

**AGRICULTURAL KNOWLEDGE OF STUDENTS AND THEIR**  
**AWARENESS ABOUT THE ROLE OF UNIVERSITIES IN**  
**DEVELOPMENT**

**REGIONAL AND LOCAL DEVELOPMENT STUDIES (RLDS)**

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**AGRICULTURAL KNOWLEDGE OF STUDENTS AND THEIR  
AWARENESS ABOUT THE ROLE OF UNIVERSITIES IN DEVELOPMENT**

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## TABLE OF CONTENTS

<b>ACKNOWLEDGEMENTS.....</b>	<b>i</b>
<b>LIST OF TABLES.....</b>	<b>IV</b>
<b>ACRONYMS.....</b>	<b>V</b>
<b>ABSTRACT.....</b>	<b>Vi</b>

### CHAPTER ONE: INTRODUCTION

1.1. GENERAL BACKGROUND	1
1.1.1. Agricultural Education, Research and Extension in Ethiopia:	8
1.1.2. The Current Development Policy	10
1.2. STATEMENT OF THE PROBLEM	11
1.3. PURPOSE AND OBJECTIVE	16
1.3.1. Specific Objectives	16
1.4. HYPOTHESIS	16
1.5. RESEARCH QUESTIONS	17
1.6. SIGNIFICANCE OF THE STUDY	17
1.7. LIMITATIONS OF THE STUDY	20
1.8. ORGANISATION OF THE STUDY	21

### CHAPTER TWO: THEORETICAL FRAMEWORK

2.1. DEFINITION OF CONCEPTS AND RELATED THEORIES	22
2.2. FOOD SECURITY AND AGRICULTURAL EDUCATION.	25
2.3. THE ROLE OF UNIVERSITIES IN DEVELOPMENT:	26
<b>2.3.1. GENERAL PERSPECTIVE</b>	<b>26</b>
<b>2.3.2. SPECIFIC PERSPECTIVE</b>	<b>28</b>
2.3.3. Potential Role of Universities in Agricultural Development	29

### CHAPTER THREE: METHODOLOGY AND PROCEDURES

3.1. STUDY DESIGN AND METHODOLOGY	33
3.2. STUDY AREA AND POPULATION	33
3.3. PROCEDURES	33
3.3.1. Sampling Techniques	34
3.3.1.1. Sample Size Determination	34
3.3.2. Research Instrument and Validity	36
3.3.2.1. Variables and Measurement	37

### CHAPTER FOUR: DATA ANALYSIS AND FINDINGS OF THE STUDY

4.1. STATSTICAL TOOLS USED	39
4.2. RESULTS	39
4.2.1. Demographic Characteristics of the Sample Students	39
4.2.2. Agricultural Knowledge of Students	42
4.2.3. The Knowledge of Students about Agricultural Higher Education	45
4.3. HYPOTHESIS TESTING	47

4.4. AWARENESS OF STUDENTS ABOUT THE ROLE OF UNIVERSITIES	
54	
CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS	
5.1 CONCLUSIONS AND IMPLICATIONS OF STUDY	59
5.2 RECOMMENDATION	63
rEFERENCES	66
APPENDICES	
Annex 1. INSTRUMENT OF THE STUDY	77
Annex 2. SELECTED EXPERIENCES OF INTEGRATING UNIVERSITIES	82
Annex 3. AGRICULTURAL KNOWLEDGE AS AN ACADEMIC STANDARD	83

## LIST OF TABLES

PAGES

<b>TABLE 1</b>	Demographic Characteristics of Sample Students.....	41
<b>TABLE 2</b>	Agricultural Knowledge Scores .....	44
<b>TABLE 3</b>	Knowledge Scores of Agricultural Higher Education.....	46
<b>TABLE 4</b>	Knowledge Scores of Food Security.....	47
<b>TABLE 5</b>	Mean comparison of knowledge Scores on the bases of High School Agricultural Education background.....	48
<b>TABLE 6</b>	ANOVA Test for the Data provided in Table 5.....	49
<b>TABLE 7</b>	Mean comparison of knowledge Scores on the bases of Place of Birth.....	50
<b>TABLE 8</b>	ANOVA Test for the Data provided in Table 7.....	50
<b>TABLE 9</b>	Independent Samples Test for Significant Difference of the Data provided in Table 5.....	51
<b>TABLE 10</b>	Independent Samples Test for Significant Difference of the Data provided in Table 7.....	52
<b>TABLE 11</b>	Modelling High School Agricultural Education background as an Independent Variable by OLS.....	53
<b>TABLE 12</b>	Awareness of students about the Role of Universities in Development.....	55
<b>TABLE 13</b>	Mean Awareness Scores on the bases of High school Agricultural Education background.....	56
<b>TABLE 14</b>	Mean Awareness Scores on the bases of Place of Birth.....	57

## ACRONYMS

<i>AAU</i>	<i>Addis Ababa University</i>
<i>AET</i>	<i>Agricultural Education and Training</i>
<i>AKIS</i>	<i>Agricultural Knowledge and Information System</i>
<i>CSA</i>	<i>Central Statistical Authority</i>
<i>ECA</i>	<i>Economic commission for Africa</i>
<i>EPSP</i>	<i>Equal Probability Selection Method</i>
<i>ESTC</i>	<i>Ethiopian Science and Technology Commission</i>
<i>EU</i>	<i>European Union</i>
<i>FAO</i>	<i>Food and Agricultural Organisation</i>
<i>HEIs</i>	<i>Higher Education Institutions</i>
<i>IAR</i>	<i>Institute of Agricultural Research</i>
<i>JU</i>	<i>Jimma University</i>
<i>LDCs</i>	<i>Least Developed Countries</i>
<i>MOA</i>	<i>Ministry of Agriculture</i>
<i>MOE</i>	<i>Ministry of Education</i>
<i>MOFED</i>	<i>Ministry of Finance and Economic Development</i>
<i>NAESs</i>	<i>National Agricultural Extension services</i>
<i>NARIs</i>	<i>National Agricultural Research Institutions</i>
<i>NGO</i>	<i>Non-Governmental Organisation</i>
<i>OLS</i>	<i>Ordinary Least Squares</i>
<i>SPSS</i>	<i>Statistical Package for Social Sciences</i>
<i>UN</i>	<i>United Nations</i>
<i>UNDP</i>	<i>United Nations Development Program</i>
<i>RLDS</i>	<i>Regional and Local Development Studies</i>

## ABSTRACT

The objective of this study was to assess and compare the difference between the mean agricultural knowledge scores of first year university students, when grouped by their high school agricultural education and place of birth background, and to determine their awareness about the role of universities in development particularly in solving the problem of food insecurity in Ethiopia. A sample consisting of 148 students was selected using Equal Probability Selection Method. The study instrument was developed, validated by group of experts, tested and administered to the sample of students. A survey was conducted in April 2003. The means comparison, ANOVA and Independent Samples t-Tests using SPSS PC version10 was employed to analyse the data at 0.05 alpha level.

The dependent variables (summated scores of agricultural knowledge ranging from 0-30 and summated score of awareness ranging from 1-5) and the independent variables (dichotomous values of high school agricultural education and place of birth background) were entered into mean comparison and ANOVA test model. The result revealed that there exists mean difference between both test groups. Students with high school agricultural education scored  $M=19.6$  and with no agricultural education  $M=12.8$ . Students with rural background scored  $M=17.5$  whereas with urban background scored  $M=16.4$ . The mean difference between students grouped by their high school agricultural education found to be significant ( $P=0.00$ ) where as the mean difference between students grouped by their place of birth revealed to be not significant ( $P=0.189$ ). This result was further verified by using Independent Samples t-Test for both groups and the result revealed ( $P=0.00$  for first group and  $P=0.176$  for the second group) which was similar to the ANOVA tests.

Furthermore, Ordinary Least Squares (OLS) econometrics model was conducted using GiveWin statistical package to estimate the extent by which the value of dependent variable is explained by the independent variable. To this end, four lag OLS test revealed ( $R^2= 0.56$  and  $DW=1.39$ ) that 56% of the agricultural knowledge of students can be explained by their previous high school agricultural education background. The awareness section mean score was  $M=1.9$  for students with high school agricultural education and  $M=2.4$  for students with no agricultural education background. This indicates that students

with high school agricultural education have a good awareness about agriculture and agricultural higher education. More than 60% of students support the integration of Universities in the national agricultural research and extension system.

It was finally concluded that offering agricultural education at high school level would help to build agricultural knowledge and awareness of the future generation. Further national survey research is warranted to determine the importance of offering agricultural education courses at all levels of schooling and designing policies or national guidance to integrate Universities in the development process particularly integrating them in to the federal/regional agricultural research and extension systems.

Key words: Agricultural Knowledge, University, and Awareness.

## **CHAPTER ONE: INTRODUCTION**

### *1.1. GENERAL BACKGROUND*

Agriculture is the main stay of Ethiopian economy. It accounts for about 50% of the Ethiopian gross domestic product. It also provides employment for about 85% of the total working labour force and accounts for 90% of the total foreign exchange earnings (MOFED: 2002b, Ibrahim: 1995). Thus, Ethiopia overwhelmingly depends on agriculture for its employment, foreign exchange, revenue and food supply.

However, the country is unable to feed its own people and suffering from great proportions of famine due to poor performance of agricultural sector. The critical food shortages and recurrent famine have resulted in a massive food aid and commercial imports of food (Tegegn: 1995).

Despite the authorities pledge to boost the agricultural production and to give high priority for its development the contribution of the sector has been declining for decades. For instance, according to MOFED (2002b) the agriculture value added per capita has been decreasing at the rate of 0.8% per annum during the eight years ending 1999/00 (i.e., 1991/92-1999/00). The major cause stated by

MOFED for the decline is the uneven distribution (in some cases undesirable) rainfall across the country.

There are, however, some other arguments against this point. For instances, Ghelawdows (2002) argues against the suggestion of, lack of rain as a major cause of the poor performance of Ethiopian agriculture. He says, while Ethiopia encounters drought and famine almost every decade despite the blessings of hundreds of major rivers and thousands of streams, Egypt with an ecology that does not witness rainfall and the country depending on the Nile waters of Ethiopia, is a food self-sufficient country.

Similarly, China and India, once known as lands of famine, now they have not only gone beyond rain-fed agriculture, harnessed their waterways, and diversified their economies, but also become relief donors themselves.<sup>1</sup> Fekade (2002) shares the idea on this point, as the main cause could have been human factor but not as such weather.

More over, Dessalegn (2003), in his recent article entitled *Poverty and Agricultural Involution*, describes the unalleviated problems of Ethiopian agriculture and the inadequate knowledge of the policy

makers about the root causes of the sector. The author highlights the structural causes rather than environmental shocks to be the major factors for the poor performance of agriculture.

There are some other reasons for the stagnation of Ethiopian agriculture as explained by different researchers in the field. These are; shortage of skilled human resource, mistaken policies of successive governments, limited supplies of chemical inputs, inefficient marketing practices, lack of security of land tenure ...(Dejene: 1995, Tegegn: 1995, Yibeltal: 1995, Mulat: 1995, Gezahegn and Metselal: 1995, Dessaiegn: 2003).

Thus, the failure of Ethiopian agriculture to produce sufficient food supply is surprising because the agricultural potential for increasing crop production is generally substantial (Tegegn: 1995). In this regard various studies indicate that Ethiopia has a huge potential of agricultural development.<sup>2</sup>

It seems that there is a consensus between different scholars that, despite its poor performance and 'persistent stagnation' (Dejene: 1995) Ethiopian agriculture remains to play the central role in the

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<sup>1</sup> The Agricultural higher education of Egypt, China and India have played leading role in the process of their agricultural development (Mohamed: 1999, Cheng: 1999.)

