farmers) are being informed of the new technologies available these days.

RESPONSES TO QUESTION 32

Strategy for agricultural and rural development should include development of appropriate technology to assist modernization of agriculture? Why or Why not.

Should: for example, since pesticides are becoming expensive and unavailable, then technology should look into disease-resistant varieties.

Appropriate technology is less costly and can be adopted with much ease.

Any development should involve appropriate technology if it is to happen. I hope that appropriate technology you mean a simple one, efficient, and that can be adapted to changing conditions. I also hope that modernization does not necessary mean to be compared to that of western countries. Any technology that improves production on small farms does not necessarily need tractors and other complex equipment.

Yes, necessary for a more extensive agriculture.

Because of efficiency. If the roads are improved there will be easier access to the urban centers where the market for the produce is. Also other infrastructure like phone, fax etc.

USAID technology transfer in Egypt was inappropriate and does not fit the situation there. Therefore, the government established extension centers for transferring appropriate technology to farmers based on their resources and conditions.

Technology already exists--But most of it is not implemented.

No, because the bigger problem is not the modernization but honesty, sincerity and devotion of the agencies i.e. government.

To increase production efficiency.

Each country has its special problems and even within a country have different regional/local problems. Which can only be addressed by indigenous technology development. Drip irrigation in Israel is the best example.

Yes, to increase production and income.

In a country like India, where most farmers do subsistence farming. The more important thing is to give a suitable political and economic setting to do agriculture. With the existing technology rather than modernizing agriculture. Most of the farmers have

very small holdings. The few farmers who have huge land holdings have the access to technology and modernization anyway.

Yes, I agree with the statement. Improving technology will affect increasing unit capacity. However, improving the technology should be followed by another program such as land reform etc. My reason is improving technology without another supporting program only increasing disguises employment.

Yes, there will be no modern agriculture without modern technology.

Why: Modernization of agriculture is must. But simple technology transfer from developed countries will not help. So development of appropriate technology is the key to modernize agriculture in developing countries. Why not: I cannot think of anything except development needs substantial capital, interest and enthusiasm.

Because in order to agricultural sectors efficiently and effectively we need appropriate technology. In order to achieve this we need not only strong basic agriculture but also technology as well.

Introduction of proper machinery and optimum use of impact for maximum profit.

Yes, I agree. Agriculture is broad scale, includes technology related with post harvest activities.

Yes, because modernization of agriculture depends on technical development strongly.

I don't understand the meaning of "modernization of technology". But I agree that we need to develop appropriate technology. For example, small farmers that produce basic crops/staples on hillsides terrain with decaying fertility. Urgently need to improve fertility of soils., Is the introduction of local legumes (as cover and fertilizers) in the traditional systems a good alternatives?

Yes, because the use of appropriate technology increases the productivity and increases efficiency.

Modernization of agriculture is geared towards increased production and maximizing output from a unit of land. In developing countries, both of these are important objectives primarily because of rapid population growth!.

Yes, because of continuity with other section of economy.

Yes, we need to have a parallel (at the same time) development of agriculture and technology. We need to industrialize our productions otherwise we will continue exporting natural products and improving industrialized products. Modern technology is

necessary to increase production. I understand modern agriculture as that which allows to increase the production and at the same time preserve the soil and water resources. (sustainable agriculture is not necessarily equal to a 100% mechanized agriculture.).

Yes and not. Yes, in terms of development of appropriate technology which basically means sustainable agriculture in the new focus of agronomist and people involved in agriculture. Not, because modernization of agriculture is harmful to soil, and other natural resources. Modern technology is not in harmony with sustainable agriculture.

Yes, farmers have survived for hundreds of years without modern inputs and they are naturally reliant to adopt new technologies which are input dependent.

Yes it should include because it would save time and money.

Yes, because appropriate technology is the proper approach to solve many problems in agriculture, for example: in areas where growers have small buds, they don't need a tractor but improved tools.

