INFORMATION TO USERS

This material was produced from a microfilm copy of the original document. While the most advanced technological means to photograph and reproduce this document have been used, the quality is heavily dependent upon the quality of the original submitted.

The following explanation of techniques is provided to help you understand markings or patterns which may appear on this reproduction.

1. The sign or “target” for pages apparently lacking from the document photographed is “Missing Page(s)”. If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting thru an image and duplicating adjacent pages to insure you complete continuity.

2. When an image on the film is obliterated with a large round black mark, it is an indication that the photographer suspected that the copy may have moved during exposure and thus cause a blurred image. You will find a good image of the page in the adjacent frame.

3. When a map, drawing or chart, etc., was part of the material being photographed the photographer followed a definite method in “sectioning” the material. It is customary to begin photoing at the upper left hand corner of a large sheet and to continue photoing from left to right in equal sections with a small overlap. If necessary, sectioning is continued again — beginning below the first row and continuing on until complete.

4. The majority of users indicate that the textual content is of greatest value, however, a somewhat higher quality reproduction could be made from “photographs” if essential to the understanding of the dissertation. Silver prints of “photographs” may be ordered at additional charge by writing the Order Department, giving the catalog number, title, author and specific pages you wish reproduced.

5. PLEASE NOTE: Some pages may have indistinct print. Filmed as received.

Xerox University Microfilms
300 North Zeeb Road
Ann Arbor, Michigan 48106
SAAH, Maurice Kwamina, 1937-
REVIEW AND SYNTHESIS OF RESEARCH ON AGRICULTURAL EDUCATION IN DEVELOPING COUNTRIES.

The Ohio State University, Ph.D., 1974
Agriculture, general

University Microfilms, A XEROX Company, Ann Arbor, Michigan
REVIEW AND SYNTHESIS OF RESEARCH ON AGRICULTURAL EDUCATION IN DEVELOPING COUNTRIES

Dissertation
Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By
Maurice Kwamina Saah, B.Sc., M.A.

* * * * *

The Ohio State University
1974

Reading Committee:
Dr. David G. Francis
Dr. J. David McCracken
Dr. J. Robert Warmbrot

Approved By
Dr. J. Robert Warmbrot
Adviser
Department of Agricultural Education
ACKNOWLEDGMENTS

Acknowledgments should be extended to a number of well meaning personalities whose encouragement and words of wisdom, consciously or unconsciously, caused a turning point in my life. These personalities are too numerous to mention but those whose immediate impact has been felt over the last few months deserve very special mention.

Sincere and heartfelt appreciation is extended to Dr. J. Robert Warmbrod, Professor of Agricultural Education and my graduate advisor, for the extensive amount of time expended to advise and counsel me in the designing, developing and reporting of this study. For his fairness and indefatigable diligence I owe him a great deal of gratitude.

To Dr. J. David McCracken, Assistant Professor of Agricultural Education, special appreciation is extended for his many helpful suggestions and keen interest. Even before he became involved as a member of my reading committee, Dr. McCracken had initiated, on my behalf, contacts with the Center for Vocational and Technical Education of The Ohio State University for permission to use the Center library and resources. These contacts ultimately proved to be the key to the completion of this study.
Dr. David G. Francis, Assistant Professor, Department of Agricultural Economics and Rural Sociology, deserves special acknowledgment for his thoughtful suggestions, encouragement and helpfulness. Many key points in examining the extension education studies would have eluded me without his perceptive analyses and keenness of mind.

Sincere thanks and appreciation are due Dr. Ralph E. Bender, Professor and Chairman of the Department of Agricultural Education, whose personal interest and encouragement are very conducive to graduate study at Ohio State.

I express sincere appreciation and thanks to the other members of my examination committee, Dr. Richard H. Wilson, Professor of Agricultural Education and Dr. Ted L. Napier, Assistant Professor, Department of Agricultural Economics and Rural Sociology, for the opportunity they offered me to demonstrate my readiness to proceed to the final stages of the doctoral program. I owe them a great debt of gratitude for their keenness and interest.

Special appreciation and acknowledgment are expressed to my parents, Mr. and Mrs. L. Sam Tandoh, for their faith in my determination and ability to achieve while they starved and waited.

Lastly, but not the least, I would like to express special gratitude to the Center for Vocational and Technical Education of The Ohio State University through Dr. Joel H.
Magisos, Associate Director, Dr. Wayne E. Schroeder, Assistant Director, and Mr. Roy L. Butler, Graduate Research Associate, for acquiring and making available for my use about fifty-five per cent of the studies reviewed. Without this cooperation and magnanimity I cannot imagine what would have happened to this study. Mr. Daryl Ellsworth, the Center librarian, also deserves very special mention for his invaluable services during the period of my search for the studies and other materials.
VITA

1937 ............... Born - Cape Coast, Ghana, West Africa
1959-1960 ...... University of Science and Technology, Kumsi, Ghana
1960-1966 .......... Senior Technical Officer, Training and Manpower Division, Ministry of Agriculture, Ghana
1966-1967 ........... Michigan State University, East Lansing, Michigan
1968 ............... B.Sc., University of Wisconsin, Madison, Wisconsin
1970 ............... M.A., University of California, Los Angeles, California
1970-1972 ........... Doctoral Program, University of California, Los Angeles, California
1973-1974 ........... Research Associate, Department of Agricultural Education, The Ohio State University, Columbus, Ohio

PUBLICATIONS


FIELDS OF STUDY

Major Field: Agricultural Education

Studies in Agricultural Education. Professors Ralph E. Bender and J. Robert Warmbroad

Studies in Adult and Vocational Education. Professor Richard H. Wilson

Studies in Rural Sociology. Professor Ted L. Napier

Studies in Research Design. Professor J. Robert Warmbroad
TABLE OF CONTENTS

ACKNOWLEDGMENTS ...................................... ii
VITA ................................................... v
LIST OF TABLES ........................................ ix

Chapter

I. SETTING FOR THE STUDY........................................ 1
   Statement of the Problem
   Objectives of the Study
   Need for the Study
   Procedure

II. AFRICA REGION........................................ 10
   Higher Education in Agriculture
   Teacher Education
   Training of Extension Personnel
   Intermediate Level Agricultural Education
   Comprehensive Agricultural Education
   Secondary School Programs in Agricultural Education
   Evaluation of Secondary Level Agricultural Education Programs
   Training for Farming and Related Occupations
   Adult Farmer and Extension Education
   Farmer Training Centers
   Elementary Level Agricultural Education
   Summary
   Recommendations for Further Research

III. ASIA AND FAR EAST REGION.............................. 46
   Survey of Agricultural Education
   Higher Level Agricultural Education
   Developing University Programs
   Teacher Education
   The Teacher and the Role of Teachers
   In-Service Education

Page
   ii
   v
   ix
APPENDIX

A. List of Studies By Author... ... ... ... ... 203
B. Correspondence... ... ... ... ... ... ... 208
BIBLIOGRAPHY... ... ... ... ... ... ... ... ... ... 216
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table Number</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Population Distribution and Land Use of Countries in the Africa Region</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>Population Distribution and Gross Domestic Product Data of the Countries Represented in the Asia and Far East Region</td>
<td>47</td>
</tr>
<tr>
<td>3</td>
<td>Population Distribution and Gross Domestic Product Data of Countries in the Latin American Region</td>
<td>113</td>
</tr>
<tr>
<td>4</td>
<td>Population Distribution and Land Use of Countries in the Near East Region</td>
<td>145</td>
</tr>
<tr>
<td>5</td>
<td>Distribution of Studies By Subject Area and By Region</td>
<td>166</td>
</tr>
<tr>
<td>6</td>
<td>Distribution of Studies By Subject Area and Type of Research</td>
<td>172</td>
</tr>
<tr>
<td>7</td>
<td>Distribution of Studies By Subject Area and Sampling Technique Used</td>
<td>175</td>
</tr>
<tr>
<td>8</td>
<td>Distribution of Studies By Subject Area and Data Gathering Instrument Used</td>
<td>176</td>
</tr>
<tr>
<td>9</td>
<td>Distribution of Studies By Subject Area and Data Analysis Technique Used</td>
<td>178</td>
</tr>
</tbody>
</table>
CHAPTER I

SETTING FOR THE STUDY

Statement of the Problem

The Center for Vocational and Technical Education of the Ohio State University commissioned a review paper on research in agricultural education which was written by J. Robert Warmbrod and Lloyd J. Phipps and published in August 1966.\(^1\) In June, 1970, a second edition of the publication written by Earl T. Carpenter and John H. Rodgers was published under the same auspices.\(^2\) The Director of the Center, in his introduction to the first review paper, indicated that "the stimulus for this paper evolved from the recognition of the need for establishing a base or 'benchmark' for current research efforts and for the national information retrieval and disseminating system being developed by the Center." He also indicated that the review paper "should aid researchers and practitioners in assessing the current state of the art in research for the field of

\(^1\)J. Robert Warmbrod and Lloyd J. Phipps, Review and Synthesis of Research in Agricultural Education (Columbus: The Ohio State University, 1966).

\(^2\)Earl T. Carpenter and John H. Rodgers, Review and Synthesis of Research in Agricultural Education (Columbus: The Ohio State University, 1970).
agricultural education. Further, it should assist in identifying voids in our research framework and help 'sharpen' future studies, both in terms of their substantive focus and methodological approaches."

Basically, the publications had as their main clientele the producers and consumers of research in agricultural education in and about the United States; and, as Warmbrod and Phipps pointed out in the preface to their review paper, "...excluded were studies conducted in the United States that pertained to agricultural education in other countries." The need was for a companion review and synthesis that will fill the gap and provide international students and researchers with a resource reference that had hitherto not been available to them.

The primary purpose of the study was to review and synthesize research in agricultural education conducted in the United States from 1965 to 1972 that pertained to other countries. It was necessary that some 'benchmark' be identified, first, to indicate the state of the research in agricultural education, and second, to indicate what suggestions had been and needed to be made for the solution of agricultural education problems in these countries.

---


Objectives of the Study

The specific objectives of the study were to:

1. Review, analyze, and synthesize research for the period 1965 to 1972 indicating the findings, conclusions, and trends emerging from the research.