<sup>2</sup> Ethiopia has 3,495,795ha of irrigable area in the major river basins, which is about 3% of total land area FAO: 1988 Cited by Tegegn (1995)

national economy and in the way of life of Ethiopian population. However, much of issues how to transform this basic sector is not well known. This point is clearly stated by Dejene (1995) as '...we have a limited knowledge of Ethiopian Agriculture.'

With regard to agricultural education, it is reported that agriculture as a field of study is not preferred by majority of trainees in Ethiopian Higher Educational Institutions-HEIs (Bedassa and Kidist: 1999, Belay: 1997b). The negligence of students to join agricultural higher education by their willing implies the prevalence of lack of agricultural knowledge in the student population.

It is also logical to suggest, from this fact, that the contribution of agricultural education in solving the major problem of Ethiopian agriculture is not well understood or recognised by the young people or in this case by students.

Whether or not Ethiopia is having a system, which is able to create correct understanding of agricultural knowledge and sense of responsibility, in the young people is not assessed. The general condition across the country indicates the issue of agricultural knowledge is lacking. Therefore, it is imperative to raise the issue of agricultural knowledge in Ethiopian context.

This is important because the adequate awareness about agriculture is one of the major prerequisites for the willingness to participate in the process of agricultural development (Wright: 1992). This explains the need to teach the new generation with the relevant concepts and issues of agricultural knowledge through the educational system.

Further more, the contribution of higher education in the process of agricultural development is not clearly articulated in Ethiopia. Belay (1997a) argues that the exiting system of agricultural higher education is not relevant to the country's objective condition. Some other different empirical studies (Belay: 1997b, Berhane: 1982, Steven and Helen: 1992) and also the intermittent shortage of food supply indicate the need for increased agricultural awareness and revitalising the role of agricultural higher education in Ethiopia. This has also become one of the major global issues.<sup>3</sup> Here the issues of food supply, as one of the major aspects of food security, should be given due attention.

According to Lindley (1999), food security in the low-income, food-deficit countries should be a first priority. To address this priority successfully, the training of agricultural experts should emphasise

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<sup>3</sup> For the details of this point, please see the Proceedings of the Inaugural Conference of the Global Consortium of Higher Education and Research for Agriculture. Held in Amsterdam, The Netherlands, July 22-24,1999.

skills and knowledge for sustained crop production and strategies for the prevention of food losses during harvest, storage, marketing and processing.

In support of Lindsay's argument, Sigot (2003) describes that teaching agriculture at the secondary school level, along with other science subjects provides the foundation for students' awareness and their future need to study agriculture at the higher education level.

This is not well recognised in some African countries (Lindley: 1999). The case of Ethiopia is not an exception, in that agricultural education as a separate course is not currently being offered at general secondary school level. It is an issue that needs to be addressed as part of national agricultural development policy.

Hence, the core background of this study was the absence of relevant research outputs, on the level of agricultural knowledge of students and their awareness about the role of higher education in alleviating the problem of food insecurity. As a response to this problem, this study has been carried out with the main objective of measuring the agricultural knowledge of first year university students.

For the purpose of common understanding about the status of Ethiopian agricultural education, research and extension a brief description is presented in the following part of this report.

### 1.1.1. Agricultural Education, Research and Extension in Ethiopia: A Brief Historical Review

The establishment of Jimma Agricultural and Technical school (JATS) in 1952 and the Alemaya College of Agriculture (ACA) in 1956 symbolise the formal initiation and beginning of agricultural higher education, research and extension in Ethiopia (Belay: 1997, Goshu: 1995).<sup>4</sup> JATS and ACA enjoyed external support from USAID up to 1968 through bilateral agreement reached between USA and Ethiopia. The ACA was modelled after the US land grant agricultural College system, where agricultural education, training and extension are fully integrated in one institution (Belay: 1997).

The college had a nation wide mandate of try agricultural extension until 1963, when the college had become part of the then Haile Sillasié I University now AAU. Since then MOA took over the responsibility of agricultural extension through out the country (Goshu: 1995).

However ACA remained the major public institution of agricultural research until 1966 when the Institute of Agricultural Research - IAR was established. Then after IAR took over the mandate of agricultural

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<sup>4</sup> The name of Alemaya College was known as Imperial Ethiopian College of Agriculture and Mechanical Arts - IECAMA.

research. In addition to research work done by IAR some adaptive type of research was conducted by MOA in the late 1960's and 1970,s<sup>5</sup>.

Eventhough their research activities were limited, various research institutions, such as the National Veterinary Institute - NVI, National Tse-Tse and Trypanosoniasis Investigation Centre NTTIC, the Forestry Research Centre and Fish Breeding and Research Centre were established in Ethiopia (Goshu: 1995).

With regard to agricultural higher education the country has some five higher agricultural learning institutions offering high level of training ranging from diploma up to Ph.D. level. Nevertheless, the level of integration of agricultural education, research and extension in Ethiopia is not promising. According to Goshu (1995) the agricultural education, research and extension are the responsibilities of different institutions and their exist little or no formal full-fledged inter-institutional collaboration and integration.<sup>6</sup>

### 1.1.2. The Current Development Policy towards Agricultural Development and Food Security

The development policy of the incumbent government is built on four pillars of basic strategies of development. These are; Agricultural

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<sup>5</sup> These were comprehensive integrated package projects such as Chilalo Agricultural Development Unite-CADU.

<sup>6</sup> Though the current government has established a national agricultural council under ESTC in 1991, the two important components of AKIS i.e. agricultural education and extension are not with in the mandate of the council. It is simply

Development Led Industrialisation-ADLI, Justice and Civil Service Reform, Decentralisation and Empowerment and Capacity Building in Public and Private Sector (MOFED: 2002b).

These strategies are believed to bring about sustainable development. The fundamental objective of the policy is to build a *'free market economic system which will enable the country'* among other things *'to extricate itself from dependence of food aid'* (MOFED: 2002b). The government pledges to rid Ethiopia of the scourge of poverty and famine, by implementing this policy.

The policy envisages that ADLI is a long-term strategy. During the first stage, agriculture is to play a leading role in the growth of national economy. Due to expected inadequate domestic demand, which resulted from very small growth rate of urbanisation, it is believed to develop the agricultural sector at internationally competitive standard. The issue of food security is sufficiently explained in the development strategy paper. It is also overtly vowed that as a result of the application of rural and agricultural development strategy the country will attain the status of food security (MOFED: 2002a).

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expected to serve as a clearinghouse for research projects to be financed by ESTC and donor agencies. See Goshu (1995) for

Thus the current development policy of Ethiopia rightly focuses on the agricultural sector as bases for the overall development of the country.

### *1.2. STATEMENT OF THE PROBLEM*

No literature is available, regarding the level of agricultural knowledge of concerned communities such as students in Ethiopia. Further more, the extent of students' agricultural knowledge and their awareness about the potential role of universities in development particularly their contribution in the process of solving food insecurity problem of the country is not known so far.

In this regard, the issue of agricultural knowledge of students is high in the agenda of developed nations. This is because the issue of food is crucial for life. The source and safety of food supply must be known by all of the members of the society. For example in USA the agricultural knowledge is one of the key academic standards considered in all level of schooling.<sup>7</sup> On top of that there is a national governmental body known as 'The National Research Council Committee on Agricultural Education in Secondary Schools', which manages and monitors the same at federal and state level (Fortier et

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details.

<sup>7</sup> Please see Annex.2 Wisconsin's Academic Standard Document for the details.

al: 1998). Such a systematic management of the issue is not known in Ethiopia.

With regard to Ethiopian educational system Tekeste (1990) criticises, that it is irrelevant to the needs of the country. However the educational reform has been undertaken after Tekeste's study.

The current Education and Training Policy is positively ambitious in the sense that it puts emphasis on purposeful and relevant training that should enable the Ethiopian children to acquire adequate knowledge to develop skill and positive attitudes that would help them to contribute for the development of their country (Bedassa and Kidist: 1999). The policy clearly puts that agriculture would be one of the focal areas of the basic education of Ethiopia and it will be provided as technical and vocational training for those who complete grade ten (TGE: 1994).<sup>8</sup>

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<sup>8</sup> It should be noted that the subjects of this study are not trained through the new Education and Training Policy. Therefore, the findings of the study may not indicate the effectiveness or otherwise of this Policy.

In relation to this, whether or not the emphasis made on the policy document is supported by practice and synchronised within the education sub-system is not studied. Belay's (1997a) and (1997b) articles were more or less concerned with institutional aspect of the issue. According to Belay (1997a), though the number of graduates from Agricultural HEIs of Ethiopia is increasing from time to time, the role they are expected to play in the process of agricultural development is not promising. There are a number of reasons identified for this. The overall effect of the factors stated in Belay (1997a) is that students are less exposed to the objective realities of the country than the general theories.

This is evident that the knowledge of students about the field they are being trained in (i.e., agriculture) is minimal. Related to this whether or not the students (particularly secondary school completed) have a sense of responsibility or awareness to participate in the process of agricultural development and solving the problem of food insecurity is unknown.

This problem further calls for the importance of capturing the level of agricultural knowledge and awareness of the future generation, so as to design pertinent intervention policies and take timely steps to deal with the issue in point. This is perhaps, one of the challenges that

should be resolved by the exiting development planners and policy makers of Ethiopia.

Hence, assessing the prevalent agricultural knowledge status of students is important and could be taken as one of the pre-requisite measures for the future policy decision to improve the agricultural sector. Because, the presence of adequate agricultural knowledge and awareness about agriculture, with in the majority of students, would easily facilitate the activity of managing the rural and agricultural development process to success.

Generally, the adequate agricultural knowledge and awareness of students in all professions is important in the process of agricultural development in general and in resolving the problem of food insecurity in particular. This explains the significance of an integrated approach of all professions in the process of struggle to attain food security status. In this regard, Sigot (2003) says;

*...Combating food insecurity involves more than one aspect; it involves economics, politics, sociology, psychology, marketing, logistics and that does not end the list...in short it involves, a universal action.*

Hence, since the students of today are policy makers, leaders and experts... of various fields of tomorrow, their good knowledge and awareness of agriculture is essential for their future potential contribution to the sector.

More over professionals who participate in the process of agricultural and public policy formulation and implementation, without adequate agricultural knowledge and awareness, could in one way or another affect the performance of the sector (Wright: 1992).

Therefore on the bases of the mentioned problems this study was conducted to find out the agricultural knowledge and awareness of first year university students. The purpose and objective of the study is presented in the following part of this paper.

### 1.3. PURPOSE AND OBJECTIVE

The main purpose of this study was to assess and compare the agricultural Knowledge of first year university students, when grouped by their high school agricultural education background and place of birth (rural or urban background).

#### 1.3.1 Specific Objectives;

- A. *To assess the major factors influencing the agricultural knowledge of students.*
- B. *To assess the awareness of students about the role of Universities in development specifically in the process of struggle to attain food security status of the country.*
- C. *To find out potential areas of integration of Universities in the process of agricultural development of the country.*

### 1.4. HYPOTHESIS

- A. There is statistically significant difference between the mean agricultural knowledge scores among students' when grouped by their previous high school agricultural education background.
- B. There is statistically significant difference between the mean agricultural knowledge scores among students' when grouped by their place of birth (rural or urban background).