Because appropriate technologies are easily adopted which would improve economic level of rural farmers. After this farmers are able (financial) to adopt modern technologies and have modernize agriculture.

Yes. You can't improve agricultural production without developing appropriate and sustainable technologies to assist agriculture modernization's.

No. Can't succeed by just providing technological packages to farmers, need to invest on roads, schools, health centers in rural areas; need to guarantee prices and market for agricultural communities etc.

Yes. Technology by itself does not solve a problem. It has to be appropriate in order to be adopted by farmers. Very few of the research done in many countries (developing) address real day to day problems of the farmers. Some of us go with western solutions to Africa's problems. I am not saying that western approach is bad, but it is not within the resources of our farmers.

"Hoe and cutlass" farming can no longer support the rapidly increasing populations in the "third" world.

Technology will be appropriate economical technically and socially acceptable For high yields.

Yes, appropriate technology is necessary because USA farming scale is so huge compared to some, including us developing countries.

To make farming more efficient and profitable.

Yes, because agricultural sector is open to the rest of world which it is working base upon the competitors.

This process should start with an education program to demonstrate farmers that some technologies adapted to their environment can improve their production/productivity. This could be demonstrated in "on farm" demo plots with farmer leaders. Start simple, but surely farmers need to foresee a benefit before adapt a new technology (new cultivar).

Technology development awarding to local needs and problems is a major necessity in developing countries. Because technology from developed countries cover their own problems and needs.

I agree with this statement; some of the agricultural technology adopted in Africa have been developed for temperate regions and cannot work in tropics. Cheap and affordable technology should be designed to fit the needs of the various regions.

Yes, but modern technology should be given only to those farmers who have educational level to receive it. Most of the cases, modern technology if given to poor farmers can be frustrating.

Yes, because only local assessment of different (and foreign) technologies can make the modernization effective.

I have mentioned that -Pakistan is Agricultural country-still farmers are working old method of cultivation is cropping. It needs change to go with rest of developing countries for this purpose we need strong strategies in appropriate technology.

Because people need to increase their production and be able to operate and use technologies that are available. Need to develop, repair, maintain and produce spare parts for equipment. Improve process of production.

Yes, because is the only way to increase profit.

Yes, because modernization (i.e. mechanization) is needed but importing foreign technology is not the real solution.

Strategies for such development is the core and also the goal. However, although there are availability at technology developed by research agencies, these can not be applied totally by the farmers because of lacking of an appropriate extension program.

Food production is by a substantial population of most third world countries than crude methods. This leads to variability of crops and inefficient use of the resources. Appropriate technology gears at modernization Agriculture is therefor welcome for it will lead to fewer farmers that will be required to efficiently use the limited resources.

-Technology transfer without adaptation to the local problems is not the issue. Appropriate and well adapted technology to the area improves the existing technology for a modern one needed for modernized agriculture.

Without development of appropriate technology no real progress can be made.

Yes, it has proved to increase all round development of the farmer.

Depends on how modern agriculture is defined. Is it mechanization or is it use of biotechnology or use of new crops?

I believe African farmers need to be liberated from the unnecessary hard hoeing and plowing (as other operations) that are best done by machines. Developing countries need to develop an indigenous industrial base that supports agriculture.

*Import technology is expensive--saving on foreign exchange. *Agriculture, basically small scale--optimization of production and labor use and creation of employment. *Diversification of production and processing of both food and cash crops--self sufficiency on food for domestic and export. *Agriculture being backbone of economy should be premier of industrialization.

Mainly through informal and formal visits to the villages and, more importantly, through research and provision of extension services.

Training extension Agents. In-service training.

-Classroom, -Local Radios, -Nation Radios, -TV programs in school, -Ads, -Community Development Agents in Agriculture.

Make farming an enjoyable activity with less toil but better results. Needs increased productivity i.e. more yield per hectare per person since good/arable land is fixed as population grows rapidly and its fertility has deteriorated over years. -Appropriate technology is key to food self-sufficiency (rural and urban needs), also for foreign exchange earnings and for industrialization (raw materials, etc.). Agriculture becomes an engine of growth. -As farming becomes modernized, more labor can be released for the industrialization process.