2. Analyze and describe the design and methodology employed in the research.

3. Indicate areas of needed research and suggest further research problems based on the research reviewed.

Need for the Study

Swanson and Persons stated that "with the alarming estimates of world food shortages and possible famine within the next several decades, attention has turned to agricultural education as a way to promote production and to alleviate the crisis." They further indicate that a few countries have made dramatic progress toward agricultural and economic development and "some of the research has chronicled the role of agricultural education in the process." 5

The United States has attracted international scholars and students in agricultural education for the past several

years and indications are that the country will continue to offer such attraction to international students in agricultural education for a long time to come. It was, therefore, hoped that the findings reviewed and synthesized in this study would be of value to these students as well as to producers and consumers of research concerned with the practice and problems of agricultural education in countries other than the United States. This need has been underscored by McCracken when he wrote:

The purpose of a research report is to report research, not to provide the educator with practical guidelines for program improvement....
In a recent study of research utilization, I stressed the necessity for making research findings accessible to practitioners: repackaging, reviewing, summarizing, and interpreting research for practical application...so that educators may learn to identify and utilize research which is applicable to their problems.

At a World Conference on Agricultural Education held in Denmark in 1970, the field of agricultural education was considered at three major levels:

1. Higher education in agriculture - university studies leading to the award of first and post-graduate degrees or an award of equivalent standard including teacher education.

2. Intermediate agricultural education and training - all types of technical training in agriculture

---

which are below the academic level of university education; agricultural education programs of secondary and immediate postsecondary nature were included.

3. Vocational training for farming and related occupations included programs at the young and adult farmer levels and for out-of-school youth preparing to enter farming and rural occupations associated with agriculture. Pre-vocational and introductory education programs at the elementary school level were included in this category. Extension education programs were also included in this category. 7

For the purpose of this study agricultural education covered all programs in agriculture and extension education related to the above classifications or categories.

Procedure

The focus of the study was two-fold: (1) to review and synthesize research studies in agricultural education to provide a convenient source for obtaining an overview of research reported during 1965-1972; and (2) to analyze and describe the methodology used in the research. Travers states that "any research that is reviewed must be appraised

partly in terms of the extent to which it was adequately designed. However, evaluating the research methodology was not a major concern of this study; merely describing the design and techniques was the main focus in this aspect of the study.

Since one of the purposes of this study was an assessment of the "current state of the art in research framework and help 'sharpen' future studies in terms of their substantive focus," an important concern was to establish the appropriateness of the subject areas and situations in which research problems were likely to reside in the countries to which the studies had reference. Also, a basis for identifying suitable categories into which the research studies should be classified and synthesized in the problem areas was established. To help in this task, several UNESCO and FAO publications were consulted.10, 11

The other aspect of this study called for a description of the types of research used in the studies. Several references provided insights into the different types of

9 Warmbrod and Phipps, op. cit., p. iii.
10 FAO/UNESCO/ILO, op. cit.
research but the outline below which was summarized from Van Dalen\textsuperscript{12} was used as a guide for identifying the methodology used in the research reviewed as to whether it was (1) historical, (2) descriptive, or (3) experimental and to describe the techniques used to identify and sample the population, and to collect and analyze the data.

**Obtaining the Research for Review**

The study was primarily concerned with research conducted in the United States about agricultural education in other countries. The population of studies comprised dissertations, theses and staff studies on file in colleges and universities offering programs in agricultural education and listed in *Dissertation Abstracts International* and *Summaries of Studies in Agricultural Education*. This listing was supplemented with computer searches utilizing the facilities of the Mechanized Information Center at The Ohio State University. The total number of studies identified for the period was 70 representing 30 different countries. The following criteria were used in selecting the studies:

a) The research was initiated and/or wholly or partly conducted in the United States. This requirement was relaxed in some cases in order to include relevant UNESCO/FAO studies.

b) The research was about a country with a developing agricultural economy.

c) The report was located in a library or resource center and was available to researchers and students in the United States.

The steps followed in obtaining the materials for the study were: (1) the studies were identified from the publications reporting the research; (2) the sources of the reports were located; and (3) by various means copies of the original reports were obtained.

The Center for Vocational and Technical Education, The Ohio State University, consented to acquire copies of all doctoral dissertations that were not already obtainable in their library system. All the dissertations identified were thus made available for use. Masters' theses and staff studies were obtained through the university inter-library loan service. Those that were not available through interlibrary loan were obtained by direct communication with the colleges and universities holding the reports.

The studies were broken down by regions of the world. A "regionalization" schedule used by the World Conference on Agricultural Education was adapted giving
the following breakdown:  

<table>
<thead>
<tr>
<th>Region</th>
<th>Dissertation</th>
<th>Theses</th>
<th>Staff Studies</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>11</td>
<td>4</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td>Asia and Far East</td>
<td>17</td>
<td>12</td>
<td>6</td>
<td>35</td>
</tr>
<tr>
<td>Latin America</td>
<td>9</td>
<td>2</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Near East</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>19</td>
<td>8</td>
<td>70</td>
</tr>
<tr>
<td>Per cent</td>
<td>61</td>
<td>28</td>
<td>11</td>
<td>100</td>
</tr>
</tbody>
</table>

CHAPTER II

AFRICA REGION

The total population of the Africa region is about 330 million. Of this total approximately 85 to 90 per cent are engaged in farming and live in rural areas.\(^1\) The table below summarizes some data of agricultural interest about the countries representing the region in this section of the study.

In much of Africa the signs indicate a very high agricultural potential. But agricultural development is limited by lack of technological facilities, knowledge of land-use under tropical conditions, and the development of efficient institutional and managerial structures to support the transformation from subsistence patterns of farming to larger scale systems of integrated agriculture. Above all, scarcity of trained human resources to man the programs of agricultural development has plagued the region.\(^2\)


\(^2\)Ibid.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Per cent urban</td>
<td>Per cent rural</td>
<td>Per cent in Agriculture</td>
<td>Per cent in Agriculture</td>
<td></td>
</tr>
<tr>
<td>Cameroon</td>
<td>6,000</td>
<td>20.5</td>
<td>79.5</td>
<td>82.0</td>
<td>52.0</td>
<td>34.8</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>26,200</td>
<td>8.7</td>
<td>91.3</td>
<td>85.0</td>
<td>71.8</td>
<td></td>
</tr>
<tr>
<td>Kenya</td>
<td>11,600</td>
<td>10.3</td>
<td>89.7</td>
<td>80.0</td>
<td>10.7</td>
<td></td>
</tr>
<tr>
<td>Ghana</td>
<td>9,390</td>
<td>31.3</td>
<td>68.7</td>
<td>55.0</td>
<td>60.9</td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td>66,170</td>
<td>22.8</td>
<td>77.2</td>
<td>67.0</td>
<td>51.1</td>
<td></td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>2,800</td>
<td>7.0</td>
<td>93.0</td>
<td>73.0</td>
<td>85.7</td>
<td></td>
</tr>
<tr>
<td>Sudan</td>
<td>16,800</td>
<td>13.8</td>
<td>86.2</td>
<td>80.0</td>
<td>13.0</td>
<td></td>
</tr>
<tr>
<td>Uganda</td>
<td>10,130</td>
<td>9.6</td>
<td>90.4</td>
<td>86.0</td>
<td>47.4</td>
<td></td>
</tr>
</tbody>
</table>

Sibanda, commenting on the question of scarcity of human resources, indicated that when African leaders, in conjunction with international technical agencies, assess their priorities and strategies they conclude that the only way to agricultural development is through the process of education and training. Swanson and Persons echoed a similar assessment when they stated that "with the alarming estimates of world food shortages and possible famine within the next several decades attention has turned to agricultural education as a way to promote production and to alleviate the crisis. . . ."

In most African countries agricultural education is divided into three levels: (a) higher education (degree), (b) intermediate (diploma and certificate) and (c) farmer training and other forms of vocational and pre-vocational systems. A directory, published by the Food and Agriculture Organization of the United Nations, lists agricultural education and training institutions in 40 African countries

---


4 Swanson and Persons, op. cit.

and presents the following information: (a) institutional name and address, (b) level of agricultural education, (c) entrance requirements, (d) courses offered, (e) student capacity of the school, (f) employment opportunities, (g) language of instruction, and (h) degrees or certificates awarded. A glossary of terms used in international agricultural education, lists of Food and Agriculture Organization seminars, reports and regional and national centers and studies in specialized fields are included. The countries represented in this study are included in the directory and generally adhere to the systems identified.

Higher Education in Agriculture

**Teacher Education**

Sibanda[^6] stated that the awareness of the need to bring about agricultural development by education and training has raised one problem in several African countries. That problem is providing highly qualified agricultural lecturers and technicians to develop programs and curriculum for the training of teachers and other required personnel. The World Conference on Agricultural Education pointed out that "...progress in the development of agricultural and training systems will not be possible without provision and support of well-trained teachers at all levels." The

[^6]: Sibanda, *op. cit.*
Conference provided further amplification by stating that "the definition of a 'teacher' should include teachers at all levels of agricultural education, technician trainers and extension workers. It is essential that the planning of teacher training programs should take the different requirements of these various categories into account."  

With this concern in mind Sibanda investigated the possibility of developing a model of teacher education programs for colleges and universities in Africa. Sibanda's specific objective was to develop a program of teacher education for two African universities - Haile Sellassie I University, Ethiopia and Makerere University, Uganda. Orientation and emphasis was to be appropriate to the African context and needs while drawing upon the long experience and expertise of some British and American universities. His argument was that all too often programs of higher education in agriculture, including teacher education, had been based mostly on the biases derived from education systems of helping nations.

The investigation included a comprehensive analysis of printed materials such as prospecti, bulletins, departmental and university publications, books and reports of FAO, UNESCO, and Organization for Economic Cooperation Development. A visit to selected universities in Britain,  

7FAO/UNESCO/ILO, op. cit., p. 29.
America and Africa was undertaken in which interviews were held with Deans of agricultural colleges, Registrars, Heads of Departments, subject matter experts, professors, lecturers, and graduate students.

Based on the findings and information gathered in the study, Sibanda proposed a model for teacher education in the two countries and other African universities. The model included guidelines for student recruitment, curriculum and subject matter offerings, staff personnel selection, practical field experiences in teaching and technical agriculture and implementation of the model. The model constituted a basically different concept from what obtains in African universities which are primarily for technical and professional education in the specific fields of study. Teacher education programs are in colleges and institutions conducted outside the university systems.