### *1.5. RESEARCH QUESTIONS;*

Though the major themes of the study were centred on the hypothesis the following research questions were used to guide the analysis and discussion of the results.

1. Is there a significance difference in the mean agricultural knowledge scores among first year university students, when their high school agricultural education background groups them?
2. Is there a significance difference in the mean agricultural knowledge scores among first year students when they are grouped, by their place of birth (being born in rural or urban area)?
3. What is the level of students' awareness about the potential contribution of Universities in solving the problem of food insecurity in Ethiopia?

### *1.6. SIGNIFICANCE OF THE STUDY*

Agriculture being the major sector of the Ethiopian economy has been given due emphasis, at least on papers, by successive governments for its development (Steven and Helen: 1992). Despite the great deal of attention paid, particularly in the past three decades, the problems of poor performance of agriculture and

shortage of food supply are still unresolved and the situation in the future is even not promising.

A lot could have been done to address this issue. Among these raising the agricultural knowledge and awareness of young generation and revitalising the contribution of higher education is inescapable (Mohamed and Stanley: 1999).

To this end, knowing the level of agricultural knowledge and awareness of students who are the future development actors is an important step forward. The crucial quest of food security agenda of Ethiopia highlights the importance of measuring the existing agricultural awareness of the new generation of actors in development.

Providing agriculture as a technical training field is given much attention in the current Education and Training Policy and many facilities are established for this purpose. This training is designed for students who have completed their general secondary education (the first cycle of secondary education i.e., 9-10<sup>th</sup> grade).

Nevertheless, agricultural education is not offered as separate course, which is focusing on raising agricultural knowledge and awareness of

students, at primary and general secondary school level.<sup>9</sup> There are arguments in favor of offering agriculture as separate course in all levels of schools to create adequate level of agricultural awareness. In order to investigate this point at this particular time we found students who have got agricultural education as a separates course at their secondary education (9-12<sup>th</sup>) and also a group of students who have not received agriculture as a separate course. Therefore, it is logical to undertake a study to find out the importance or otherwise of provision of agriculture as a separate course, by assessing the level of agricultural knowledge and awareness of these groups of students

Thus, the significance of this study is clear, in that it tries to find out whether or not it is beneficial to offer agriculture as a separate course at the lower level of schooling in Ethiopia. On top of that, the result of this study will be used as a kind of base line data for the future similar studies those would focus on the outcome of the current Education and Training Policy.<sup>10</sup>

In a nutshell, in a country, which is mainly dependent on agriculture like Ethiopia, searching for the agricultural awareness status of

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<sup>9</sup> Though agricultural education is not offered as a separate course at these levels, according to experts from MOE the major agricultural concepts are included in the Environmental and Natural Science courses.

students and factors influencing it would irrefutably help the fight against the causes of poor performance of the sector. Eventhough much of the arguments in this study were based on the situations in Ethiopia, the gist of the messages would also understandably be valid for other developing countries. As a result of the above justification, the researcher becomes aware of the importance of undertaking this study as his MA Degree thesis.

### *1.7. LIMITATIONS OF THE STUDY*

This study is, perhaps, the first of its kind in the history of Ethiopian development research. Thus, the researcher had no chance of reviewing similar research out puts based on the local situations. Because of this fact, it was a challenge to develop a reliable research instrument, which was successfully done by the researcher almost from the scratch. More over it become compulsory to stick on the similar studies undertaken elsewhere, in the comparative discussion of the findings of this study. This has hampered the ability of the researcher to make a dependable policy recommendation on the bases of this single study.

### *1.8. ORGANISATION OF THE STUDY*

This study report is organised in to five chapters. The first Chapter deals with introduction that includes background of the study,

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<sup>10</sup> The group of students covered by this study, the first year university students, are the last group of students trained by the former education policy and the next year (1996 E.C) entry students are the first group of students after the introduction of the new Education and Training Policy.

statement of the problem, objective, Hypothesis, significance and limitation of the study. Chapter two deals with theoretical framework. Chapter Three is devoted to methodology and procedures employed and chapter four is about data analysis and findings of the study and finally chapter five presents the conclusions and recommendation of the study.

## **CHAPTER TWO: THEORETICAL FRAMEWORK**

This chapter introduces some of the key concepts in the study. As the study was primarily concerned with the measuring and comparing of the level of agricultural knowledge and awareness of students about the role of Universities in development process, the mainstream literature on this area are briefly reviewed.

In order to provide a kind of reference to be used as evidence for the potential role of Universities in development, the experience of three countries namely Uruguay, Uganda and Ghana which was selected as success story by World Bank (1999), is attached to this study report as Annex 3.

### **2.1. DEFINITION OF CONCEPTS AND RELATED THEORIES**

#### **Agriculture**

Agriculture is food, land and people. It is food safety, health promotion through diet nutritional enhancement through processing of production, nutrition and education.... It is conservation of soil and water, atmospheric and biological resources, livestock and range management issues and development. More over aquaculture, non native and invasive species, hydrological issues; use of chemicals and bio-controls, waste management issues, land preservation and land

use, and the rural/urban interface...are among the components of agriculture (University of Minnesota: 2001).

### **Agricultural Knowledge**

Knowledge requires a theoretical or practical understanding of a subject. In this sense, agricultural knowledge of an individual could demonstrate some understanding of the detailed issues of agriculture including its, contributions, problems and prospects (Stratton, Peter. 1998).

The concept of agricultural knowledge implies knowledge about the contribution of agriculture to the overall economy and to the way of life of the society. According to Wright (1992), the level of agricultural knowledge and related awareness about it creates a concern about the quantity, quality and safety of food supply.

The importance of agriculture and the need to the public to be informed about it is discussed in much of the literature. For instance Hamlin (1962) as cited by Wright (1992) noted that voters elect representatives, who create agricultural and other public policies without agricultural knowledge could be responsible for the demise of the agriculture. This implies people who have adequate

knowledge about agriculture should take the lead in the process of public policy formulation and implementation.

In relation to this point, Osler (1994) says, a secondary agricultural education program could create a positive attitude with in students that will let them develop into positive leaders. More over the theory developed by Perritt and Moton (1990) describes as, younger students who have received agricultural education at their secondary schools can develop a positive association with agriculture. They stated as 'the younger you start them the better they will become'. This indicates that agricultural knowledge concepts should be incorporated into the curricula early in the educational process.

### **Awareness about the Role of Universities in Development**

Awareness occurs when an individual is sufficiently informed about a subject for him/her to be conscious of its existence and importance. Awareness about any activity or situation could be based upon knowledge, observation or some information about the issue (Stratton, Peter. 1998, Harbstreit, Richard and Welton: 1992). This suggests that a student to become actively involved in agricultural career or his/her intention about agriculture could be predicated by analyzing his/her knowledge about agriculture.

As applied to this study if students are aware of the contribution of Universities in solving the problem of food insecurity, they will likely support the integration of Universities in the national agricultural research and extension systems. This would indicate their good level of awareness. Conversely, if students do not support the integration of Universities in the national agricultural research and extension systems, this would indicate they are not aware of the potential contribution of Universities in development.

## *2.2. FOOD SECURITY AND AGRICULTURAL EDUCATION*

Shortage of food supply, lack of access to it and nutritional inadequacy explains the issue of food security. The fundamental challenge the world faces is to ensure that the hundreds of millions of families living in poverty have access to enough food, to maintain a healthy life (Ayres and McCalla: 1996). One of the major causes of food insecurity is the low level of agricultural development (Gasperini: 2000).

Agricultural education has much to do in attacking the problem of food insecurity. This could be possible via research and development RD, i.e., scientific and technological progress. For example doubling yields in a complex farming systems with out damaging the environment could be possible through education (McCall: 1998).

Education affects small landholders and subsistence farmers' productivity immediately and positively, and that a farmer with four years of elementary education is, on average, more productive than a farmer with no education (Gasperini: 2000). Farmers with more education get much higher gains in income from the use of new technologies and adjust more rapidly to technological changes.

Moreover, many children of today will be the farmers of tomorrow and, if educated will have more chance of becoming productive farmers. Cognisant of this situation, FAO designed a well-celebrated strategy, known as '*From agricultural education to Education for rural development and food security, all for education and education for all*'.<sup>11</sup>

### 2.3. THE ROLE OF UNIVERSITIES IN DEVELOPMENT

#### 2.3.1. General Perspective.

Universities are identified as significant institutional role players in knowledge-based over all development for at least two fairly obvious reasons;

1. Universities are by definition and practice, institutions of higher learning.
2. This learning is primarily based on the acquisition, synthesis and transmission of knowledge (Florax and Folmer: 1989).

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<sup>11</sup> FAO has put many priorities to enhance the contribution of education at the core of the global and national development agenda and food security agenda. See Gasperini (2000), for details of this strategy.

Of course universities, particularly in the LDCs should also incorporate an expanded sense of social responsibility and political relevance. They are to take care of a great variety of issues such as,

1. Increasing food production, (agricultural out put)
2. Addressing the problem of poverty and rural development,
3. Participate in health development
4. Advising governments on;
  - A. House construction as well as social engineering to improve ethnic balance and national integration,
  - B. Development policy formulations etc.
5. Supplying competent skilled human power (Gerry, Meer and Conway: 2002)

Among these variety of reasons, increasing of food production or agricultural out put seems very crucial in LDCs in general and in Ethiopia in particular. In rapidly changing social and natural environment, famine and hunger, institutions of higher learning or universities are being asked to play a critical role (FAO: 1998).

University particularly agricultural universities were first formed in the belief that farm production could be increased as a result of the systematic application of technology and agricultural research findings (FAO: 1997). The mission of these early educational institutions was, to study agriculture scientifically with the participation of the farming community (FAO: 1997).

### 2.3.2. Specific Perspective.

The great emerging demand for the role of universities in attaining food security status is beyond their usual role as an educator of students and shaping them into knowledge based graduates for the market (Maguire: 2000). Thus universities should prepare themselves to shoulder more responsibilities in the process of development of their respective countries or regions.

McCalla (1998) describes an integration of agricultural education system into the broader science establishments and practical agricultural system. He emphasises the importance of internal integration before the Universities could integrate with other systems. The author explains the future development challenge require four levels of integration;

**Level 1** - Integration of Teaching/Education Research and Extension (TRE). The experience of Land Grant system of USA which has been successful and still the right model with teaching, research and extension integration into a single institution cited as live example for this level.

**Level 2** - Integration of TRE into the broader science establishment on campus and off campus.

**Level 3** - integration at the national or federal level into the policy environment and interaction with the multiplicity of interested actors (public sector, private sector, NGOs and civil society).

**Level 4** - Integration into the global agricultural science system which itself is a component in an integrated global science system (McCalla: 1998).

Generally, for countries that want to be part of the global community (this seems a must for all) these levels of integration are not options but imperatives (McCalla: 1998). More specifically, Maguire (2000) identifies the following potential areas of participation.

#### 2.4.1.Potential Role of Universities in Agricultural Development

##### **1. Agricultural Research**

University faculty should devote at least 25% their time to research designed to solve most threatening societal problems. This is most likely feasible because about half of all agricultural scientists work in Universities (World Bank: 1996) and they have considerable potential to carry out research.

***Common Agricultural Research Roles are:***

- a. National Research.** A university might assume full responsibility for public sector agricultural research, establishing a national agricultural research institute within the university.
- b. Basic research.** A university might focus on basic and strategic research, leaving applied to other institutions.
- c. Regional research.** A university might conduct adaptive and applied research to support development in a province or agro-ecological zone, possibly specialising in research on a community or agricultural problem important to the region.
- d. Consultant service.** Universities provide consultant services to support research by NARIs, NGOs, International agencies, and commercial firms (World Bank: 1999).