Yes, to start with what we have.

I strongly agree that appropriate technology must be included to assist modernization of agriculture. Just imagine how much one single machine can do in a short period of time as compared to manpower?

Absolutely, because some agricultural and food processing issues are specific to developing countries and these problems should be addressed by adequate and purposely worked out solutions.

Yes, these countries need modernization because for this main reason: productivity! They need to increase their productivity.

I think both go hand-in-hand. Simultaneous development of both will provide tremendous boost to production and increased awareness.

To provide the best ways know today for high quality produce. to maintain commercial agricultural projects in the private sector.

I agree because with new technology one can search for high quality product and reduce space because population in our world are increasing.

Of course, it should be modernized to haste up farming and ease on normal labor.

To increase productivity. -To survive from recent agricultural trading war (to protect from relatively cheap foreign products).

We don t have agricultural land any more because it is being confiscated by the Israelis.

Yes, traditional agriculture in developing countries is low efficiency, farmers just get a little more than enough to eat. So, not just farmer s income is low but also industry do not have enough raw materials. Agriculture is part of national economy. To modernize the agriculture needs appropriate technology to help.

True; these technologies should include the mechanical, chemical and biological. On the other hand pricing control is at the same time important to be competitive. For example agricultural product from Malaysia has to compete with that from Thailand. Through this development, Malaysia can improve its agriculture sector.

Because our demand is to have huge amount of production from relatively smaller size of land.

Yes: development of appropriate technology is an essential tool to disseminate/or to help adopt the modern technology developed in other advanced countries. It has been the experience over the years that local socio-economic setting is vital for the successful use of modern or better technology.

Should, traditional way of agriculture is not able to sustain the needs of today's demand.

It is important to use appropriate technology as blind use of technology can lead to a number of problems. As each area and problem is unique, unique solutions are needed. Also the goals of modernization may differ from place to place.

Yes. Because what I see in Nepal is farmers following age-old traditions in farming. The productivity can be significantly raised by exposing them to new technology for farming.

Because the technology that we are using is primitive. Hence the output per acre of land is half that from developed countries.

No comment.

To improve the productivity of farmers thus improving their standard of living.

I agree, without the best means, strategy plans cannot be carried out.

Yes, because appropriate technology increases life expectancy of soils and also it can be used for improving eroded-soils.

Yes, we can no longer continue to apply traditional method to the agriculture. It is necessary to become the agriculture in big business so that we can produce food for supplying the whole country and also export it.

It should because technology increases productivity and diminishes costs.

Yes, because if we want to be competitive in the market we have to develop the appropriate technology to improve not only the quality of the agricultural activities but also the living conditions of farmers.

Yes, because only that way the modernization of agriculture can be done with means adjusted to each area's reality and making people involved in the decisions.

Yes, because through the development of new technology, the food production can increase. The developing countries try to have many problems due to an increase in population and the food is not sufficient. Therefore, it is necessary to or to transfer appropriate technology.

It should so the challenges can be answered.

Yes it should. It will increase productivity and help the economy.

RESPONSES TO QUESTION 33

Please feel free to write any additional comments or suggestions pertinent to the study.

Hope this research will allow you to come up with suggestions for the US universities in a way that they run or incorporate programs that will help us meet training needs for our countries. Also to have a continuous working-relationship as we struggle to solve our problem through new technology and newly-acquired knowledge.

I think it would have been better to focus questions on countries of respondent rather than asking questions on the whole LDC's. For example, to some extent, agricultural problems in Ethiopia are different from those in Indonesia. Also students would tend to give relevant answers to questions related to their individual countries compared to questions on the whole LDC. I have the impression that the scope of your study (LDC) is very large since it involves Africa, Latin America, Asia (excluding Japan) etc. Why not limit yourself to say Africa?