Mondeh, Boma and Okoye, in their studies about Sierra Leone, West Cameroon, and Nigeria respectively

---


investigated teacher education along with other programs of agricultural education. Okoye stated this about Nigeria:

The problems which face the country over teacher training are very formidable indeed. No timid or half-hearted programmes will suffice. Without this Nigeria's education will limp sadly behind her aspirations.

Boma indicated in his findings that there was an acute shortage of specialized agriculture teachers in Cameroon to carry out the programs of elementary school level agricultural education. In his earlier study Boma also mentioned the shortage of agriculture teachers at the secondary level.

Mondeh also stated: "to be able to pursue effective programs of functional vocational and technical education in agriculture Sierra Leone will need to educate a new breed of teachers, as well as provide opportunities for the re-education of some of the existing staff."

All four studies, concerned with appropriate teacher education programs in the respective countries' colleges and universities, outlined several guidelines and curriculum guides for implementation of such programs in Africa with emphasis on adequate and appropriate preparation in the three aspects of teacher education, namely, (1) general education, (2) technical education, and (3) professional education. These studies, like that of Sibanda, were advocating a change in orientation and direction of teacher education programs in the several African countries where such programs are located outside the university systems.
Training of Extension Personnel

The World Conference on Agricultural Education and other agencies have stressed the need for extension personnel preparation. Preparation at the higher education level has been frequently mentioned.

A suitable curriculum for such a program was the subject of a study conducted by Williams.11 This study identified professional needs of extension agents in Western Nigeria as a basis for a curriculum at the college level. The purpose of the study was to develop a curriculum for the preparation of extension personnel needed in extension education programs of Nigeria with emphasis on the general professional competencies of such workers. Williams used the critical incident method in interviews with personnel of five levels in the extension hierarchy in the Western Nigerian Ministry of Agriculture. Williams' general findings were that extension agents needed training in specific aspects of the extension educational process, behavioral sciences and agricultural technology. He then made proposals for what he thought would be a suitable or appropriate curriculum for the training of such extension personnel.

Another study by Asante\textsuperscript{12} was more specific with the extension specialist as the main focus. The major objective of Asante's study was to establish the functions of an agricultural extension economist and to derive from the functions a job description pertinent to the Ghanaian experience. Asante used extensive library and documentary search of Ghana government publications and reference materials in the U. S. as well as personal interviews with extension experts and workers in the United States to develop the data needed.

The study established that there was an increasing need for subject matter specialists in Ghana and other developing countries and that existing conditions required an extension economist with a broad knowledge to be able to handle his responsibilities efficiently. To do that the extension worker needed appropriate training in professional and technical education in the specific area of concern. The findings offered the basis for a suitable curriculum which Asante thought would deal with the nature, purpose, duties and tasks of the extension economist provided such curriculums would be incorporated in the institutions preparing extension agents.

Intermediate Level Agricultural Education

In most developing countries of Africa, intermediate level agricultural education is the least developed. This is because "the demand by Africans for western education was and is predominantly oriented towards the provision of more academic-type schools."\(^{13}\) Wharton, discussing the types and levels of education relevant for agriculture, identifies one level as the education of those serving farmers directly and states that "during the early stage of agricultural growth, direct servers will come primarily from some type of secondary education level."\(^{14}\) But, as pointed out earlier, this level of agricultural education has been the most neglected according to experts and observers. It is this concern that has prompted several studies to be devoted to the development of agricultural education programs at the intermediate level.

Comprehensive Agricultural Education

Mondel\(^{15}\) investigated the possibility of developing a total program of agricultural education for Sierra Leone.


\(^{15}\) Mondel, op. cit.
His major objective was to develop a program for Sierra Leone based on the needs, the potential conditions and national objectives.

Mondeh's findings were that Sierra Leone had a problem of unemployment but also a shortage of agricultural labor with the necessary aptitudes, skills and knowledge. Other problems included political instability, illiteracy, malnutrition, low productivity, rural underdevelopment and poverty, a high rate of school drop-out and inappropriate educational programs. The fact that Sierra Leone is a predominantly rural society with a great agricultural potential made it absolutely necessary for the country to have a comprehensive agricultural education program functional and varied enough to satisfy the needs for agricultural manpower resource development.

Sierra Leone's problems are duplicated in many African countries. Boma\textsuperscript{16} and Okoye,\textsuperscript{17} therefore, were looking at similar situations in studies dealing with the development of agricultural education programs for West Cameroon and Nigeria respectively. The specific objective of Okoye's study was to design a comprehensive program of agricultural education able to meet the needs, raise the standard of living of rural people and increase the

\textsuperscript{16}Boma, op. cit.
\textsuperscript{17}Okoye, op. cit.
contributions of the agricultural sector to the whole economy and culture of Nigeria. Okoye's design was to embrace the development of educational programs for (a) children of the rural primary school age level, (b) rural high school pupils, (c) post-high school young adults, (d) adults desiring to increase their proficiency in farming, and (e) pre-service and in-service teacher education.

The purpose of Boma's study was to develop guidelines for agricultural education programs in West Cameroon in the areas of primary, secondary, and out-of-school youth education. To meet this purpose the specific objectives to be achieved were to develop guidelines for curriculums for students in primary and secondary schools, out-of-school youth and teacher education for teachers of primary, secondary and young and adult farmer programs. These specific objectives in all respects coincided with Mondeh's idea of a total agricultural education program.

Boma, Mondeh, and Okoye reviewed the national deficiencies, priorities, and objectives vis-à-vis the agricultural potential of their countries and based their recommendations on a general rationale contained in the following statements by Okoye:18

1. A nation's educational system must provide the education and training necessary for

18Okoye, op. cit.
and appropriate to a modern agriculture in the rural communities;

2. An efficient agriculture which helps education, business, and industry meet the needs of the people, will in turn, further improve agriculture and nutrition;

3. Without adequate agricultural education rural development will remain sluggish and the success of the industrial program will be adversely affected;

4. Vocational agriculture is an integral part of vocational and general education and tends to strengthen the rural education processes;

5. The teaching of vocational agriculture in Nigerian schools will significantly increase the status of agriculture as a way of life;

6. The major concern for increasing productivity in Nigerian agriculture is to concert its ordinary peasant producers into progressive, efficient, and independent farmers.

All three studies involved extensive library and documentary search and analysis of reports and papers of the various governments concerned, reference works, textbooks, reports of international technical programs and reports of other foundations.

While Mondeh and Boma recommended a set of philosophical considerations in the development of educational programs at the various levels, Okoye went further by not only making general statements of rationale but also outlining the specific objectives, curricular content, organization, administration, and financing of the various levels of agricultural education.
Secondary School Programs in Agricultural Education

As a take-off from the comprehensive agricultural education programs proposed by Mondeh, Boma and Okoye for Sierra Leone, West Cameroon and Nigeria respectively, Sogie-Thomas and Effanga developed a program of agricultural education specifically for schools at the secondary level in Sierra Leone and the Southeastern State of Nigeria. The objectives of both studies were (1) to ascertain the need for the development of programs of agricultural education based on this question: What should be the nature and scope of such a program at the secondary level in the schools of their several countries? and (2) to determine the means of accomplishing the objectives of agricultural education.

Both Sogie-Thomas and Effanga used extensive literature and documentary search relative to programs in several American colleges and universities. In addition Effanga conducted interviews with state personnel in administration, supervision and instruction as well as teacher education in Virginia to develop a rationale for educational programs


comparable to those in American public schools with modifications and adaptations appropriate for Africa.

The general findings were that very little had been done in the area of agricultural education at the secondary level and that school leavers lacked adequate knowledge, skills and understandings as they prepared to enter occupations of farming and agriculturally related areas.

Based on these and other findings, recommendations were made for agricultural education programs to be established in the secondary schools. It was recommended that programs be established with specific and utilitarian objectives and that the governments in the respective countries include agricultural education in their systems as a matter of national policy and provide adequate funding, personnel, facilities and equipment as well as teacher education programs to produce teachers. In addition, both investigators developed and proposed specific curriculum guidelines for use in the secondary schools of the respective countries.

Education in Africa has a long history of considerable involvement by Christian missions. Even though this involvement has been at a lower level in agricultural or vocational education than in general education, nevertheless substantial, but unannounced contributions have been made by the Christian Church in some specific countries. Reeves' study21

21Wade H. Reeves, "Church-Related Programs in Agricultural Education in Cameroun and Uganda" (unpublished Ph.D. dissertation, The Ohio State University, 1972).
is of great interest in this respect.

Specifically, the principal objective of the study was to establish the contribution of the Christian Church to agricultural education in Cameroon and Uganda by describing the development, activities and accomplishments of some programs. These agricultural education programs are mostly in secondary-type institutions with provisions for young and adult farmer training and extension education. Reeves used questionnaires and personal visits and interviews to gather the necessary data.

Reeves' general findings were that (a) the training programs were fulfilling a real need in the two African countries, (b) the projects were making substantial progress in the achievement of their objectives, (c) they could be used as examples for expansion and development of similar programs in other areas of Africa, and (d) these projects could be used as guidelines for the evaluation of similar programs in other areas or countries. In this connection Reeves provided a listing of curricular offerings, schedules, materials and equipment, model farm instructions, cropping plans, recommended books and literature and the addresses of all the projects covered in the study.

**Evaluation of Secondary Level Agricultural Education Programs**

One aspect of evaluation of programs of agricultural education that is frequently undertaken in research studies
is to determine the occupational status (or post-graduation pursuits) of former enrollees some time after graduation or termination of their school programs. Two studies relating to agricultural education in Africa had this aspect as their main focus.

Siegenthaler\textsuperscript{22} conducted a follow-up study of the graduates of the Jimma Agricultural High School in Ethiopia. At the time of the study Jimma was the only high school of its kind in Ethiopia. It was established in 1952 as a pilot project to become a nucleus of a system of secondary-level agricultural education envisaged for the country. The major objective of the study was to determine the relationships between the background characteristics and the educational experiences of the graduates of Jimma High School and their post-high school pursuits. The study involved 150 students who had graduated between 1954 and 1964. Some of the variables investigated were the graduates' tribal and provincial origins, occupational status, perceptions of practical work training while in school, assessment of the program of studies, proficiency status, grade point average, agricultural college records, and scholastic deficiency of graduates who were dismissed from the Agricultural College because of poor academic performance.