**2. Agricultural Extension**

Extension is important to universities as a discipline within their curricula and as a link to real world agricultural concerns. However, university staff allocate less than 10% of their time to extension because it is not prestigious than research, requires mobility, and travel costs and can expose the university to criticisms when work with the rural poor fails, appear political or threatens private interests. University extension activities include advising extension staff and / or

farmers, internships, preparing extension booklets and materials, and methodologies (World Bank: 1999).

**Common Agricultural Extension Roles are:**

- a. Accepting full responsibility** for national or provincial extension.
- b. Collaborating with government extension** services to provide technical and training support and to make staff available as extension agents or subject matter specialists.
- c. Providing extension services** in using the university's technical base to competitive advantage.

In general universities help to build sustainable extension systems through training and extension service support.

**University training support to NARIs might include;**

- a. Specialised courses** emphasising practical communication strategies, extension philosophies, mass media approaches and other extension tools, such as new information technologies.
- b. Agricultural curricula** in which extension strategies, experiences, and approach permeate all courses relating course materials to technology disseminate and farmer needs.
- c. An appreciation of farming as a business**, including elements of business planning and market information systems.

- d. New approaches to extension**, including user-financed advisory services, community based participatory extension, group extension, and product and service marketing.
- e. Technical fields and priorities** of increased importance to extension, such as natural resources management, farm management, commercial crops, post harvest handling, and high value export crops.
- f. Extension program management training**, either in the regular student curriculum or as a special course at institutions that conduct extension (World Bank: 1999).

In this regard universities located in regional areas might have a comparative advantage in providing extension services in their surrounding area. Programs for contracted extension services might allow universities to implement programs directly or to deliver training and technical support to other service providers. Therefore, these conceptual underpinnings have been utilized as a guide or bases of this study.

## **CHAPTER THREE: METHODOLOGY AND PROCEDURES**

### *3.1. STUDY DESIGN AND METHODOLOGY*

The study was mainly based on a primary data generated through a cross-sectional study design. A descriptive survey method, which was administered to all first year students of Jimma University, 1995 E.C. entry (N=1858) was used. A student roster from the Admission office of JU served as the population frame.

### *3.2. STUDY AREA AND POPULATION*

The study area was Jimma University located in Jimma town 335km south west of Addis Ababa in Oromiya Region. The 1995 E.C. academic year, entry first year students of JU were taken as the study population.

### *3.3. PROCEDURES*

A total of 148 self-administered questionnaires were distributed for the proper sample students, and 146 were returned making about 99% of response rate. Six of these questionnaires were found to be unusable. Because most of very important data were left out or not properly responded. Statistical Package for Social Sciences - SPSS for Windows Standard Version 10.0 and GiveWin Statistical Package for econometrics were used in this data analysis.

To verify the data provided by the survey some volunteer sample students, those indicated their willingness to be interviewed in the questionnaire were interviewed on the basis of their particular responses and some other variables of the study as a data triangulation mechanism. On top of that the researcher has discussed with some educators, agriculture and development researchers and officials of MOE on the findings of the study and tried to capture important inputs from these discussions. This was done to validate the information provided by the survey instrument.

### 3.3.1. Sampling Techniques

A basic principle of probability sample i.e. Equal Probability Selection Method EPSM (Babie: 2001) was employed. Then alphabetically arranged list of first year students of JU was rearranged by gender to make a stratified sample frame. Based on this stratified sampling frame, sample students were selected, by employing stratified systematic sampling with random start method to provide the required survey data.

#### 3.3.1.1 Sample Size Determination

The sample size was determined using Bhandarkar P. L. and T.S. Wilkinson (1999) formula. Kelley (1999) reported the importance of using this formula most particularly when employing simple random sampling method.

*The assumption for sample size determination was;*

- a) *The acceptable amount of error (plus or minus of 0.5) is accepted.*
- b) A confidence interval of 95% is assumed (table value of which is 1.96).
- c) Standard deviation of the population is estimated to be 2.9 (This is estimated from the result of the pilot survey undertaken by the researcher two weeks before the data collection).

**The Formula used for sample size determination was;**

$$N = \frac{(Z \cdot \delta)^2}{(T)^2}$$

(Bhandarkar P. L. and  
T.S. Wilkinson: 1999 & Kelley: 1999)

Where:

N = Sample Size

Z = standard error

(i.e., table value for 95% confidence level = 1.96)

$\delta$  = Standard deviation (from pilot test = 2.9)

T = Margin of error that may be tolerated = 0.5

Finally, Using the above assumptions and the formula, a sample size of **129** was obtained. To compensate for non-responses or unusable questionnaires a contingency of **15%** over sampling was used because the pilot survey carried out using 30 questionnaires two weeks before the survey had shown low response rate.

Hence, a total sample size of **n=148** (129+19) was obtained. Furthermore, this sample size was found to be more than adequate, as reported by Harbstreet R. and Richard F. Welton (1992), when compared to Krejice and Morgan's table for determining sample size from a given population.<sup>12</sup>

### 3.3.2. Research Instrument and Validity

The researcher has developed the survey questionnaire from a review of relevant literature and corresponding to the objective of the study. Similar research under taken by Wright (1992) for doctoral dissertation was used as a model for the questionnaire development.<sup>13</sup>

The instrument was reviewed by the agricultural science professionals all academicians and researchers from JU College of Agriculture, and adjustments were made based on their comments to establish content and face validity of the instrument.

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<sup>12</sup> A sample size of 376 students would be needed for a population ranging from 7000-8000 students. Since the population of this study is 1858, the calculated sample -148 is more than enough. For details please refer Krejice, R.V. and Morgan, D.W. (1970) Determining sample size of research activities. USA.

<sup>13</sup> The title of this study is **Agricultural Awareness of Eleventh Grade Students in Rural Schools. USA.** For details of this Please refer the Reference of this document, (It was a Ph.D. Dissertation.)

### 3.3.2.1. Variables and Measurement

The instrument included some well-recognised and identified concepts of agriculture with respect to Ethiopian context. These concepts were collected from relevant research outputs in Ethiopian agriculture and validated by agricultural science experts.

Items related to the societal significance of agriculture, the role it plays in national economy in terms of employment, foreign exchange, government revenue, its relation to the environment, natural resources and policy implications were included. Other concepts regarding the concept of food security, the relevance and importance of agricultural higher education, the complementary nature of education, research and extension, the role of universities in development and related points were included in the instrument.

The knowledge section of the instrument used for data collection involved various items with attached value of 30 points. Students responded using a *True, False, or Do not know* scale for the measure of knowledge and a 1-5 likert scale style (*1=strongly agree, 2=Agree, 3=Neither Agree nor Disagree, 4=Disagree, 5= Strongly disagree*) for awareness section. The knowledge score judged to be ranged from 0-30, which means, the higher the knowledge scores the better is the agricultural knowledge of a respondent.

Where as the awareness score scale was standardised and ranged from 1-5, with 1 score indicates the most awareness. The interpretation of knowledge scores was based on the following scale;

**M**= 0-14 = Low

**M**= 15-20 = Good

**M**= 21-25 = Very Good

**M**= 26-30 = Excellent.

The interpretation of awareness score was performed using the following scale;

**M**= 1.0 - 2.0 = Good awareness level

**M** >2.1 = Below average awareness level

The data analysis of the study done on the bases of the above mentioned definitions and procedures is presented in the next part of this paper.

## **CHAPTER FOUR: DATA ANALYSIS AND FINDINGS OF THE STUDY**

### *4.1. STATISTICAL TOOLS USED*

According to Babie (2001), in parametric statistical test of hypothesis, it is appropriate to use independent *t*-test, means comparison and/or ANOVA, when the dependent variable is interval/ratio level of measurement and the independent variable is nominal. This was judged to be appropriate to apply in this study. Because the dependent variable was a ratio level of measurement [*summated value for knowledge scale*] and the independent variables were nominal [*high school agricultural education background and place of birth*]. Finally an Ordinary Least Square (OLS) econometrics model was employed to determine the value of independent variable.

### *4.2. RESULTS*

#### *4.2.1. Demographic Characteristics of the Sample Students*

A demographic data of sample students are provided in *Table 1*, allowing some missing data. A total of 113 (80.7%) males and 25(17.9%) females responded to the instrument. Reportedly there were 48(34.3%) rural born and 89 (63%) urban born students.

In relation to the Regions from where they come from, almost students from all Regional States were included by random. Among these Oromiya 43(30.7%), Addis Ababa 30(21.4%), Amhara 26(18.6%) and SNNPR 17(12.1%) were relatively higher proportions.

A high level of congruence was observed between the sample and population student's proportions in respect of their Regional background. For instance about 30% of the total student population come from Oromiya region and 31% of the sample students reported that they were from Oromiya Region. By and large similar trend is observed from the data profile for the rest of the Regions.

With respect to the family background of the students 51 (36.4%) are from civil servant family, 37(26.4%) from agricultural community or farmers and 29(20.7%) form private or merchants family. In regard to agricultural education background 81 (57.9%) of the students reported they have received agricultural education during their high school learning and 59(42.1%) of them reported that they have not received agricultural education in their high school learning. With regard to their future plan of study 55 (39.3%) of them reported to pursue their degree level study in one of the social science fields, 34(24.3%) in health related areas, 23(16.4%) in other natural science fields and 20(14.3%) in engineering area. Only 8(5.7%) reported to study agricultural science at higher education level. See *Table 1*.

**Table 1**  
**Demographic Characteristics of Sample Students**

	Population			Sample		Remark
		<b>Number</b>	<b>% with in</b>	<b>Number</b>	<b>% with in</b>	
<b>Gender</b>	Male	1560	83.9	113	80.7	2 sample students not mentioned their gender status. 2 missing data recorded
	Female	298	16	25	17.9	
	<b>Total</b>	<b>1858</b>	<b>100</b>	<b>138</b>	<b>100</b>	
<b>Place of Birth</b>	Rural	NA	NA	48	34.3	3 sample students not mentioned their birth area. 3 missing data recorded
	Urban	NA	NA	89	63.6	
<b>Regional State they come From</b>		<b>No</b>	<b>% with in</b>	<b>No</b>	<b>% with in</b>	The Regional background of 32 and 6 students of the population and the sample respectively was unknown. 6 missing data recorded
	Tigray	172	9.3	7	5	
	Afar	16	0.9	1	0.7	
	Amhara	390	20.9	26	18.6	
	Oromiya	563	30.3	43	30.7	
	Somali	10	0.5	1	0.7	
	Ben-Gum	8	0.4	1	0.7	
	SNNRP	212	11.4	17	12.1	
	Gambela	2	0.1	1	0.7	
	Harar	15	0.8	5	3.6	
	Addis A.	411	22.1	30	21.3	
	Dire D.	27	1.5	2	1.4	
<b>Total</b>	<b>1826</b>	<b>-</b>	<b>134</b>	<b>-</b>		
<b>Family Background</b>	Civil S.	NA	NA	51	36.4	
	NGO W.	NA	NA	8	5.7	
	Merchant	NA	NA	29	20.7	
	Farmers	NA	NA	34	24.3	
	Other	NA	NA	18	12.9	
	<b>Total</b>	<b>-</b>	<b>-</b>	<b>140</b>	<b>100</b>	

#### 4.2.2. Agricultural Knowledge of Students

Respondents were asked to indicate their knowledge about Ethiopian agriculture in ten identified knowledge areas using a *True, false and Do not Know* scale. Data displayed on *Table 2* indicates, many of students have no satisfactory knowledge in four areas of the measure items. For instance, 59(42%) of the respondents reported that Ethiopian agriculture provides sufficient food supply currently. This indicates the respondents are not aware of the shortage of food supply in Ethiopia.