-Training of agricultural officers should be done or handled by the department of education, to raise the image of agricultural qualification, especially in developing countries where diploma training was under agriculture department. -Land tenure has been a problem, communal land. -Tenure system as in many African countries has caused more harm to environment with low production. -Small scale farming accompanied with farming systems research can be exploited to the limit in developing countries--Government policy makers should be well trained, and policies should be toward seeking incentives for farmers to produce.

To move toward an upper level of development, developing countries must not only emphasize the study of agricultural services but also change the way they think about agriculture.

I think more than most of the factors countries' resources which can satisfy the economical (financial) needs and demands for development overall is the very (bottleneck) item necessary first of all for a country to have to start with. Without money good plans, policies, educational research and other programs are somehow doomed to failure.

Consideration of farmer to incorporate mechanization, especially in the developed countries.

Students study abroad to go back and assist in development. Land corruption is over system. for example coffee farmer in Kenya have been frustrated by poor pay despite of the large earnings for Kenya coffee.

the world is to see the agricultural sciences as a tool to develop a sustainable agriculture that can preserve the national resources and diminish the destruction of our world.

Interesting study that hopefully will help in some way to improve the agricola sector in developing countries.

The social aspects should be taken into account i.e. when trying to solve the problem of small lands/growers by supporting extensive agriculture, what the most of growers will do should be considered.

Students from developed countries should do research for their MS\PhD programs which solves agricultural problems in their countries.

I feel that most international students in agricultural universities in the USA (especially from Africa) sent for training by their governments through USAID or other related agencies are concentrated in the area of agronomy, pathology...It should be especially important to also send students in the area of ENGINEERING (i.e. agricultural, mechanical, electrical...). So that they can start designing and making or adapting simple tools to help farmers in their own countries. The governments should also assist and encourage private enterprises (for farmers & engineers). This will have a definite positive impact in both agricultural and industrial development in developing countries.

1. I believe that most of the problems in Africa (including agricultural problem) arise due to lack of stable and democratic government. Regardless of the number of Agricultural institutions or good Agricultural policies a country may have, there will be no progress unless the country is stable. 2. Western Food Aid is no solution to Africa's food problem. IT is unfortunate that many African countries rely more and more on food aid rather than trying to be self-sufficient. 3. In order to enhance agricultural department other services such as infrastructure, health, marketing etc. need to be developed.

1. In my opinion, the number one problem of Agriculture in Ghana has to do with preservation and distribution and the subsequent reduction of price differences within different parts of the country. 2. The young ones don't want to go into farming because there hasn't been nay big technological breakthrough in our farming methodology. 3. Because of the way it is practiced, it does not attract any one as his/her dream profession.

Agriculture plays a very important role in the developing countries. However, the major problem that should be addressed is population control as agriculture is improved and gradually to shift to industrialization.

Farming in our country are such in a smaller scale compared to that in the USA. A small-scale farmer equals 4 Hectares; so appropriate technology is necessary. The big farmers are so few and mostly owned by multinational corporation (Dole, Del Monte).

I hope you send me a copy of your results before you leave. Congratulation in advance.

Good questionnaire.

In the developing countries the big hurdle is monopoly of big farmers, who utilize the big amount of government resource and they are less than 5% of the farming community. The second biggest problem is farmers resource that are very little and government helping programs are operated by the corrupted officials. The availability of fertilizer, tractors and other machines should be very easy and at local level.

I really appreciate your effort. It will be great if you let me know (or give a brief summary) of the results of your study.

The general attitude of developing countries to get aid from developed countries should be discouraged. -Aid from developed countries should not be in the form of food but in the form of any means (personnel, capital, training, etc.). e.g. rotary scholarships. - Rural people should be encouraged to adopt modern agriculture. They should be involved in research. Subsidies should not play a major role in agriculture of developing countries.