Siegenthaler used the records of graduates at the Jimma school and a combination of personal contacts and questionnaires to collect data and information for the study. The findings of the study generated the following conclusions: (a) the graduates' tribal and home province background had little association with their post-high school pursuits, (b) the graduates were meeting a real need in providing Ethiopia with trained young men to establish and carry on programs for social and economic development, (c) there was need to expand the Jimma concept as the broad objectives of the school were being met, (d) several former graduates had assumed leadership roles in agricultural education, research and extension, (e) there was need to increase the amount of the practical training aspects of the program, and (f) an elementary teacher education program should be included in the curriculum of the school.

Maxwell studied the graduates of Chavakali Secondary School in the western province of Kenya which paralleled Siegenthaler's study in Ethiopia. The major difference in the two studies was that the Jimma school was strictly an agricultural high school and Chavakali a regular high school with an agricultural curriculum.

---

Chavakali Secondary School was established in 1959 and in 1960 became the first and only rural secondary school in Kenya to start a curriculum in agriculture and industrial arts along with the regular high school program. The objective of Maxwell's study was to evaluate the relationship between certain background characteristics and the post-high school pursuits of 299 graduates of Chavakali during the period from 1962 to 1966. Variables included in the investigation were structural characteristics of parental home and reference villages, educational attainment of parents, secondary school experience, further training or higher education, present occupational status and post-secondary location. Maxwell utilized a combination of questionnaires, interviews and a search and analysis of the school records at Chavakali to amass needed data and information.

Since the agricultural curriculum was just a part of the overall school program the findings of this study were generally in terms of the total school experience. However, a finding that was of particular concern to the agricultural curriculum was that there was no difference between students who had studied agriculture and those who had not in relation to ratings for modernity, job satisfaction, present salary levels, occupational status, number of jobs held since leaving school and job tenure in present employment. In addition, the graduates who had received
agricultural training were mostly employed by government agricultural agencies. The number so employed was much greater than that of graduates who had not received agricultural training. The agricultural trainees were more inclined to pursue agricultural careers and further education in agriculture.

Above all a major finding reported by Maxwell was that the total program of agricultural education at Chavakali had been so successful in meeting its educational objectives that by 1970 thirty-five rural secondary schools in Kenya were teaching agriculture and the Ministry of Education had planned to establish agricultural education programs in all the rural secondary schools of the country.

Training for Farming and Related Rural Occupations

Discussing vocational training for farming and related rural occupations in Africa, the World Conference on Agricultural Education noted:

Agricultural training and extension are the two major methods in which the adult farming community is influenced and induced to adopt new and improved methods of agricultural production. Types of training, length of courses, and other factors will vary enormously with local circumstances and needs.

Adult Farmer and Extension Education

Demonstration is one method in extension education which is considered very desirable in carrying a new idea or practice to the farmer. Leagans further described an aspect of demonstration thus:

A result demonstration is a way of showing people the value of a new practice. . . . Comparisons are usually necessary. The result demonstration may be for a single recommended practice or series of practices that come in sequence with respect to a problem.

In a nutshell, this was the main focus of a study by Alfred Boateng. The primary purpose of Boateng's study was to develop a program for educating the farm people of Ghana concerning the use of compost as a means of increasing soil fertility. The objectives pursued in order to achieve the purpose were (a) to determine the relative effectiveness of different compost levels on the yields in selected school gardens in the Ashanti region of Ghana; (b) to demonstrate the value of compost as a fertilizer; and (c) to suggest a program designed to help the farmers of Ghana learn how to make and effectively use compost. A random


sample of school gardens was selected in various localities of the region, and compost was prepared in situ and applied to selected plots at different levels with four replications. Crops planted on both control and experimental plots were pepper, tomatoes and corn.

The major finding of the experiment was that compost as a fertilizer was effective in increasing yields of certain crops and that the general quality of the treated crops was superior to that of the untreated crops. Boateng utilized the whole experimental study and the findings to recommend some educational programs for farmers. But the immediate educational value of the study was the opportunity both the school children and the local farmers had to observe the experiment in progress. In this connection the World Conference statement on research is noteworthy: "Research and field trials provide an essential basis for the improvement of agriculture."27

Malnutrition is a major problem in several African countries and educational programs in nutrition and food utilization are frequently emphasized in extension education and rural development programs. The development of an educational program in this regard was the focus of

27FAO/UNESCO/IL0, op. cit.
Baffuor-Senkyire's study. Baffuor-Senkyire investigated the extent of the incidence of Kwashiorkor - a protein calorie deficiency disease prevalent in several African countries - in the Ashanti region of Ghana as a basis for developing an extension educational program in nutrition in the rural areas. The specific objectives were to (a) determine the extent to which the disease affected the pre-school age children of Ashanti and (b) consider practical measures in terms of developing educational programs that mothers could understand to realize the need to improve their knowledge and practice of nutrition.

Baffuor-Senkyire made an extensive search of the medical records of the Nutrition Division of the Ministry of Health in the region to determine the extent of the incidence and treatment of and mortality resulting from Kwashiorkor. He used other survey methods including interviews, questionnaires and visits in the region to obtain background information about the rural people. He also utilized an experimental approach using a model nutrition education program on a sample experimental group against a control group to test the effects of the education program. The model consisted of lectures, demonstrations, and visual aids in connection with the principles and elements of proper nutrition.

---

28 Joseph K. Baffuor-Senkyire, "The Magnitude of the Incidence of Kwashiorkor (Protein-Calorie Malnutrition) and the Development of Educational Programs to Decrease its Occurrence in Ashanti Region of Ghana" (unpublished Ph.D. dissertation, Purdue University, 1971).
basing the concepts on more familiar food items in the rural areas. The program included encouraging the mothers to properly feed their weaning babies and pre-school children. The overall result of the experiment was the improved condition of the children affected by the educational program and the mother's general awareness of the proper nutrition methods due to improved knowledge.

His findings were that Kwashiorkor was more widespread and fatal than usually reported and the pre-school children of ages two to four were most vulnerable. He reported that medical and clinical facilities were totally inadequate and that much of the disease incidence was attributable to lack of proper health habits, traditional methods of infant feeding and lack of knowledge of good dietary practices. Baffuor-Senkyire concluded that apart from its medical implications, which were crucial due to a lack of adequate health facilities, the problem could be approached from the preventive perspective -- education. He, therefore, proceeded to make extensive proposals for educating the rural women and mothers in the Ashanti region through extension programs. He recommended that the model he used in the study be expanded and used in such programs but he also indicated that the model should be incorporated in an extensive program of rural and community development covering the fields of health, sanitation, nutrition, and agricultural production.
Farmer Training Centers

For a more formalized type of extension education many African countries have established farmer training centers. A farmer training center is a residential short-course institution where farmers, farm women, youth club leaders and others attend short practically-oriented courses of training. These centers are integral parts of the agricultural extension service. Markham\(^{29}\) stated the objectives of farmer training centers as follows:

1. To bring to the attention of the farmer that there could be a better life for himself and his family;

2. that this standard of living is preferable and desirable and is attainable by improved agriculture;

3. to provide the farmer with the training and skills, and introduce him to the use of new factors by which he can realize this improvement.

Markham conducted a study of farmer training centers in some English-speaking countries of Africa. The purpose of the program under which the study was conducted was to assist developing countries to organize programs for effective preparation of farmers. In this case the study was concerned with the *modus operandi* of such centers in Ghana,

Kenya, Sudan, Uganda and Western Nigeria. Markham visited the countries concerned and through field observation, interviews and documentary analysis exhaustively examined several centers. His findings were that (a) each country had developed training programs which met its needs, (b) no one system met the needs and requirement of all conditions, and (c) farmer training centers assisted in promoting incentive and change. Markham recommended that farmers should be instructed and guided in the proper use of improved techniques and practices and that farmer training should be based on a sound knowledge of both agriculture and socio-economic programs of the country and especially of the community in which they are located. He also mentioned that farmer training programs should be seriously considered only when placement of and use of techniques or knowledge by farmers is assured.

An evaluation of farmer training centers in Kenya was the subject of a study by Mackie. At the time of the study 29 centers were in operation in Kenya where the idea was first put into action in 1957 with only three centers operating in the whole country. The major purpose of the study was to appraise the farmer training centers as

---
agents of change in peasant behavior in agricultural pursuits. Mackie held several interviews with administrators, teachers, and farmers directly or indirectly concerned with these centers and carried out a field study of one center through observation and interviews of participants and programmers.

Contrary to the impression conveyed by Markham, Mackie's major finding was that "in a general sense the farmer training centers have been unable to change significantly the farming habits of the peasant farmers in the districts served." Mackie cited these factors as those principally inhibiting the general objectives of the programs: (a) insufficient facilities, (b) inadequate administration, (c) lack of coordination between centers and other agencies of change, (d) insufficient localization of curriculum, (e) poor staffing practices, (f) lack of morale and staff continuity, (g) inadequate recruiting practices, (h) poor selection and timing of courses, (i) insufficient follow-up and evaluation, (j) inadequate teaching aids, (k) inability to recruit and successfully train local opinion leaders.

The differences in the findings between Markham's study and Mackie's could be explained by the major objectives of the two studies. While Markham was only interested in describing the farmers' centers as they operated at the time of his study Mackie's purpose was to make an evaluative assessment of such centers. However, Markham's recommendations implicitly conceded some of the shortcomings that Mackie revealed.
Elementary School Level Agricultural Education

Mondeh,\textsuperscript{31} Okoye\textsuperscript{32} and Boma\textsuperscript{33} proposed comprehensive programs including agricultural education at the elementary school level as the beginning or introductory orientation to agricultural education. These studies provided in general terms the rationale and guidelines for elementary school programs even though Boma alone went further to make recommendations for specific organization and curricular offerings.

In a follow-up study Boma,\textsuperscript{34} conceding that the introduction of such a program into a system that is otherwise oriented raised some fundamental issues, investigated the problems and perceived solutions related to the introduction of agricultural education programs at the elementary school level in West Cameroon. The specific objectives of the study were (a) to explore the existing status of elementary level agricultural education in West Cameroon, (b) to identify the problems and perceived solutions inherent in upgrading the status of such a program from the point

\textsuperscript{31} Mondeh, \textit{op. cit.}
\textsuperscript{32} Okoye, \textit{op. cit.}
\textsuperscript{33} Boma, \textit{op. cit.}
\textsuperscript{34} Alaric N. Boma, "Problems and Proposed Solutions of Agricultural Education at the Elementary School Level in West Cameroon" (unpublished Ph.D. dissertation, Cornell University, 1971).
of view of administrators, top level decision-makers in education, teachers of agriculture and students of West Cameroon, and (c) to propose solutions as a basis for the effective development of agricultural education program in the elementary schools of the country.