With regard to the share of agricultural for the foreign exchange 48(34%) of students reported that the share of agriculture in Ethiopian foreign trade is not significant. In reality agriculture provides about 90% of the total export items. Similarly, 66(47%) of sample students do not know that Ethiopian agriculture has a good potential for development, and 87(62%) of them think that the fertility of Ethiopian agricultural land has already been affected by the excessive use of chemical fertilisers. In general, the overall result of this section implies students need to have been informed about the basics of Ethiopian agriculture.

In general, the mean score of knowledge section of all students looks not sufficient when compared with the findings of other similar studies. For instance the study carried out in USA by Wright (1992)

reported that the mean score of 11<sup>th</sup> grade students' agricultural knowledge ranging from 18.08 to 21.37 which was calculated out of 28 knowledge scale points. However this study shows the knowledge score ranging from 12.8 to 19.6 out 30 knowledge scale points. It is clear that the magnitude of mean score difference between the results of the two studies is not that much exaggerated.

But the mean scores recorded by this study seems inadequate or insufficient when we consider the academic level difference observed between the two samples (11th grade in the case of USA and secondary school complete students in the case of this study). Related to this Harbstreit and Rechard (1992) reported that student's awareness about agriculture increases as advancement is made to the next high school class.

**Table 2**  
**Agricultural Knowledge Scores**

	Test Statements	True		False		Do not know	
		n	%	n	%	n	%
1	Agriculture is the major sector of Ethiopian economy.	116	82.9	20	14.3	4	2.9
2	Agriculture provides sufficient food supply of Ethiopia.	<b>59</b>	<b>42.1</b>	76	54.7	<b>5</b>	<b>3.6</b>
3	Agriculture is affected by political and economic policies of the successive governments of Ethiopia.	92	65.7	35	25	13	9.3
4	Agriculture provides large share of Ethiopian export items	85	60.9	<b>48</b>	<b>34.3</b>	<b>7</b>	<b>5</b>
5	The traditional practice of Agriculture has affected the effective use of natural resources of Ethiopia.	62	44.3	65	46.4	13	9.3
6	There is a high potential of agricultural development in Ethiopia	60	42.9	<b>66</b>	<b>47.1</b>	<b>14</b>	<b>10</b>
7	Small farmers are the major providers of Ethiopian food supply	79	56.4	52	37.1	9	6.4
8	Ethiopian Agricultural system is largely nature dependent (rain-fed)	89	63.6	50	35.7	1	0.7
9	Excessive use of fertilisers and pesticides seriously affected the fertility of Ethiopian agricultural land.	39	27.9	<b>87</b>	<b>62.1</b>	<b>14</b>	<b>10</b>
10	Agriculture includes plant and animal production and its marketing.	106	75.7	21	15	13	24.3

### **4.2.3. The Knowledge of Students about Agricultural Higher Education and the issues of Food Security.**

The instrument included some seven items (four in agricultural higher education and three in food security issues) to measure the awareness of students. A three point scale *True, False* and *Do not know* was used as a self-measure. *Table 3 and 4* report the count and percentage for each of the item statements. About 17(12%) students reported that agricultural education is not a scientific area of study and 33 (24%) said they have no idea about it making about 50 (38%) of the sample population have no knowledge about agricultural higher education as a scientific field of study.

This is perhaps one of the major indicators of the unawareness of Ethiopian students about agricultural higher education. A more or less similar study carried out in USA by Dyer, Lisa and Randall (1999) indicates 94% of freshmen students covered by the study reported that they know agricultural education is a scientific area of study. This is with large variation of the result of this study, of which only 64% of students reported they believe that agricultural education is a scientific field of study.

Asked about the current agricultural higher education about 62 (42%) students reported that the existing agricultural higher education has not

given attention to the major need of the country i.e., food insecurity problem. This seems a correct cognition of the reality as compared with the report of Belay (1997b), which describes that the training of higher agricultural learning of Ethiopia is not based on the local objective situations of the country. More than 47% of students are aware of the point that Ethiopian agricultural HEIs are not integrated to the federal or regional agricultural research and extension system.

In regard to the knowledge of students about food security 77 (55%) know exactly the concept of food security, and about 96(69%) reported attaining food security status requires an integrated effort of various institutions. The problem of food insecurity seems well known by the student population, about 101(72%) students responded that they believe that food security problem is one of the basic issue that should be given high attention.

**Table 3**

**Knowledge of Agricultural Higher Education**

	Test Statements	True		False		Do not know	
		n	%	n	%	n	%
1	Agricultural Higher Education is a scientific area of study.	90	64	17	12	33	23
2	Agricultural Higher Education is integrated in the national agricultural research.	17	12	69	49	54	39
3	Agricultural Higher Education is integrated in the national agricultural extension service.	22	16	67	48	51	36

4	The existing Ethiopian Agricultural Higher Education mainly focuses on the need of the country particularly to the production of food supply	57	62	62	44	21	15
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**Table 4**

**Knowledge of Food Security**

	Test Statements	True		False		Do not Know	
		n	%	n	%	n	%
1	Availability of food supply, access to it and nutritional adequacy indicates the prevalence of food security	77	55	37	26	26	19
2	Attaining food security requires an integrated effort of technological, political and economical effort.	96	69	25	18	19	14
3	Food security is one of the major problems that must be given high attention	101	72	32	23	7	5

**4.3. HYPOTHESIS TESTING**

**Research Question one:** *Is there a significant difference in the mean agricultural knowledge scores among first year university students when grouped by their high school agricultural education background?*

In order to compare the difference between the mean agricultural knowledge scores of students, initially means comparison procedure was utilised. Descriptive statistics, means and standard deviation were calculated for both groups. *Table 5* reveals the summary of mean scores comparison of students when grouped by their high school agricultural education background.

Accordingly, the mean agricultural knowledge score of students with previous high school agricultural education background is **19.6**. Where as the mean score of students with no high school agricultural education background reads **12.8**. Hence, (19.6-12.8 = 6.8) difference is detected between the mean agricultural knowledge scores among students when they are grouped by their high school agricultural education background.

**Table 5**

**Mean Comparison of Knowledge Scores  
On the bases of Agricultural Education Background.**

High School Agricultural Education Background	Mean	N	Sta. Deviation
Had Agricultural Education	<b>19.58</b>	81	3.2427
No Agricultural Education	<b>12.75</b>	59	2.9322
Total	16.70	140	4.5916

After identifying the presence of difference between mean scores of the test groups, it was judged appropriate to run ANOVA procedure to test for a significant difference among the mean agricultural knowledge scores of students grouped by their high school agricultural education background.

The ANOVA test of the mean agricultural knowledge score of students with and without high school agricultural education background revealed that all mean scores are significantly different at 0.05 alpha level (**F = 163.8, P = 0.00**) see *Table 6*.

**Table 6**  
**ANOVA Test for the Data Provided in Table 5**

	Sum square	df	Mean	F	P- value
Between groups	1590	1	1590	<b>163.81</b>	<b>0.00</b>
With in groups	1339	13	9.7	-	-
Total	2930	13	-	-	-

Therefore *the first null hypothesis was rejected*, and there was a significant difference in the mean agricultural knowledge scores among students grouped by their previous high school agricultural education background.

**Research Question Two:** *Is there a significant difference in the mean agricultural knowledge scores among first year university students when grouped by their place of birth i.e., rural or urban background?*

Using the same procedure employed for research question one, the mean agricultural knowledge scores are **17.5** and **16.4** for students with rural and urban background respectively. This indicates that the presence of difference ( $17.5 - 16.4 = 1.1$ ) between the two mean scores. See *Table 7*.

**Table 7**  
**Mean Comparison of Knowledge Scores On the bases of**  
**Place of Birth Background.**

Place of background	Mean	N	Std.Deviation
Rural	<b>17.5</b>	48	4.81
Urban	<b>16.4</b>	89	4.46
Missing Data	13.5	3	3.12
Total	16.7	140	4.59

Then the ANOVA test followed to test for the significance difference between the mean agricultural knowledge scores of students with rural and urban background.

The result revealed that the difference between the mean scores is not significant (**F = 1.687, P = 0.189**, which is  $0.189 > .05$ ). Therefore the second null hypothesis is approved. See *Table 8*.

**Table 8**  
**ANOVA Test for the Data Provided in Table 7**

	Sum square	Df	Mean	F	P- value
Between groups	70.43	2	35.21	<b>1.687</b>	<b>0.189</b>
With in groups	2860	13	20.87	-	-
Total	2930.43	13	-	-	-

The result of ANOVA test was, further proved by employing independent *t*-test for both four groups. The result in *Table 9*, indicates difference

between the mean agricultural knowledge scores among students grouped by their high school agricultural education background is statistically significant [**P = 0.000** which is **<0.05**, and the confidence interval does not contain Zero].

However the independent *t*-test result for difference between the mean agricultural knowledge scores among students when grouped by their place of birth revealed that there is no statistically significant difference between the two mean scores [**P = 0.176** which is **>0.05** and the confidence interval contains zero value - see *Table 10*].

**Table 9**

**Independent Samples t-Test for Significance Difference of the Data Provided in Table 5**

	Leven's Test for Equality of Variances		t-test for equality of Means						
	F	P	t	df	P	Mean Difference	St.Error Difference	95% Confidence Interval of the difference	
								Upper	Lower
Equal variances Assumed	<b>3.1</b>	<b>0.081</b>	<b>12</b>	<b>13</b>	<b>0.00</b>	<b>6.8</b>	<b>0.533</b>	<b>5.77</b>	<b>7.88</b>
Equal variances not Assumed			13	13	0.00	6.8	0.524	5.78	7.88

**Table 10**

**Independent Samples t-Test for Significance Difference of the Data Provided in Table 7**

	Leven's Test for Equality of Variances		t-test for equality of Means						
	F	P	t	df	P	Mean Difference	St.Error Difference	95% Confidence Interval of the difference	
								Upper	Lower
Equal variances Assumed	0.212	0.646	1.4	135	0.176	1.1	0.821	-0.5066	2.74
Equal variances not Assumed			1.3	90	.187	1.1	0.84	-0.5516	2.79

Therefore, the first hypothesis of the study is proved to be correct. And this is ascertained by the statistical tests, in that the mean agricultural knowledge scores of students with high school agricultural education was good (because 19.6 is with in the range of 15-20) and the agricultural knowledge of students with no agricultural education was low (because 12.2 is with in the range of 0-14).

However this test does not clearly explains to what an extent the independent variable [high school agricultural education background] influences the value of the dependent variable [the present level of agricultural knowledge]. For this purpose *GiveWin PC version* was used.

In order to capture the agricultural knowledge of students since their 9<sup>th</sup> grade learning, an Ordinary Least Square (OLS) econometrics model *four-lag period* was run. Accordingly, the result revealed that the data is reliable [**DW\* = 1.39 which is > R<sup>2</sup>\*\* = 0.562486**]. See Table 12.

This implies that the regression is not spurious or nonsensical. The result of OLS revealed that, 56% of the current agricultural knowledge of students can be explained by their secondary school agricultural education background [**R<sup>2</sup> = 0.56**].