In the questionnaire I think you should include the religion of the respondent, because of people who are very core about religion will consider that the religion is one of the factors which may influence their thought. If you put the religion as one factor in this questionnaire I believe you will get little bit different answers relating to the questions you ask.

Your study is very useful for developing countries. Most developing countries have agricultural background; therefore, agriculture is the most important asset to support their economy.

We need to train people that could better understand the commercialization practices and help small farmers (majority) to get better prices for their products. Cash crop farmers (few and rich) should have a special tax and the money be used in vocational /technical education of young farmers, there is need for doing something so that the big companies can sell agricultural inputs as fertilizers to small farmers. Finally students like us exposed to "high technology", should look for the application of "tools" that can help under our conditions. Trying to "replicate" things have been proven to be useless and disappointing.

I really encourage you to consider very carefully each answer and to take in consideration that they were answered considering only the characteristics of countries such as Bolivia, Ecuador, Peru and Argentina. These countries have similar characteristics related to climate, economy, people, customs and government. The new tendency around

Agricultural is not longer a close sector every decision took will affect the other sector no only in our own country but also worldly.

I just would like to say that policies or new technologies "by themselves" will not make an impact on agriculture practices unless farmers realize that they can benefit from them. It should be a balance between subsistence farming/production farming. This will vary from country to country. I believe farmer will always adopt "new technologies" if they have a good understand of the changes and benefits involved.

Each country in Africa need to have it's strategic plans for the production of the various commodities over a long time period. The social economists should identify the root course of agricultural problems in Africa. One thing I know is that our Agricultural policies do not promote the small farmers and also certain types of traditional crops. It is the high time the government come to reality and leave out policies inherited from colonial governments and adopt what is important for us. I do not see why we should be growing export crops such as tea, coffee, etc. if at all we are unable to grow enough maize and other cereals for our people.

Attitudes (of people) toward agriculture in countries such as Zaire and Congo are negativist. Students who major in Rural or Agricultural Economics in Zaire are mocked by their colleague who choose other fields. I remember some fellow who used to nickname the Department of Rural Economics (University of Kinshasa) as the Economics of "Mamioc", something Derogatory. End Mobutu's regime has been detrimental to the Zairian Agricultural sector. Rural areas equal hell where opponents were banned. Peasant or Villager is even synonymous of an insult compared with "urban". With such mentalities Zaire import food (rice, corn ...) whereas it does not have to. Feel free to ask for some explanations. any e-mail C578008@mizzou1.missouri.edu.

You should do your questionnaire a little more explicit. Mainly in the first two sections.

It is very important to know how the agriculture must be improved in our developing countries. Above all, when we trying to comparing our agriculture vs. the agriculture belonging to countries of the "first world". We have a lot of necessities which must be solved throughout agriculture, our main source of food and life. We have to enforce our educational and agricultural agencies toward and efficient spirit of service, honest and integrity, combining these aspects with an appropriate technology and outstanding extension programs, we will have a key for solving our main problems: hungry and misery.

I hope the results of this most important research will not be shelved like others. I have often had the notion that developing countries should not target all the farmers, but to set our research strategies towards modernization. It is obvious that our farmer provided in its resources should be able to produce more than the farmers provided with

similar resources. Education should therefore be paramount: farming should be a business as well as a hobby. It is not to be for punishment.

Until the people particularly educated persons deeply involve themselves in the development work from within their heart, no real progress can be made. This is the reason developing countries are not making any progress.

Africa and other developing countries need to wean themselves from a "culture of dependency" on foreign aid. We have the resources, agricultural, economic, natural and physical to develop solutions to our problems. The industrialized world has no interest in Africa so long as we do not have the cash to exchange products with it. Africans, should stop sitting on their brains and start working for themselves. Promote ECOWAS, PTA and SADCC and remove unnecessary trade and cultural exchange locations.