Boma used a combination of literature search and analysis and questionnaires designed to solicit information from the administrative head of the elementary school system in Cameroon, supervisors and managers of schools, headmasters (or principals) of elementary schools, agriculture and non-agriculture teachers and senior students of elementary schools. In addition he travelled to Cameroon to conduct personal interviews with top level decision makers.

Boma's major finding was that there was a complete lack of commitment to the philosophy and general objectives of agricultural education in the country. His major recommendation was that there should be a government policy in agricultural education committed to specific national objectives which would form the basis for curriculum development, organization and administration and financing of educational programs in agriculture in the elementary schools of West Cameroon. He also recommended guidelines for objectives, program planning, guidance, curriculum, organization and administration and research in elementary level agricultural education.
Included in his recommendations were the need for the government of the Cameroon to provide adequate funding for agricultural education so that adequate facilities and equipment, and teaching and supervisory personnel can be provided to ensure agricultural education programs at the elementary school suited to the needs and requirements of advanced programs of agricultural education and the development of educational programs for out-of-school youth and young farmers.

Summary

Teacher education is a crucial issue in agricultural education at all levels and the studies emphasize the need for both pre-service and in-service programs in the countries across Africa.

The studies underscoring the need for suitable extension education curriculums for extension workers is noteworthy. Many times teacher education or preparation of personnel in agricultural education has been held to reside only in subject matter or technical competence without regard to general and professional preparation in education. The result is that colleges and universities in African countries do not have specific curriculums for extension or other educational workers in agriculture.

The FAO study, Directory of Institutions in 40 African Countries, offered a comprehensive list of all agricultural
education institutions in every country in Africa. Indications are that these institutions are considered adequate and appropriate by the governments of such countries for their needs in agricultural education. On the other hand several of the studies gave the impression that agricultural education in the countries studied has some extreme deficiencies. In some of the studies comprehensive agricultural education programs were proposed giving the overall impression that no programs of any kind existed. The inevitable conclusion to be drawn is that the researchers and the policy makers in Africa have not been addressing themselves to the same concerns.

Reeves' study developed an awareness of the part Christian missions have played in agricultural or vocational education. In the arena of world discussions, educational efforts by the Christian church in Africa are infrequently mentioned even though in several African countries the initial effort in education of any kind was initiated primarily by Christian missions.

Evaluation of educational programs and follow-up studies of graduates of educational programs provide valid opportunity to programmers, policy makers, teachers, and others to take stock of their impact, activities and performance. Experts maintain that evaluation should include assessments and appraisals of both product and process.
and that it should be a continuous process and not just a point in time judgment. However, even when evaluation is a one-time exercise the outcome can be revealing.

Maxwell's finding regarding the equal post-high school performance of graduates who took agriculture in high school and those who did not is very revealing. In Africa secondary type programs that have to do with agriculture attract only low academically-inclined students or stigmatize the graduates for lower prestige or status pursuits. By the same token, Siegenthaler's finding that several of the Jimma Agricultural High School graduates in Ethiopia have assumed leadership roles in agricultural education, research and extension speaks well of how agricultural education programs, if well conducted and accepted, can help destroy the low regard accorded agricultural curriculums in otherwise academically-oriented educational systems in the region.

Extension education has been proposed to hold one of the keys for rural and agricultural development in Africa. The focus of an extension program should seek to answer a need or arouse farm people to new ideas or forms of practice. Demonstrations are frequently used to provide that emphasis. Boateng's study addressed itself to this approach and demonstrated how local facilities and involvement can be utilized to develop extension education programs.

In developing countries agricultural education cannot be divorced from other educational issues having to do with
rural development. Since malnutrition constitutes one of the most debilitating problems, some agencies advocate a total program of extension education encompassing the cross-section of rural farming communities. The World Conference on Agricultural Education insisted that the rural farm woman is an important part of extension clientele. One area in which rural women need the greatest impact of new knowledge and awareness is nutrition education. McKenzie, \(^{35}\) addressing the subject of nutrition in a hungry world, noted:

> Nutrition education should be directed at the family. Usually the people to get the first attention are the women of childbearing age and children, as these are most likely to be affected by poor diet.

To develop a program to educate rural women in this regard was the focus of Baffuor-Senkyire's study on Ghana. Baffuor-Senkyire established that the incidence of Kwashiorkor was attributable in a large measure to lack of proper nutrition education. His educational program constituted a new approach to extension education applicable to many African countries.

In the more formalized programs in extension education farmer training centers have become popular in the African region. Whether or not these institutions are doing an adequate job is hard to assess because United Nations

agencies usually refrain from evaluating individual countries' programs. On the other hand, Mackie's study brought into the limelight the complacency that invariably belies many programs of education or rural development on the African continent. The study uncovered several shortcomings which Markham's study, for example, glossed over for reasons difficult to fathom. Also, Mackie's study afforded insights into some of the factors that should be taken into account when such or similar programs are being evaluated.

Recommendations for Further Research

The most common method of evaluation for educational programs in Africa is by means of common examinations administered to elementary and secondary school students at various stages of their schooling to determine progression through the system and to certify the end of terminal programs. In between these examinations no other types of evaluation are conducted. As already indicated, educators and measurement experts maintain that evaluation should be directed toward both the process and the product.

Evaluation of agricultural education programs was mentioned by several investigators but they did so in connection with specific aspects of the program. One investigator suggested, and as he did so expressed the concerns of others, that studies should be conducted (a) to evaluate total agricultural education programs as often as resources will permit
and (b) to follow-up various categories of graduates of agricultural programs. Specifically mentioned was the need for comprehensive and systematic follow-up studies of secondary school leavers to provide information for career and educational planners and manpower studies. Also mentioned was the need for investigation into factors of home and village environments and their relationship to government programs of planned change.

One area which was least studied in the Africa region was curriculum and syllabuses for secondary type agricultural programs. One investigator expressed a region wide need when he suggested that a study or studies be initiated for curriculum development and syllabus options for secondary agricultural education including options for girls emphasizing small animals, vegetable production and food preservation.

In the area of extension education one investigator proposed research to develop superior seeds, improved varieties of cereal grains and other agricultural crops. This calls for basic research but the investigator indicated that, if farmers should be approached with new methods and ideas of production, teaching and demonstration should be based on scientific findings. What this suggestion could be interpreted to mean is that studies should be conducted on the repackaging and utilization of findings in basic agricultural research for purposes of agricultural extension education.

Farmer training centers do not have the same kinds of examination schedules as regular elementary and secondary
level educational programs. But it is necessary to assess the impact of these centers and the post-course pursuits of participants. In order to achieve this purpose one investigator suggested that farmers training centers in various countries should be evaluated more often in terms of the programs themselves and the influence the programs have on participants.
CHAPTER III

ASIA AND FAR EAST REGION

The region is predominantly agricultural. Millions of acres of land with topography and soil suited to inten­sive agriculture are available for both crop and animal production.¹ Table 2 provides an insight into the agri­cultural situation of the countries in the region.

The economic development of this region, like that of other developing regions, is tied with agricultural devel­opment. The agricultural sector makes a substantial con­tribution to the socio-economic life of the region. In the last two decades many countries in the region have initiated various strategies and "crash" programs for agricultural development, particularly increased produc­tion of food grains to stave off shortages in view of fast growing populations. But "the success of all the efforts depends not only on technological breakthroughs and insti­tutional changes, but also in the efficiency of both farmers and those responsible for the programs. Hence, education is the key."²


² Ibid., p. 17.
<table>
<thead>
<tr>
<th>Country</th>
<th>Population (Thousands)</th>
<th>Per cent urban</th>
<th>Per cent rural</th>
<th>Per cent Agriculture</th>
<th>Per cent Agricultural Share of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>584,800</td>
<td>20.0</td>
<td>80.0</td>
<td>87.0</td>
<td>50.0</td>
</tr>
<tr>
<td>Japan</td>
<td>106,000</td>
<td>68.0</td>
<td>32.0</td>
<td>24.0</td>
<td>12.0</td>
</tr>
<tr>
<td>Korea</td>
<td>33,700</td>
<td>34.0</td>
<td>66.0</td>
<td>55.0</td>
<td>35.0</td>
</tr>
<tr>
<td>Laos</td>
<td>3,100</td>
<td>15.0</td>
<td>85.0</td>
<td>81.0</td>
<td>55.0</td>
</tr>
<tr>
<td>Malaysia</td>
<td>11,400</td>
<td>43.0</td>
<td>57.0</td>
<td>55.0</td>
<td>28.0</td>
</tr>
<tr>
<td>Nepal</td>
<td>11,800</td>
<td>4.0</td>
<td>96.0</td>
<td>92.0</td>
<td>66.0</td>
</tr>
<tr>
<td>Pakistan</td>
<td>66,900</td>
<td>27.0</td>
<td>73.0</td>
<td>68.0</td>
<td>47.0</td>
</tr>
<tr>
<td>Philippines</td>
<td>40,800</td>
<td>30.0</td>
<td>70.0</td>
<td>58.0</td>
<td>33.0</td>
</tr>
<tr>
<td>Taiwan</td>
<td>14,700</td>
<td>62.0</td>
<td>38.0</td>
<td>47.0</td>
<td>24.0</td>
</tr>
<tr>
<td>Thailand</td>
<td>38,600</td>
<td>18.0</td>
<td>82.0</td>
<td>78.0</td>
<td>31.0</td>
</tr>
</tbody>
</table>

Agricultural education in the region, in one form or the other, is carried on at different levels in all the countries except Taiwan, Japan, Malaysia, Laos, and Nepal which do not conduct elementary school level agricultural education. The UNESCO survey identifies the levels of agricultural education as follows:

1) Higher level agricultural education covering faculties and colleges of agriculture (including teacher education) in universities and other independent university level agricultural institutions offering undergraduate and/or graduate programs;

2) Intermediate level agricultural education covering vocational agriculture schools, comprehensive high schools with agriculture curriculums and technical agriculture schools of up to one year post-high school duration;

3) Primary level agricultural education including elementary school programs offering agriculture as an avocational or introductory curriculum; farm schools or farmer training centers; and extension programs in agriculture aimed at adult and established farmers or young farmers.  