**Table 11**

**Modelling High School Agricultural Education as Independent Variable by Using OLS.**

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-value</b>	<b>t-prob</b>	<b>Part R<sup>2</sup></b>
<b>Constant</b>	26.255	0.81753	32.114	0.0000	0.8881
HISCAG R.	10.500	3.1071	3.379	0.0010	0.0808
HISCAG R.1	0.50000	4.3658	0.115	0.9090	0.0001
HISCAG R.2	10.000	4.3658	2.291	0.0236	0.0388
HISCAG R.3	3.0000	4.3658	0.687	0.4932	0.0036
HISCAG R.4	2.7545	3.1151	0.884	0.3782	0.0060

**R<sup>2</sup> = 0.562486**, F (5,130) = 33.427 [0.0000] \ sigma = 3.08712

**DW=1.39** RSS = 1238.936364 for 6 variables and 136 observations

\*DW = Derbin Watson.

\*\*R<sup>2</sup> = Coefficient of determination.



#### *4.4. THE AWARENESS OF STUDENTS ABOUT THE ROLE OF UNIVERSITIES*

Students were asked to indicate their awareness on four areas of potential roles of universities in agricultural and extension activities. The measure was based on the lickert scale (1= agree, 2=Neither agree nor disagree and 3= Disagree). Accordingly, 92(66%) of respondents indicated their agreement towards the integration of agricultural universities in the national agricultural extension and research services. About 85(61%) students reported that they are aware of the potential contribution of universities for the development, if they should launch community based teaching method that would include practical trials on the small farmer's cropland and they should also participate in the national policy formulation process. More over 70(50%) of them also reported they know the potential contribution of agricultural universities if they should integrate their agricultural training program with research and service.

In general, about 60% of the students reported that they are aware of the importance of integrating universities in the national agricultural research and extension systems. This implies that by and large students support the contribution of HEIs in solving the problem of food insecurity of the country. *See Table 12.*

The mean awareness scores of students on the bases of their previous secondary school agricultural education background and place of birth has been analysed to see the association of the awareness of students with their agricultural education and place of birth background .See *Table 13 and 14.*

**Table 12**  
**Awareness of Students about the Role of Universities in Development.**

	HEIs could play an important role in solving the food security problem of Ethiopia...	A*		ND*		D*	
		<u>n</u>	%	<u>n</u>	%	<u>n</u>	%
1	By participating in the National Agricultural Extension and Research service to the farmers	92	66	33	24	15	10
2	By integrating agricultural education with service and research	70	50	51	36	19	14
3	By participating in the national policy formulation process	85	61	40	29	15	11
4	By launching community based teaching method that would includes practical field trials on the small farmers' cropland.	85	61	35	25	20	14

*\*A= Agree, ND = Neither Agree nor Disagree, D = Disagree*

A result in Table 13 indicates that the mean awareness score of students with high school agricultural background is about **M= 1.9**. This figure indicates a good awareness level because it is with in the range of 1.0-2.0. Where as the mean score of students with no high school agricultural education background is **M= 2.4**. This figure indicates an awareness level below the average because it is with in the range of 2.1-3.4.

Thus the data reveal still the awareness level of students with high school agricultural background is better than that of their counterparts with no agricultural education. The mean awareness score of students grouped by their place of birth revealed that the similar trend with the result of knowledge mean scores. That is mean awareness score of students with rural background is **M= 2.0**, which indicates a good awareness level and the score of students with urban background is **M= 2.2**, which is below the average awareness level. See Table 14. This indicates there is a mean difference between awareness scores of students when they are grouped by their place of birth background. Here we see the awareness of students with rural background is better that of their counterparts.

**Table 13**  
**Mean Awareness Scores on the bases of High School Agricultural Education Background**

High School Agricultural Education Background	Mean	N	Sta. Deviation
Had Agricultural Education	<b>1.87</b>	81	0.4499
No Agricultural Education	<b>2.44</b>	59	0.5978
Total	2.11	140	0.5883

**Table 14**

**Mean Awareness Scores of Students based on their Place of Birth Background**

High School Agricultural Education Background	Mean	N	Sta. Deviation
Had Agricultural Education	<b>1.955</b>	81	0.539
No Agricultural Education	<b>2.201</b>	59	0.596
Total	2.115	140	0.588

Further more this study partly shows students who had high school agricultural education background are most likely to pursue higher education in agricultural science fields than students with no high school agricultural education background. The willingness of these students to study agriculture at higher education level indicates their readiness to pursue their career in the field of agriculture, which is a very important condition for success.

The finding shows among the eight students who have reported that they are interested to pursue their further study in agricultural science field, seven of them have got agricultural education at high school level and even the remaining one student was from rural area agrarian family. However, it should be noted that, it is only 10% of all students with high school agricultural education background (n=81), who are interested to study agriculture at degree level.

This figure or proportion is remarkably very low compared with the finding of Dyer, Lisa and Randall (1999). They reported 97% of the students who had completed high school agriculture courses expressed to study agriculture at higher education level. We see a wide difference when we compare the above result with the findings of this study. The implication of this difference reveals, though the agricultural knowledge level of Ethiopian students, with high school agricultural education background is better, their awareness about the profession of agriculture as a field of study is very low compared to the students in other part of the world.

Thus the very important implication of this finding is that, the agricultural course they received at their respective high school level was not enough to make them at required level of awareness. Therefore, we need to incorporate additional agricultural knowledge raising concepts and informative type of lessons in lower level of agricultural education syllabus.

## **CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS**

### *5.1. CONCLUSIONS AND IMPLICATIONS OF THE STUDY*

#### **I. CONCLUSIONS**

Based on the findings of this study the following conclusions were made;

1. Students with high school agricultural education have a good agricultural knowledge.
2. Place of birth, being born in rural or urban areas, do not affect significantly the agricultural knowledge and awareness of students.
3. Students with high school agricultural education background are aware of the potential contribution of Universities in the process of struggle to attain food security status of the country.

#### **II. IMPLICATIONS OF THE STUDY**

On the bases of the above conclusions the following implications are identified;

1. ***Specific Implications of the Study*** to Ethiopia. Three points in particular relevance to the strategy of ADLI are presented below.

**a) *The strategy to strengthen the Co-ordinated and Integrated Path.***

It is clearly stated under this strategy that, the rural and agricultural development effort needs to be integrated/co-ordinated (MOFED: 2002a). In relation to this, the strategy document calls for further identification of potential partners of co-ordination/integration in the system. Therefore the study tool designed to capture the students awareness about the role of Universities in development gives an indication of the possibility of inviting local Universities to be one of the major partners in the system of co-ordination/integration for agricultural development.

**b) The strategy to **Enhance Agricultural Research and Extension.****

It is also explained in the strategy document that attention will be given to strengthen the research and extension in direct relevance to the objective problem of the country. Hence this study gives at least a researchable hint or clues that local Universities could be invited to participate in the process of agricultural research and extension system of the country (MOFED: 2002b).

- c) The strategy to **Train the Farming Community** with modern **farming skills**.

In order to improve the farming skills of farmers, secondary school complete students will be selected and trained in agricultural skills and then would be assigned to each farmer's association areas (MOFED: 2002b).

The idea of improving farming skill of small farmers seems lofty and undeniably very important. However, the issue of readiness of the secondary school complete students, who are going to be the major task takers, should be considered. In this regard, questions like, are these students adequately aware about the problems and prospects of Ethiopian agriculture? Had they been given sufficient and continuous agricultural knowledge and awareness raising courses during their lower level of schools? Must have been considered.

The finding of this study reveals clearly that, the current secondary school complete students particularly who have not taken agricultural education at their high school level are not aware of the crucial role and importance of agriculture in this country. Thus, these sorts of students are most likely not ready to handle the great task they are expected to do in rural farming areas.

Further more, working in rural areas, with poor farmers and in a challenging environment needs a considerable amount of awareness, commitment and a sense of responsibility. So students that are going to be selected, trained and sent to the farmers are expected to be conscious enough of the over all nature of agriculture and their community.

Therefore, as implied by the findings of this study, in order to insure the adequate level of agricultural knowledge and awareness of students they have to be given continuos and relevant agricultural awareness raising courses in their lower level of schooling. This point could be taken as one of the basic research problems to provide agricultural education as a separate course with the objective of creating adequate level of agricultural knowledge and awareness in the future generation.

## **2. *General Implication of the Study* to LDCs**

Offering agricultural education as a separate course in lower level schools from primary up to general secondary school levels seems a good investment for a developing country with a dominant share of agriculture in its national economy, for two reasons;

First, as the finding of this study shows, this would help to raise adequate agricultural knowledge and awareness of the future generation that would involve in the future development process. Second, even if a student leaves her/his schooling earlier, as a drop out, he/she would join the world of work, particularly agriculture, with adequate agricultural knowledge and awareness. This would also be beneficial for his/her productivity as a farmer.

## *5.2. RECOMMENDATION*

Based on the conclusions and implications made the following recommendation is forwarded;

Further national wide evaluative research is warranted to determine,

- A) The importance of offering agricultural education as a separate course focusing on agricultural knowledge and awareness at various school levels from primary up to the general secondary school level.
- B) Specific agricultural knowledge concepts, those should be included in the agricultural awareness-raising course, which would be offered at different school levels, in particular reference to the long-standing development strategy and specific nature of Ethiopian agriculture.

- C) The need for inclusion or otherwise of agricultural knowledge and awareness of students as one of the components in the national academic standards for formal education completion.
- D) The need to formulate notational policy or a body of law to integrate local Universities with in themselves and also with the larger system in the overall development process in general and agricultural development in particular. In relation to this the following points could be considered;
- (a) Assigning Universities as one of the major partners in federal/regional Agricultural Research and Extension System.
  - (b) Stimulating or encouraging Universities to launch community oriented teaching method that would incorporate training, research and service at grass root level in accordance with the new Education and Training Policy.
  - (c) Empowering Universities to participate in the federal/regional level of policy formulation process.

Finally I would like to stress as responsible professional citizens of Ethiopia, we should seek to identify and document ways and mechanisms to foster a positive attitude and perception about Ethiopian Agriculture. This is very important and crucial because the

agricultural awareness of the present generation seems not at its required level.

## REFERENCES

- Abbi Mamo. (1995). *Environment, Population and Agricultural Development in Ethiopia*, Dejene Aredo and Mulat Demeke. eds. (1995). **ETHIOPIAN AGRICULTURE: Problems of transformation**. Proceedings of the fourth annual conference on the Ethiopian Economy. Addis Ababa University Printing.Press
- Acker, Daved G. ed. (1999). **Leadership for Higher Education in Agriculture**. Proceedings of a conference held in Amsterdam, The Netherlands, July 22-24,1999. Iowa State University.
- Armstrong, H. W. et al (1997). “*Maximising the local economic, environmental and social benefits of a university: Lancaster University*,” *Geo- Journal* 41, 4, 339-50.
- Ayres, Wendy S. and Alex F. McCalla. (1996). **Rural development, Agriculture, and Food Security**. *Finance and Development/ December, 1996*.
- Babbie, Earl.R. (2001). 9<sup>th</sup> ed. **The Practice of Social Research**. A Division of Thomson Learning Inc, Wadsworth. USA.
- Bawden, Richard. (1998). **Agricultural Education and Training: Future Perspectives**. Paper prepared for the Agricultural Knowledge and Information Systems (AKIS) thematic team in the Rural Family of the World Bank.