The following are burning comments. i). We (Africans) must stop expecting (loans and) food aid/gifts/ subsidies from others. ii). We must start doing what others have/are doing to be sufficient in food. a) Identify priorities-top most- sufficiency in food. use money (whatever!) to grow the food rather than importing it. b) Plan well--do not blame weather--have irrigation; research; have farmers produce food (give them advice and inputs and input mechanisms; ensure good prices--most important incentive can store the food; have tight controls or check on traders that exploit farmers--prosecute or hang regardless! iii). We have many items in the agenda--but start now with food. Meddling with food production should be made a crime. NB: "African farmers as I know them, work very hard. They have been failed by their governments through poor policies and exploitation". iv). We must stop mixing domestic problems and international issues. Let's think clearly and stop being misled. v). We must stop being feeble. African can think, plan and work hard. So we must accept our responsibility in the world of nations to think, to plan, and to work constructively. **DO IT OR DIE! LET US NOT TRY TO REAP WHERE WE DID NOT SOW.**

-Most of the agriculture in developing countries has been entirely dependent on weather/rainfall--i.e. rain-fed. Droughts have thus resulted into economic growth instabilities, etc. Hence need to develop simple small-scale irrigation technologies, resistant crops of emergency grain reserve programs both at the national and local levels. - Agricultural pricing policies need be supportive of efforts to raise agricultural productivity and agricultural, production. -Marketing and distribution systems if left unreformed in most developing countries may counter other positive efforts to improve agriculture. - Rural infrastructure--especially transportation and storage facilities need to be improved simultaneously. -Adult illiteracy and especially rural illiteracy if left to continue will, as always, continue to impede agriculture growth and development.

To make agriculture not dependent on rain and government interference both appropriate technology, rural policy should be developed. Modern technology and education is also important., Things are intertwined. It takes more than one area specialist to solve problems of developing agriculture.

I think one of our biggest problems is that we only produce what is essential for our survival. In order for us to compete and get the best out of agriculture, we have to concentrate on producing what the international market needs. Let us spend more money on research and technology, educate and train our farmers, give them more incentives and privileges and prepare them to adopt to the changes in strategies to come.

The biggest problem I see in our country is illiteracy. Since farmers are illiterate and usually poor, there are hundreds of others trying to exploit them. They seem to get very little rewards for the manual labor they do. Increased social awareness and trying to kindle people's ability to think will definitely help. Development of effective mass communication is needed. The western governments should increase pressure on governments of developing nations to work more effectively to improve the situation of the rural people.

It is time for developing countries to concentrate on successful agricultural projects that can feed the population rather than concentrating on reducing the population.

-In order to ensure stable agricultural production, first of all, have to achieve irrigation water system. -In order to protect agriculture from world wide major crop dealers, agriculture has to be diverged and concentrate to the suitable products for their own country.

1. I am wondering if you would include territories under occupation in your study.
2. We don't have agricultural land any more in the West Bank. It was confiscated by the Israelis. What we have is very small pieces of land which relies on winter rain. In these lands we basically grow wheat, barley. The main product in the West Bank is olives. And we know how to take care of it so we don't need any technology. The situation in the West Bank is, I think, an exception to your study.

No comment.

Studying agriculture science is no doubt important, but areas that involve sector is probably more. No country in world reach the status of developed country through agriculture. Agricultural process in LDC is necessary but not sufficient for development.

To the developing countries, agriculture would be the important source of income. But it cannot increase the living standard of people substantially., So intensive industrialization based on the productivity of primary source is very important to the developing countries.

Sorry, I don't know too much about agriculture because my family is not working in farms.

My country, Taiwan, has very successful agriculture history. If you are interested in developing countries' agriculture. Taiwan is a good model that you can get lots of information and technologies.

Please contact department of agriculture in Taiwan the president of agriculture department was a PhD at Purdue University in USA.

Nepal, a mountainous country, is unable to get rid of traditional farming partly because of geo-social structure and partly due to government policies. The need for agricultural education is not fault by farmers and those who are educated also are not able to spread their knowledge in the rural areas. For countries where 90% people are farmers government should give strong stress to the education, needs, problems of farmers and come up with special programs specially designed for developing countries like ours.