---

3Ibid., pp. 9-10.
Survey of Agricultural Education

A study by the United Nations Educational, Scientific, and Cultural Organization\(^4\) provides an overview of agricultural education in 19 Asian countries. The survey offers valuable information for planners and administrators, teachers at all levels and others who are concerned with the practice and improvement of agricultural education in Asia and in other regions where similar situations and problems exist.

Sets of questionnaires together with guidelines for the preparation of chapters pertaining to specific countries and statistics were sent to individual countries in the region. The data collected through replies to questionnaires were supplemented by information secured from various other sources such as UNESCO and FAO experts and national and institutional publications.

Much of the information and data were derived from national government sources providing considerable insights into the historical development and levels of agricultural education, organization and administration, curricular programs, teacher education, methods of teaching, staff and facilities for instruction, training in related fields, manpower needs and supply, placement services, and trends and problems. The countries covered in this study included:

\(^4\)Ibid., pp. 9-12.
Afghanistan, Burma, Cambodia, Ceylon, India, Indonesia, Iran, Japan, Korea, Laos, Malaysia, Mongolia, Nepal, Pakistan, Philippines, Singapore, Taiwan, Thailand, and Viet-Nam.

The study provides an overall view of the state of agricultural education in the region as a whole and a detailed description of agricultural education in the several countries according to the outline indicated above.

Higher Level Agricultural Education

The UNESCO survey reported that a trend taking place in the region is the expansion and reorganization of agricultural education programs. Some of the measures taken to expand and reorganize programs have been the establishment of additional agricultural institutions and the conversion of existing schools and colleges into universities. Agricultural universities, patterned after the land-grant colleges and universities in the United States, have been established in India and Pakistan.\(^5\)

**Developing University Programs**

Assistance to some developing countries to establish and maintain agricultural institutions of higher learning has been the focus of specific United States technical aid programs since World War II. India has been a beneficiary

of such an agreement for assistance. Manthiri Krisnaswamy conducted a study to assess the impact of the United States/India technical assistance program. The specific objectives of the study were to (a) determine the success achieved by the United States technical assistance program in accomplishing the project objectives of bringing about organizational and functional changes in the Indian institutions of agricultural education on the pattern of the U. S. Land-Grant model and in augmenting the human resource base of these institutions; (b) assess the effectiveness with which the institution building inputs, especially the participant training and U. S. advisory services, have been used in achieving the project objectives; and (c) to identify the major problems associated with the development of the institution building inputs with special reference to the problems associated with participant training and U. S. advisory services. The study involved an extensive examination of large volumes of documents, reports, reviews and literature. Other data were obtained by questionnaires.

The major findings were that the land-grant concept had been accepted for reorganizing the pattern of higher level agricultural education; eight universities exhibiting

varying degrees of the concept had been established; both the human and material resources of the institutions had been improved including the expansion and strengthening of graduate study; and that research and extension had been accepted as a legitimate function of the universities. However, the study isolated a number of problems and deficiencies which delayed the achievement of the overall objectives of the project. Some of these problems included legislative and practical difficulties in transferring research and extension functions to the new institutions; tendency of the institutions to spread out their resources by proliferating beyond the limits of human and financial resources; and the adoption of the American system of coursework based on semesters and quarters and internal evaluation posed some conflicts of traditionalism versus pragmatism.

On the other hand, there were some positive aspects of the picture and Krishnaswamy pointed out the U. S. technical assistance program had been largely successful in achieving its main objectives and indicated:

In spite of these difficulties it is reasonable to conclude that there has been a preceptible improvement in the quality of agricultural education, research and extension. The most significant change is that now there is an increasing awareness of the functional aspects of agricultural education and of the need to make it development-oriented. The right psychological environment has been created
but, it will be some time before these institutions can attain functional maturity.

**Teacher Education**

Lack of qualified teachers at the intermediate and primary levels is a problem frequently mentioned in connection with agricultural education in Asia and the Far East. The UNESCO study indicated that lack of teachers was a perennial problem. The World Conference on Agricultural Education insisted that teacher education should not only concern itself with the quality and numbers coming out of pre-service programs but also with the quality and frequency of in-service programs. Many studies about this region focused on this subject.

Thipphawong, Teofilo de la Cruz, Lodhi, and Kishimoto studied the possibility of developing agriculture

---

7 Krishnaswamy, *op. cit.*, p. 258.
11 Tanweer A. Lodhi, "Developing A Pre-Service Education Program for Agriculture Teachers at West Pakistan Agricultural University, Lyallpur" (unpublished Ph.D. dissertation, Ohio State University, 1966).
teacher education programs in Laos, Philippines, West Pakistan and the Ryukyu Islands respectively. Thipphawong's study was concerned with developing a teacher education program in agriculture for elementary school teachers of Laos. The purpose of the study was to (a) analyze collected educational and sociological information to determine the needs of pre-service and in-service training in agriculture for elementary school teachers; and (b) suggest a new educational policy and a new curriculum which would meet the needs of the daily life of the rural people and to explain how teacher education in agriculture could make contributions to the national socio-economic development.

The main procedure for obtaining the data and information was a search and analysis of government documents and reports, reports of international organizations and library material. Based on the material analyzed, Thipphawong developed a rationale based on the socioeconomic as well as the agricultural situation of the country for a concerted agricultural education program in the school systems of Laos and suggested a detailed curriculum and curriculum guide for a teacher education program. The proposals were to be incorporated into the overall program of the National Teacher Training Center in Laos, the only teacher education institution in the country.

Teofilo de la Cruz's study was to develop a pre-service teacher education program in agricultural education.
Specifically, the objective was to compare the undergraduate curriculum in agricultural teacher education of selected state universities in America with the Mindanao Institute of Technology (MIT) in the Philippines as a basis for formulating some basic recommendations for upgrading the MIT program in teacher education. A copy of the undergraduate curriculum in agriculture education was requested from six American institutions. From these materials course offerings and credit hours by major areas and fields were drawn up. A comparison of this information was made with the MIT program.

De la Cruz's findings were that there were not too many differences between the curriculums of the American institutions on one hand and the MIT curriculum on the other regarding (a) credit hours required for graduation and course distribution, (b) course offerings relative to technical, professional, and general education and the number of credit hours of electives, and (c) requirements for scholastic performance.

However, this comparative study of the curriculums enabled de la Cruz to make the following recommendations for upgrading the MIT program: (a) a wider range of elective courses in technical agriculture should be offered to allow students more flexibility in designing their individual programs; (b) a course in adult and young farmer teaching should be offered because of the requirement of vocational
agriculture teachers in rural high schools to conduct adult farmer programs; (c) a course in agricultural engineering dealing with small unit farm machinery should be included in the curriculum; (d) among the recommended electives should be at least a course in agricultural/rural communication and mass media; (e) some of the existing courses that overlapped should be consolidated to allow introduction of new courses suggested in the study.

Lodhi was also concerned with developing an agriculture teacher education program for the West Pakistan Agricultural University, Lyallpur. The purpose of the study was to secure suggestions from programs in selected institutions in the United States for improving the program of agriculture teacher education at Lyallpur. Lodhi developed the following objectives for the study: (a) to assess the need of selection and recruitment practices and offer some suggestions for West Pakistan Agricultural University; (b) to propose a curriculum for the education of prospective agriculture teachers at the university; (c) to assess the need for placement, follow-up, and in-service education; (d) to recommend the nature and amount of field experiences including student teaching; and (e) to assess the suitability of the proposed program of pre-service education of agriculture teachers at Lyallpur by having members of a jury react to the proposed program.

---

13 Lodhi, op. cit.
The programs of 10 Departments of Agricultural Education in U.S. universities were studied through available printed material. Mailed questionnaires were used to obtain additional information from these institutions. Also, Lodhi made personal visits to the institutions for interviews with the faculty concerned. A list of 16 guiding principles was developed from the literature and submitted to a jury of five teacher educators in U.S. institutions who had experience in both Pakistan and the United States.

Lodhi made specific proposals for a teacher education program for Pakistan. Specially mentioned and provided for were selection and recruitment, curriculum, professional laboratory experiences, placement, follow-up and in-service education guidelines. Some of Lodhi's recommendations were that in order to facilitate recruitment and selection of prospective trainees Lyallpur should advertise its teacher education program through bulletins, handbills and catalogs, invite prospective trainees to visit the campus facilities and allow staff members to visit and talk to students and their parents at home; that students should be encouraged to declare their major field not later than the third year at the university to enable students to work toward more specific subject areas of the curriculum; that in order to make student teaching more attractive to prospective teachers, student teachers should be paid for teaching time instead of the compensation to cooperating teachers; and
that a division of student personnel services be established in the teacher education department charged with the responsibility of placing prospective teachers, follow-up of teachers on the field and arranging in-service education programs.

The study by Kishimoto\(^{14}\) was similar in many respects to Lodhi's study. The main objective of the inquiry was to formulate a curriculum and to identify and describe specific courses in agriculture and professional education for beginning teachers of agriculture in the Ryukyu Islands. However, while Lodhi used teacher education programs in the United States as a pattern for his recommendations Kishimoto used a strategy described in this statement:

To determine the pattern of a teacher education program related to technology in agriculture and methods of teaching agriculture in a situation similar to Ryukyu Islands a review was made of the programs of the twelve collegiate training institutions in Japan in preparing teachers for the same type of agricultural schools as is found in the Ryukyu Islands.

Kishimoto reviewed the catalogs and other related data and material about each university in Japan in addition to a review of library material on agricultural education in the United States. He then proceeded to draw up and recommend program content and suggested curriculum and specific descriptions which would develop the abilities

\(^{14}\)Kishimoto, \textit{op. cit.}
and competencies needed by prospective teachers of agriculture.

Kishimoto's recommendations were based on the rationale that even though the general pattern of agriculture teacher education was not prescribed by Japan's Ministry of Education and the course requirements were not uniform in the 12 Japanese universities, the Japanese practices, with adaptations to allow for Ryukyu Islands' specific agricultural pattern, provided the basis for an agricultural teacher education curriculum for the University of Ryukyus. His findings were that the most commonly required subjects in technical agriculture were: animal husbandry, agricultural economics, agricultural weather, farm management, farm mechanics, fertilizers, general crops, general horticulture, practical farming, soils and special crops. In the area of professional education the most commonly required subjects were adolescent and educational psychology, principles of education, student teaching, teaching methods of agriculture and vocational guidance.