- Bedassa Tadesse and Kidist G/Sellassie. (1999). ***Anthropogenic Determinants of success in Agricultural Education: The case of Jimma College of Agriculture***. EASSRR, Vol.XV, 1, January 1999.
- Belay Kassa. 1997a, '***Obstacles to High Level Agricultural Manpower training in Ethiopia: Evaluation of Postgraduate program in Agriculture***' Education Journal, Vol.3, No 5, pp. 47-73
- \_\_\_\_\_. (1997b). '***Agricultural Manpower Training in Ethiopia: Achievements and Challenges***' Paper prepared for the seventh Annual Conference on the Ethiopian Economy.
- Berhane G.Kidan. (1982). '***Higher Agricultural education in Addis Ababa University: Its achievements and challenges***' Ethiopian Journal of agricultural Sciences Vol. 4, No 2, PP. 95-108.
- Bhandarkar P.L. and T.S. Wilkinson. (1999). ***Methodology and Techniques of Social Research***. Himalayan Publishers. Delhi.
- Bleaney M. F. et al., (1992) ***What does a university add to its local economy?*** Applied Economics, 24, 305-311.
- Blondel, Daniel. (1998) "***The Role of organisation and financing of higher education***" in Jacques Delors. Education for The 21<sup>st</sup> Century. UNESCO. Publishing, Paris.
- Boucher, Gerry and Els van Der Meer. 2002. ***The Role of Universities in the Development of Less Favoured Regions***. Web site: [www.e.d.conway.newcastle.ac.uk](http://www.e.d.conway.newcastle.ac.uk).

- Brennan, J. et al, eds. (1999). **What Kind of University?** Buckingham: SRHE and Open University Press.
- Buckwell, Allan. (1998). *The Role of Universities in the Agricultural policy development Agenda 2000 and beyond: towards new common agricultural and Rural policy for Europe* -CARPE. Wye College, University of London.
- Charles, D. (2000). **Universities and Regional Development**. Project funded by the European Commission under Targeted Socio-Economic Research. Final report to the Commission. CURDS, Newcastle-upon-Tyne.
- Cheng, Jiaan. 1999. ***Agricultural Higher Education in China: Challenges for the Twenty-First Century in Leadership for Higher Education in Agriculture***, Proceedings of a conference held in Amsterdam, The Netherlands, July 22-24,1999. Iowa State University.
- Coleman, J.S. & Court, D. (1993). **University Development in the Third World**. The Rockefeller Foundation Experience. Pergamon Press, Oxford. I-xviii, 1-417. Gast, W.J. (Ed.)
- Clarke, B. (1998). **Creating Entrepreneurial Universities: Organisational Pathways of Transformation**. Oxford: Pergamon/IAU Press.
- Dagnew Eshete. (1995). *Food shortages and Household Coping Strategies by income Groups: A Case Study of Wolayita District in Southern Ethiopia*, Dejene Aredo and Mulat Demeke. eds. (1995). **ETHIOPIAN AGRICULTURE: Problems of transformation**. Proceedings of the fourth annual conference on the Ethiopian Economy. Addis Ababa University Printing.Press

- Dejene Aredo.(1995). *Transforming Peasant Agriculture: A conceptual framework* in Dejene Aredo and Mulat Demeke. eds. (1995). **ETHIOPIAN AGRICULTURE: Problems of transformation.** Proceedings of the fourth annual conference on the Ethiopian Economy. Addis Ababa University Printing.Press.
- Dejene Aredo and Mulat Demeke. eds. (1995). **ETHIOPIAN AGRICULTURE: Problems of transformation.** Proceedings of the fourth annual conference on the Ethiopian Economy. Addis Ababa University Printing.Press
- Dejene Aredo and Tefferi Regassa.(1995). *Land Tenure: Theory and Policy Issues in Ethiopia*, in Dejene Aredo and Mulat Demeke. eds. (1995). **ETHIOPIAN AGRICULTURE: Problems of transformation.** Proceedings of the fourth annual conference on the Ethiopian Economy. Addis Ababa University Printing.Press.
- Dessalegn Rahmato. ed. (2003). **Some Aspects of Poverty in Ethiopia: Three Selected Papers.** Forum For Social Studies (FSS). March 2003, FSS Studies on Poverty No. 1. Addis Ababa.
- Dyer, James E. and Lisa M. Breja and Randall J. Andreasen. (1999). **Attitudes of College of Agriculture Freshmen toward Agriculture.** Journal of Agricultural Education. Vol. 40, No, 2 1999.
- Falvey, L. (1997). **Bright Students for Agriculture: Do we Attract them. Is Agricultural Education interesting?** Invited paper presented at the

- Annual Conference of the Australian Institute of Agricultural Science and Technology, Crown Casino, Melbourne, August,
- FAO. (1991). **Strategic Options for Higher Education in Agriculture**, Expert Consultation, Report. Rome.
- FAO. (1994). **Agricultural Development Options Review**. Phase 1 Rome: FAO, RGOC. Support to Human Resources Development for Sustainable Agriculture and Rural Development [TCP/CMB/6612(T)]. Phnom Penh.
- FAO. (1997). **Agricultural Education and Training: Issues and Opportunities**. Part of Agricultural education group of the extension, education and Communication service.  
Rome.
- Fekade Shewakena. (2002). ***I am crying No More***. Unpublished. Internet.  
Web Site.
- Florax, R. and Folmer, H. (1989). '***Regional Economic effects of Universities. The Impact of Knowledge Production on Private Investments.***'  
Enschede: CHEPS.
- Ford, P. et al, eds. (1996). **Managing Change in Higher Education**.  
Buckingham: SRHE and Open University Press.
- Fortier, John D. et al (1998). ***Wisconsin's Model Academic Standards for Agricultural Education***. Bulletin NO. 9003, Wisconsin Department of Public Instruction. Madison.

- Gasperini, Lavinia. (2000). ***From Agricultural Education to Education for Rural Development and Food Security: All For Education and Food for All.*** Unpublished. Web site: [WWW.fao.org/sd/exdirect/.htm](http://WWW.fao.org/sd/exdirect/.htm)
- Gerry B., Els van Der Meer and Cheryl Conway. (2002). '***The Role of Universities in the Development of Less Favoured Regions***' an article from Website: [www.c.d.conway.newcastel.ac.uk](http://www.c.d.conway.newcastel.ac.uk)
- Gezahegn Ayele and Metselal Abraha. (1995). *Impact of Micro economic Policies on The Production of Wheat in Ethiopia*, in Dejene Aredo and Mulat Demeke. eds. (1995). **ETHIOPIAN AGRICULTURE: Problems of transformation.** Proceedings of the fourth annual conference on the Ethiopian Economy. Addis Ababa University Printing.Press.
- Ghelawdews Araia. (2002). ***Uprooting the Root Cause of Famine In Ethiopia unpublished.***
- Goshu Mekonnen.(1995). *Agricultural Research and Extension in Ethiopia*, in Dejene Aredo and Mulat Demeke. eds. (1995). **ETHIOPIAN AGRICULTURE: Problems of transformation.** Proceedings of the fourth annual conference on the Ethiopian Economy. Addis Ababa University Printing.Press
- Harbstreet, Steven R. and Richard F. Welton. (1992). *Secondary Agriculture Student Awareness of International Agriculture and Factors Influencing Student Awareness.* Journal of Agricultural Education Vol. 59 no. 9, Kansas State University.

- Hamlin, H.M. (1962). **Public School Education in Agriculture**. Danville, IL: the Interstate Printers and Publishers, Inc.
- Ibrahim Abdullahi Zeidy. (1995). *The Impact of Macro economic Policy Reforms in Agriculture*, in Dejene Aredo and Mulat Demeke. eds. (1995). **ETHIOPIAN AGRICULTURE: Problems of transformation**. Proceedings of the fourth annual conference on the Ethiopian Economy. Addis Ababa University Printing.Press
- Kelly, D.Lynn. (1999). **Measurement Made Accessible**. Sage Publication, Inc.London.
- Lindley, William. (1999). **Constraints and Potentials of Training mid-career Extension Professionals in Africa**. Presented at the International Workshop on Innovative Training Programmes for Mid-Career Agricultural Extension Field Staff in Sub-Saharan Africa, Addis Ababa, Ethiopia, 6-8 July 1999.
- Magrath, C. Peter, (1999). **Reforming U.S. Higher Education**. In Proceedings of the Inaugural Conference of the Global Consortium of Higher Education and Research for Agriculture. Iowa State University.
- McCalla, and Alex F. (1998). *'Agricultural Education, Science and Modern Technology's Role in Solving the Problems of Global Food Resources in the 21<sup>st</sup> century'* paper presented at the Conference of Globalizing Agricultural Higher Education and Science: Meeting the needs of the 21<sup>st</sup> Century held at the national Agricultural University of Ukraine, Kiev, September 28-30, 1998.

- Maguire, Charles J. ' *From Agricultural to Rural Development; Critical Choice for Agricultural Education*' Paper presented to the 5<sup>th</sup> European Conference on Higher Agriculture Education, Plymouth, UK, 11-16 September 2000.
- MOFED. (2002a). **Ethiopia: Sustainable Development and Poverty Reduction.** Mega Printing Enterprise. Addis Ababa.
- MOFED. (2002b). **Development and Poverty Profile of Ethiopia.** Welfare Monitoring Unit, Mega Printing Enterprise. Addis Ababa.
- Mohamed, El Boghdady Shousha Fakhry, and Stanley R. Johnson. 1999. **'Restructuring Higher Education for the Transition to a Market Economy: The Experience of the Higher Institute for Agricultural Cooperation'** Leadership for Higher Education in Agriculture, Proceedings of a conference held in Amsterdam, The Netherlands, July 22-24,1999. Iowa State University.
- Mulat Demeke. (1995). *Fertilizer Procurement, Distribution and Consumption in Ethiopia*, in Dejene Aredo and Mulat Demeke. eds. (1995). **ETHIOPIAN AGRICULTURE: Problems of transformation.** Proceedings of the fourth annual conference on the Ethiopian Economy. Addis Ababa University Printing.Press
- National Council for Agricultural Education. (1999). **Reinventing Agricultural Education for the Year 2020.** Alexandria , Virginia, USA.
- Osler, Audrey. (edr). (1994). **Development Education: Global Perspectives in the Curriculum.** Redwoods Books, Trowbridge, Wiltshire.

- Perritt, D. and Morton, D. D. (1990). *Pre-secondary agriculture: preparing for the future*. The agriculture education magazine, vol.63 No.1
- Rabuffeti, A. (1993). *Some Mechanisms of Co-operation between the National Institute of Agricultural Research and the University in Uruguay'* In FAO, **The Role of Universities in National Agricultural Research systems:** Report of the FAO Expert Consultation, held 10-220 March 1991. FAO, Rome
- Ruffio, P. and J. Barloy. (1995). **Transformations in higher education in agricultural and food sciences in Central and Eastern Europe.** European Journal of Agricultural Education and Ext., vol. 2,Number 2.
- Sigot, Asenath. (2003). **Food Security in Sub-Saharan Africa: The Role of Governmental and Non- Governmental Organizations.** Maseno University College, Kenya.
- Steven Frazle and Helen Van Houten. (1992). **Research with Farmers: Lessons from Ethiopia.** Institute of Agricultural Research. Redwood Press ltd. Melksham
- Stratton, Peter. (1998). **A Student's Dictionary of psuchology.** Peter and stratton abd nick Hayes. london.
- Taddesse A. Woldu. (1995). *The performance of Ethiopia's Agricultural Export*, in Dejene Aredo and Mulat Demeke. eds. (1995). **ETHIOPIAN AGRICULTURE: Problems of transformation.** Proceedings of the fourth annual conference on the Ethiopian Economy. Addis Ababa University Printing.Press

- Tegegn Gebre Egziabher. (1995). *An assessment of Ethiopia's Agricultural Resources*, in Dejene Aredo and Mulat Demeke. eds. (1995). **ETHIOPIAN AGRICULTURE: Problems of transformation**. Proceedings of the fourth annual conference on the Ethiopian Economy. Addis Ababa University Printing.Press
- TGE [Transitional Government of Ethiopia.] (1994). **Education and Training Policy**. Berhanina Selam printing Enterprise. E.E.P.-66, Addis Ababa.
- Tekeste Negash. (1990). **The Crises of Ethiopian Education: Some implications for Nation Building**. Uppsala University, Uppsala.
- \_\_\_\_\_. (1996). **Rethinking Education in Ethiopia**. Reprocentralen HSC, Uppsala.
- Topel, David G. (1998). **Partnerships between Private Sector Agribusiness and Public Higher Education in Agriculture and Rural Development**. Conference on Globalizing of Agricultural High Education and Science. Kiev, Ukraine, Van Crowder, L. and J. Anderson. 1997.
- University of Minnesota. (2001). **Defining Agriculture**. Unpublished. Internet web site.
- World Bank, Rural Development Family, AKIS. **Integrating Universities into National Agricultural Research and Extension Systems: Good Practice for investment in Agricultural University Programs**. March 6, 1999.