I am an engineering student and don't have much exposure to the details of the agriculture education.

I can't give you accurate information about farming in my country, so I prefer do not comment about those topics.

In Mexico, most of the land able to be cultivated is in hands of the Mexican government. So, bad policies of the present government have stopped the development of agriculture in Mexico.

Many individual and collective interest keep agriculture from developing in the developing countries. There are social, politic, economic, and even racial and religious issues involved in the problems of agricultural and rural development in the developing countries. For example, in my country there are groups of interest that control the production, distribution and appraisal of agricultural products.

Due to the production of oil in my country, we have not paid too much attention to agriculture (unfortunately). Now we depend a lot in foreign countries to feed our people.

It is important that all the international students be concerned in applying or transfer technology to our countries in order to solve the problem. It is necessary that all of us be evolved in educational, political or research problem. All the problem on agriculture, at least in my country, can be solved if the political, educational and research do a good job.

I am not very familiar with all the programs being offered. But my father and most of my relatives are in farming. They do get a lot of help from the government in terms of subsidies. But there is still more to be done. Farmers are very poor. They lack education as well as funds. They need all the help they can get.

APPENDIX D
IRB Approval

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 06-28-94

IRB#: AG-94-034

Proposal Title: ANALYSIS OF ATTITUDES AND PERCEPTIONS OF INTERNATIONAL STUDENTS FROM DEVELOPING COUNTRIES TOWARD STUDYING AGRICULTURAL SCIENCES AND NATURAL RESOURCES

Principal Investigator(s): James P. Key, Baba M. Adam

Reviewed and Processed as: Exempt

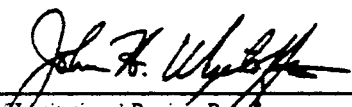
Approval Status Recommended by Reviewer(s): Approved

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING.

APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.
ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for Deferral or Disapproval are as follows:

Signature:


Chair of Institutional Review Board

Date: June 30, 1994



VITA

Baba M. Adam

Candidate for the Degree of

Doctor of Education

**Thesis: ATTITUDES AND PERCEPTIONS OF INTERNATIONAL STUDENTS
FROM DEVELOPING COUNTRIES TOWARDS AGRICULTURE
AND STUDYING AGRICULTURE**

Major Field: Agricultural Education

Biographical:

Personal Data: Born in Maiduguri, Borno State, Nigeria, March 3, 1958, the son of Alhaji Adam and Hajja Yagana Ajiram Adam.

Education: Koranic School, 1963-1976; Graduated from Yerwa Government Secondary School, Maiduguri, June 1977; received Associate in Science degree at Miami-Dade Community College, Miami, Florida, May 1979; received Bachelor of Science degree in Agriculture December 1987; received Master of Science degree in Agricultural Education, July 1990; completed requirements for the Doctor of Education in Agricultural Education in July 1995 at Oklahoma State University, (OSU) Stillwater, Oklahoma.

Professional Experience: Apartment Assistant, OSU Residential Life Family Resource Center, July 1991 - Present; Research Assistant, Oklahoma State Regents For Higher Education, 1992 - 1994; Coordinator, Graduate Seminar Class (AGED 6100) Agricultural Education Department, Spring 1992 and 1991; Coordinator, International Leadership Conference, International Council of Tulsa, November - January 1990 and 1991 Graduate Research Assistant, OSU Center for International Trade Development, 1988 -1990.

Activities: Graduate Student Association Representative, 1994 - 1995; Won the primary of 1992 OSU Student Government Association (SGA); SGA Family Living Senator, 1989 - 1992; Chairman of SGA Academic Affairs Committee, 1991 - 1992; Oklahoma Intern Legislature (OIL) Senate, 1992; Chairman, All African Research Symposium , 1992; and the President of Nigerian Student Union, 1983 / 1984

Award: 1992 Student of the Year. Oklahoma State University International Student Organization