On the whole the teacher education curriculum consisted of 32 per cent technical agriculture, 27 per cent general education, 20 per cent professional education, 10 per cent required electives and 10 per cent elective subjects. Kishimoto's suggested curriculum was based on the above findings.
The Teacher and The Role of Teachers

Warmbrod and Phipps indicated that studies of the perception of teachers of agriculture reveal conflicting findings relative to the teacher's role both within the profession and with other groups of professional educators.¹⁵ A study by Delbert Shirley¹⁶ was concerned with evaluating the perceptions of different groups of professionals. The objective of Shirley's study was to determine what the professional role of vocational agriculture teachers in Thailand should be as perceived by vocational agriculture teachers and by individuals identified by the vocational agriculture teachers as holding significant positions and whether this role contributed to the objectives of the agricultural schools. Individuals holding significant positions were identified as other vocational and academic teachers in the same or other schools, administrative personnel, supervisors, vocational agriculture teacher educators (professional), technical agriculture teacher educators, and students.

¹⁵Warmbrod and Phipps, op. cit., p. 78.

A background review of agricultural education in Thailand was developed from library and documentary searches as well as from government and technical aid organizations' reports. Eight schools were selected in the four provinces of Thailand with the assistance of an advisory committee. The advisory committee also helped to develop a list of 138 role behaviors for vocational agriculture teachers. Interviews and questionnaire schedules were developed and administered to all teachers in each of the eight schools, seven supervisors of agricultural education, and five USAID personnel.

Agriculture teachers, administrators, supervisors, and technical agriculture teacher educators were identified as the most "significant others" to whom agriculture teachers turned when they needed help with teaching problems. There was generally a great deal of convergence on the role of vocational agriculture teachers; 123 out of the 138 role behaviors were identified as a "must" for the teachers by all parties polled. Even though the smallest number of convergent items was identified between agriculture teachers and administrators, the conclusion was that the role of teachers as identified contributed in a general way to the specific objectives of the vocational agriculture schools.

17United States Agency for International Development personnel are usually advisors and technicians attached to projects that have joint sponsorship between the U. S. government and aid receiving country.
In-service Education

In-service education programs are designed either to upgrade teachers' knowledge in specific subject matter areas or to strengthen their professional competence. In each case the teaching effectiveness of teachers is always the main focus. With this focus Samuel Go conducted a study which was concerned with determining the in-service education needs of teachers of farm business management in the Philippines. The primary objective of the inquiry was to determine whether elementary agriculture teachers in Cotabato who were Mindanao Institute of Technology (M.I.T.) graduates needed further training in selected farm business management topics and to find out in which areas more training was needed. Go attempted to obtain data on the relationship between selected variables and the elementary agriculture teacher's competency to teach selected farm business management topics. Variables considered were number of years of teaching experience, age, number of years of vocational agricultural training in high school, credits taken after college graduation, overall grade point average and grade point average in agricultural economics courses taken in college.

---

Two groups of respondents were involved in the study. The first group included 74 elementary agriculture teachers in the province of Cotabato and the second group was composed of high school vocational agriculture teachers, college instructors and members of the M.I.T. Farm Business Management Committee. Go used sets of questionnaires to extract needed information. Information was also obtained from records of the Registrar at M.I.T. The farm business management program was broken down into 30 course units. Among the course units were selected measures of farm profit, general interpretations of analysis results, analyzing the cropping program and animal enterprise, obtaining credit for farming and planning the reorganization of the farming business.

The findings in the study were that (a) the elementary agriculture teachers needed in-service training in farm business management before they could participate in teaching the subjects to adult farmers; (b) the teachers needed additional training in 21 of the 30 topics included in the study; (c) the teacher's training, experience, age, high school vocational agriculture training, overall grade point average, and grade point average in agricultural economics courses taken in college were positively related to teachers competency to teach farm business management courses. The number of credit hours taken after college
graduation was not related to competence. The findings generated some recommendations for upgrading the pre-service education program and for instituting a concerted program of in-service education in farm business management. He recommended specifically that priority attention should be given to the following topics in any in-service program meant for elementary agriculture teachers who would teach farm business management: optimum level of production, general interpretation of analysis results, analyzing the animal enterprise, the cropping program and other costs, planning the reorganization of the farming business and the farm account book.

Another study concerned with the quality and improvement of teacher education programs in agricultural education in the Philippines was conducted by Gapasin. Gapasin mailed questionnaires to 90 agricultural schools and received completed questionnaires from 299 vocational agriculture teachers, 56 heads of agricultural high schools and 10 teacher educators. The purpose of the study was to collect information from vocational agriculture teachers, agricultural school administrators, and college supervisors in agricultural education in the Philippines to determine the effectiveness of selected aspects of the pre-service education program.

---

agricultural teacher education programs at the Mindanao Institute of Technology identifying the significant strengths and weaknesses and the need for in-service education in order to upgrade teachers of vocational agriculture in the Philippines.

The significant conclusions drawn from the findings were that several areas of the pre-service programs were deficient by not providing adequate student teaching experiences, teacher preparation for young and adult farmer education, agricultural mechanics, and student farming programs. It was also significant that many agricultural teachers had not taken courses for professional improvement since graduating from college. Based on the findings Gapasin made extensive recommendations for improving the pre-service education program and a detailed proposal for appropriate in-service programs. Some of his recommendations were that the curriculum should be revised to include student teaching and professional courses as rigid requirements for teacher certification. The curriculum should be flexible to allow for specialization by prospective teachers in technical areas like agricultural production, agricultural mechanics, agricultural supplies, ornamental horticulture, forestry and agricultural resources. The professional courses in the undergraduate program should be expanded to include how to organize and teach adult and young farmer
programs and youth organizations. He also mentioned that intensive and extensive in-service programs should be a regular feature of the agricultural teacher education institutions.

**Intermediate Level Agricultural Education**

The World Conference on Agricultural Education stated that objectives of intermediate level agricultural education in Asia and the Far East were as follows:

1. To prepare students for farming and farm living
2. to impart agricultural knowledge and skills
3. to develop local leadership
4. to train farm managers
5. to train village level extension workers for government employment.

The UNESCO study also stated:

The objectives of agricultural education at this level vary from providing a broader perspective in the general education of the students to preparing prospective and skilled agricultural operatives for the government and private sectors.

With this broad outline of objectives it is easy to see how agricultural education in the region could have developed from varied historical backgrounds, needs and emphases.

---

21 UNESCO, *op. cit.*, p. 34.
Development of Agricultural Education

Studies by Hari Sinha$^{22}$ and Prodeep Paul$^{23}$ focused on the historical development of agricultural education in India. Specifically, the purpose of Hari Sinha's study was to trace the origin and development of agricultural education in India$^{24}$ with major emphasis on non-degree programs. Data were collected from a comprehensive survey of annual government yearbooks, five-year plans, United Nations reports, periodicals, Indian government reports on the progress of agriculture since 1905, and from curricula of institutions in the different states of India.

Sinha's findings were that (a) the original impetus for agricultural education arose from recurrent incidences of famine in India; (b) agricultural education was organized at three levels -- primary, middle and high school; (c) various versions of the middle level programs evolved and were discontinued; (d) multipurpose high schools developed


out of the failures and deficiencies of previous attempts at the middle level; (e) agricultural extension education played a great part in educating farmers in new methods and practices of farming; and (f) agricultural extension programs have been merged with community development programs.

The findings led Sinha to make a number of recommendations such as the following: (a) a truly functional system of vocational education in agriculture was urgently needed; (b) the image of agricultural education should be improved; (c) a strong program of teacher education should be developed; and (d) adult education and rural development education in agriculture should be a regular part of vocational education programs in agricultural education.

Paul's study investigated the development of agricultural education in India from the early colonial period up to the 1970's noting the social, economic, political and agricultural circumstances that gave rise to the various stages it passed through.

Paul, therefore, made a comparative study of the development of agricultural education in the United States to serve as the basis to develop, strengthen and improve the programs of agricultural education in India. The general world impression is that United States agriculture has made such a phenomenal progress in development that it is felt the United States has leadership and example to offer the rest of the world. It is little wonder that many developing
countries are eager to draw not only inspiration but also practical examples from educational programs in agriculture in the United States.

The study had as its focus programs of high school vocational agriculture, technical agriculture, young and adult farmer education, and out-of-school youth education in agriculture. Based on his findings Paul recommended programs to take into consideration the historical development of agricultural education and the social and economic conditions of India. The highlights of Paul's recommendations were (a) a general program of agricultural education should be established at the primary and secondary school levels; (b) those students wishing to continue in specific agricultural careers should be encouraged to enter Agricultural Polytechniques located in the vicinity of or attached to agricultural colleges and universities; (c) a system of guidance and counseling programs should be provided in secondary schools and in the polytechniques; (d) the Ministry of Education should assume responsibility for vocational and technical agriculture education in India; and (e) agriculture curriculums should be designed to incorporate knowledges and skills specifically needed in Indian agriculture.

Secondary Level Agricultural Education Programs

Several studies focused on either the description of programs or the development of agricultural education
programs at the secondary level in the region. Paul's recommendations were also referenced in a study by J. A. Shah\(^\text{25}\) which was to develop a rationale and guidelines for secondary school agricultural education programs in India and Pakistan. The specific objectives of Shah's study were (a) to review the history of education including agricultural education in the public schools of India and Pakistan; (b) to describe the educational and socio-economic variables which determined the nature of current agricultural education programs; (c) to determine the extent of the need for instruction in agriculture in the public schools; and (d) to suggest guidelines for establishing and carrying out agricultural education programs in the public schools.

The study, like many with similar purposes, used mainly literature search and analysis, various official documents and reports about India and Pakistan. Based on the findings Shah developed detailed rationale statements and guidelines for the establishment of vocational agriculture programs in the countries mentioned. Appropriate teacher education to help carry out the educational programs in the secondary schools was also mentioned.