Wright, Douglas. (1992). **Agricultural Awareness of eleventh grade students in south state** Missouri schools. Doctoral Dissertation, University of Missouri Columbia.

Yibeltal Gebeyehu. (1995). *Population Pressure, Agricultural Land Fragmentation and Land Use: A case Study of Dale and Shashemene Woredas, Southeren Ethiopia*, in Dejene Aredo and Mulat Demeke. eds. (1995). **ETHIOPIAN AGRICULTURE: Problems of transformation.** Proceedings of the fourth annual conference on the Ethiopian Economy. Addis Ababa University Printing.Press

# APPENDICES

## ANNEX 1: INSTRUMENT OF THE STUDY

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NO \_\_\_\_\_

Addis Ababa University  
School of Graduate Studies  
Regional and Local Development Studies (RLDS).

### **QUESTIONNAIRE**

Introduction

This questionnaire is designed to acquire information to be used for MA Degree thesis entitled:

#### **AGRICULTURAL KNOWLEDGE OF STUDENTS AND THEIR AWARENESS ABOUT THE ROLE OF UNIVERSITIES IN DEVELOPMENT**

The finding of this study will be used as pre-hand information for policy makers educational planners, potential researchers and development planners.

All questions to be asked in this questionnaire are purely for the research purpose. Hence you are kindly requested to provide your personal knowledge and perception about Agriculture and Agricultural Higher Education and its role in solving the food security problem of Ethiopia.

Finally I would like to confirm you that your individual answers would be kept strictly confidential. Your answers will be combined anonymously with all other respondents and therefore no reference will be made to you in particular.



**PART TWO**

**2. AGRICULTURAL KNOWLEDGE (30 POINTS)**

2.1. FOR EACH OF THE FOLLWING STATEMENTS PLEASE MARK (✓) UNDER *TRUE, FALSE, OR DO NOT KNOW* THAT BEST DESCRIBE YOUR KNOWLEDGE ABOUT ETHIOPIAN AGRICULTURE, AS AN ECONOMIC SECTOR.

*If you do not know about the statement, please do not guess, instead mark Do not know.*

	<b>(Mark tick (✓) the appropriate) →</b>	<b>True 1</b>	<b>Fals e 2</b>	<b>Do not know 3</b>
1	Agriculture is the major sector of Ethiopian economy.			
2	Agriculture provides sufficient food supply of Ethiopia.			
3	Agriculture is affected by political and economic policies of the successive governments of Ethiopia.			
4	Agriculture provides large share of Ethiopian export items			
5	The traditional practice of Agriculture has affected the effective use of natural resources of Ethiopia.			
6	There is a high potential of agricultural development in Ethiopia			
7	Small farmers are the major providers of Ethiopian food supply			
8	Ethiopian Agricultural system is largely nature dependent (rain-fed)			
9	Excessive use of fertilisers and pesticides seriously affected the fertility of Ethiopian agricultural land.			
10	Agriculture includes plant and animal production and its marketing.			

*Total score \_\_\_\_\_ (for the researcher use only) 1x10=10 points*

2.2. FOR EACH OF THE FOLLWING STATEMENTS PLEASE MARK (✓) UNDER *TRUE, FALSE, OR DO NOT KNOW* THAT BEST DESCRIBE YOUR KNOWLEDGE ABOUT ETHIOPIAN AGRICULTURAL HIGHER EDUCATION AND FOOD SECURITY ISSUE.

*If you do not know about the statement, please do not guess, instead mark Do not know.*

	<b>(Mark tick (✓) the appropriate) →</b>	<b>True 1</b>	<b>False 2</b>	<b>Do not know 3</b>
1	Agricultural Higher Education is a scientific area of study (3 points)			
2	Agricultural Higher Education is NOT integrated in the national agricultural research. (2 points)			
3	Agricultural Higher Education is NOT integrated in the national agricultural extension service. (2 points)			
4	The existing Ethiopian Agricultural Higher Education mainly			

	focuses on the need of the country particularly to the production of food supply (3 points)			
--	---------------------------------------------------------------------------------------------	--	--	--

*Total score* \_\_\_\_\_ *(for the researcher use only) 3+2+3+2=10 points*

2.3. FOR EACH OF THE FOLLOWING STATEMENTS PLEASE MARK (✓) UNDER **TRUE, FALSE, OR DO NOT KNOW** THAT BEST DESCRIBE YOUR KNOWLEDGE ABOUT THE ISSUE OF **FOOD SECURITY**.

	(Mark tick (✓) the appropriate) _____→	True 1	False 2	Do not know 3
1	Availability of food supply , access to it and nutritional adequacy indicates the prevalence of food security*			
2	Attaining food security requires an integrated effort of technological, political and economical effort. *			
3	Food security is one of the major problems that must be given high attention (2 points)			

Total score \_\_\_\_\_ (for the researcher use only) 4+4+2=10 points

\*=4 points

### PART THREE

#### 3. AGRICULTURAL AWARENESS (5 POINTS)

3.1. PLEASE INDICATE WHETHER YOU *AGREE* OR *DISAGREE* WITH THE FOLLOWING STATEMENTS AS THEY PERTAIN TO THE ETHIOPIAN AGRICULTURE, AS AN ECONOMIC SECTOR.

	Mark tick (✓) in the appropriate box below this _____→	SA* 1	A* 2	ND* 3	D* 4	SD* 5
1	Improper agricultural practice affected the forest resource					
2	Unwise agricultural land use resulted in soil degradation					
3	Use of irrigation for farming is <b>not</b> widespread					
4	Soil and water conservation techniques are <b>not</b> widely practised.					

\*1. Strongly Agree (SA), 2. Agree (A), 3. Neither agree nor disagree (ND), 4. Disagree (D) 5. Strongly disagree SD

Total score \_\_\_\_\_ (for the

researcher use only) 2+1+1+1=5 Points

**3.2. PLEASE INDICATE WHETHER YOU *AGREE* OR *DISAGREE* WITH THE FOLLOWING STATEMENTS AS THEY PERTAIN TO THE ETHIOPIAN AGRICULTURAL EDUCATION.**

	<i>Mark tick (✓) in the appropriate box below this</i>	<b>SA*</b> <b>1</b>	<b>A*</b> <b>2</b>	<b>ND*</b> <b>3</b>	<b>D*</b> <b>4</b>	<b>SD*</b> <b>5</b>
1	Agricultural Education should be given at high school level because it helps for both production and further training.					
2	The contribution of Agricultural Higher Education in curbing shortage of food supply so far is <b>not</b> significant					
3	Ethiopian Agricultural Higher Education has never been attractive for trainees.					

\*1.Strongly Agree (SA), 2.Agree (A), 3.Neither agree nor disagree (ND), 4. Disagree (D) 5. Strongly disagree SD) Total score \_\_\_\_\_(for the researcher use only) 5 Points

**3.3. PLEASE INDICATE WHETHER YOU *AGREE* OR *DISAGREE* WITH THE FOLLOWING STATEMENTS AS THEY PERTAIN TO THE ROLE OF UNIVERSITIES IN SOLVING THE PROBLEM FOOD INSECURITY OF ETHIOPIA.**

Universities most particularly Agricultural Universities or Colleges could play an important role in solving the food security problem of Ethiopia;

	<i>Mark tick (✓) in the appropriate box below this</i> →	<b>A*</b> <b>1</b>	<b>ND*</b> <b>2</b>	<b>D*</b> <b>3</b>
1	By participating in the National Agricultural Extension and Research service to the farmers			
2	By integrating agricultural education with service and research			
3	By participating in the national policy formulation process			
4	By launching community based teaching method that would includes practical field trials on the small farmers' cropland.			

1. Agree (A), 2.Neither agree nor disagree (ND), 3. Disagree (D)  
Total score \_\_\_\_\_(for the researcher use only) 5 Points

**W**ould you be willing to be interviewed in person concerning your response in this questionnaire? (Optional) YES \_\_\_\_\_ NO \_\_\_\_\_

If yes, please indicate your name and address below.

Name \_\_\_\_\_ Telephone No. \_\_\_\_\_ e-mail \_\_\_\_\_

THANK YOU.

## **ANNEX 2: SELECTED EXPERIENCES OF INTEGRATING UNIVERSITIES IN DEVELOPMENT.**

### **I. URUGUAY**

*Linking Universities to NARIs According to Rabuffetti (1993) as cited by World Bank (1999) in Uruguay, effective linkages have established research partnership between universities and the NARI.*

- Ten percent of the NARI research budget is set aside for competitive contracting for research with outside agencies. Universities receive almost half of third funding.
- Universities and NARI staff meet annually to prepared joint research programs.
- Senior NARI staff spend up to 20% of their work time teaching at Universities.
- The NARI facilitates university linkages with international programs (especially the international agricultural research centres).
- Undergraduate students receive NARI fellowships.
- The NARI gives students preference in summer employment.

According to the World Bank, the effort made by Uruguay to integrate universities in the overall rural and agricultural development process is by and large a success story.  
(World Bank: 1999)

### **II. UGANDA**

*Building an Integrated AKIS*

*In Uganda the five years Agricultural Research and Training Project, initiated in 1993, built an integrated system for agricultural research, education, and extension that includes universities.*

Support to the Ugandan University comprised:

- Training to fill critical gaps in the university faculty.
- A continuing Agricultural Education Centre to provide demand-driven training for clients.
- A program for twining Makerere University with foreign universities to strengthen curricula.
- Capacity building for diploma level training at agricultural colleges.
- Close co-ordination with universities in developing an effective NARI  
(World Bank: 1999)

### **III. GHANA**

**Establishing a University Role on National Research program.**

*In Ghana, National Agricultural Research Project (NARP), initiated in 1992, helped to bring universities into the national research program through two mechanisms:*

- The Ghanaian National Commodity/Factor Research Programs, established for 17 strategically important research areas, are led by program Co-ordination Committees PCCs that ensure that research reflects national priorities and responds to client needs. Scientists from all participating institutions, including the universities, serve on the PCCs, allocate funding to participating institutions according to priorities.
- A *Research Grants scheme* is designed to draw universities and other institutions into the research system and to complement research activities under the national programs. The scheme gives priority to basic and strategic research. By mid- 1998, it had funded 110 research projects, including 34 that supported postgraduate research at local universities  
(World Bank: 1999)