Gagni, Barile, and Cushman\textsuperscript{26} conducted a study of agricultural education programs in some southeast Asian countries. The investigation involved case studies of secondary school programs in Thailand, Taiwan, South Korea, and Japan.\textsuperscript{27} One of the main purposes of the study was to seek out and describe exemplary and innovative features of agricultural high schools in the selected countries. According to the investigators "especially sought were innovations which would meet the criteria of uniqueness; excellence of outcome; viability; and promise for try-out, adaptation, and adoption in other countries seeking to improve their programs of vocational agriculture at the secondary level."

An interview schedule was developed and the investigators personally visited the specific schools selected for the study. Four schools were nominated by the directors of agricultural education programs in Thailand, Taiwan, South Korea, and Japan. In its final form the interview schedule enabled detailed case study information to be obtained concerning such aspects of a local school as location, history, purposes, curricula, buildings, description of site, water resource, teaching staff, admission requirements, student fees, enrollment, drop-outs, evaluation, methods

\textsuperscript{26}Arsenio Gagni, Dolores P. Barile, and Harold R. Cushman, "Innovative Agricultural Education Secondary School Programs in Southeast Asia" (Staff Study, Cornell University, 1970).

\textsuperscript{27}For additional information about vocational agriculture in Japan, see: Hajime Kenjyo, "Vocational Agriculture and the Future Farmers of Japan," \textit{The Agricultural Education Magazine} 44 (May, 1972), 283.
of teaching, student organizations, land crops, animals, equipment, practice requirements and adult education. The study provided a comprehensive resume of the operation of exemplary agricultural high schools in the region.

Some of the outstanding features of the exemplary schools were (a) rigid student selection requirement - the school admitted only applicants who demonstrated both academic competence and commitment to engage in occupations for which they sought training; (b) the curriculum was both specialized and flexible to permit students to design programs suited to their needs and interests; (c) high priority was placed on coordination between instructional programs in the school and students' occupational experience programs; (d) advisory councils were used to monitor the needs of the agricultural sector and the programs of the school; and (e) a high priority is the involvement of the school's main sources of financial and other support in program evaluation and improvement.

In a more specific way Subarna Joshi28 studied the possibility of developing a vocational agriculture program for the secondary schools of Nepal. The purpose of the investigation was to determine what contributions secondary school agricultural education programs could make to the

economic development of the country and to propose an improved program of vocational agriculture in the secondary schools.

Joshi reviewed the general agricultural, economic and social conditions in the country entirely from literature search and analysis. He determined that since agriculture was the basic economy of Nepal with 92 per cent of the population engaged in farming and forestry and since 65 to 66 per cent of the gross domestic product is derived from agriculture, programs in agricultural education constituted a most important approach to agricultural, social and economic development. Joshi stated:

An examination of the education system and Nepalese economy leads to a recognition of the growing need of expanding agricultural education in public schools of Nepal to produce trained manpower which the country will need as economic development occurs.

Joshi maintained that agricultural education programs could be most appropriately accommodated in Nepal since the educational system of the country provided for multi-purpose high schools. He then proceeded to make recommendations for setting up a program with the following basic units: (a) vocational guidance; (b) instructional materials; (c) pre-service teacher education; (d) in-service teacher training; and (e) young and adult farmer education.

Almost all of the studies reviewed which pertain to this region have focused on government institutions of
agricultural education. But a study by Dharm Tesna had a different emphasis. Information was gathered from the Division of Agriculture Schools, Ministry of Education, reports of various government offices in Thailand and from international organization sources like FAO, ILO, UNESCO and U.S.D.A. as well as from library and literature search to aid in the investigation which Tesna conducted to develop a model for education in agriculture for Thailand. Tesna's target population was the private agricultural schools of Thailand.

The objective of Tesna's study was to develop a model for education in agriculture below college level for Thailand, specifically for private agricultural schools which Tesna maintained could handle a considerable part of the agricultural education program in the country at the secondary level. His model included educational programs for students who would be preparing to enter farming for a career and young and adult farmers who would be already engaged in farming. Tesna maintained that if agricultural education was to contribute to social and economic development in Thailand it should be available to those who would not have access to government-run agricultural schools and

---

were likely to terminate their formal agricultural education at grades lower than those who went on to higher government institutions. Tesna recommended detailed curriculums for appropriate agricultural programs. The curriculums were similar to those already in use in Thai schools but his specific guidelines included a larger percentage of time devoted to practical farming programs and coordinated occupational experience programs. He also recommended the training of teachers with backgrounds in technical and professional education.

Administration of Secondary School Programs in Agriculture

Derogangon conducted a study to (a) discover the problems commonly faced by agricultural high school administrators in the Philippines and (b) determine the opinions of the administrators on how to solve their most important problems. At the time of the study 83 agricultural high schools were in operation in the Philippines but data were available from only 63 schools and their administrators.

The problems of administrators considered were:
(a) staff; (b) assignment of teachers; (c) recruitment of teachers; (d) selection of students; (e) handling discipline; (f) providing facilities; (g) graduate placement; (h) obtaining

finances; (i) public relations; (j) in-service education; (k) improving instruction; and (l) others. Derogangon used questionnaires to obtain the desired information from 63 administrators.

The general findings were that problems existed in every area of responsibility. The respondents' suggestions for solution of many of these problems were as follows:

(1) Increased legislative appropriations to vocational education for better teacher and administrative salaries, appropriate basic and improved facilities and equipment and improved student services.

(2) Less political interference in administration of the schools.

(3) Better staff, teacher and administrator selection.

(4) Better methods of student selection.

(5) Improved intra- and inter-school coordination and visitation by teaching and administrative staff.

(6) Establishment of student guidance and placement services.

(7) Improved efficiency of teaching and clerical staff through well organized in-service programs.

(8) Better coordination of intra-school routine activities.

(9) Improved public relations activities.
Curriculum Development

The UNESCO survey raised the need for curricular reforms as indicated by the following:

The problems arising from curricular reforms have been noted by several countries and range from revision methods to the question of what additional courses should be included in new extended curricula to meet changing requirements.

A study by Woods and Stitt had as its objectives (a) a review of the existing curriculum and teaching materials on vocational agriculture in Nepal with a view to determining opportunities for improvement, and (b) developing additional materials that will provide opportunities for improvement of academic, vocational, and professional competencies for all vocational agriculture teachers in Nepal.

Woods and Stitt, describing the procedure used to collect data for the study, stated: "since needed empirical data were not available, they were drawn from the experiences and knowledge of five in-service vocational agriculture teachers." In addition the investigators used extensive background information from a literature search and analysis.

31 UNESCO, op. cit., p. 57.

The result of their investigation is presented in a very comprehensive document dealing with a review, in the first part, of the existing agricultural situation and vocational agriculture in Nepal. In the second part a review is presented of the principles of learning, the steps in teaching processes, procedures and techniques in developing lesson plans, sample lesson plans, formation of desirable agricultural organizations, and supervised farming. In addition a complete course of study is provided for other secondary level programs that have an agricultural curriculum as a requirement for a school leaving certificate examination.

Thailand has 24 agricultural high schools which are basically three-year schools offering agriculture curriculums in grades 9 thru 11. The agricultural courses taught in these schools are animal science, plant and soil science, and agriculture mechanics. Agricultural mechanics and animal science were the subjects of three curriculum development studies conducted by Pan-Nga, Suneenart Kitnukul

---


According to Pan-Nga agricultural mechanics is increasing in importance hence his study has as its focus the development of an agricultural mechanics curriculum for the schools of Thailand. The major purpose of the study was to compare the curriculum guides for one-year agricultural mechanics programs in Oklahoma and Thailand. A second purpose was to develop teaching plans in agricultural mechanics for use in agricultural schools and vocational education departments in Thailand. Pan-Nga considered five areas of instruction: (a) farm shop work; (b) farm power and machinery; (c) farm buildings and conveniences; (d) soil and water management; and (e) rural electrification.

Library search was the main procedure used to collect information for the study. Included in the search were textbooks, bulletins, catalogs and printed materials and the curriculum of vocational agriculture departments in Oklahoma. Curriculum materials from Thailand were also used. On the basis of his search Pan-Nga developed a two-year curriculum in agricultural mechanics for the ninth and tenth grades. In addition he made the following recommendations: increased time allocation for advanced arc welding and

Manat Kitnukul, "Plans for Developing and Implementing Short Courses in Livestock Production for Adults Through Vocational Agriculture Schools in Northeastern Thailand" (unpublished Master's thesis, Oklahoma State University, 1972).
basic oxyacetylene cutting; emphasis on advanced gas welding or rebuilding farm machinery or equipment in use; and considerable emphasis be placed on small gas engines.

With the same audience in mind Suneenart Kitnukul conducted a study to develop an animal nutrition curriculum. The purpose of the study was to develop units of instruction in animal nutrition that would increase the quality of animal production. Each unit was to be developed using behavioral objectives based upon the instructional plan of animal nutrition as being taught in Thailand's agricultural schools.

Kitnukul used literature and library searches, official documents and bulletins from Thailand and other materials on curriculum, course descriptions and construction of behavioral objectives to develop the outline and content of the curriculum study. After the curriculum and instructional units were developed Kitnukul submitted them to a jury of 12 international students in agriculture and four professors in animal science at Oklahoma State University for review and criticism.

The result of this inquiry was a detailed curriculum outline including instructional units which Kitnukul recommended be incorporated in or used to reinforce the existing curriculum in Thailand's schools. He also recommended

---

36 Suneenart Kitnukul, _op. cit._
that parts of the curriculum be adapted to fit adult farmer programs in specific aspects of the animal nutrition curriculum which would offer farmers needed training or retraining.

While Suneenart Kitnukul's primary target audience was the regular agricultural high school population with some provisions for adult farmer education, Manat Kitnukul's primary target audience was adult farmers served through the agricultural schools. The specific purpose of the investigation was to develop and implement short courses in livestock production for adults through vocational agricultural schools in Northeastern Thailand.

Basically, he used the same approach as Suneenart Kitnukul in obtaining data and information for the study but did not use a jury. Manat Kitnukul developed a detailed curriculum guide and instructional program for short courses for livestock production with emphasis on beef cattle, swine, and poultry. In many respects the two studies could be considered as a complementary effort since both had animal production as the main focus.

Using Research in Agricultural Education

The utilization of research is one of the concerns expressed by experts in agricultural education who maintain that if research is to aid practice it must be reported in

37Manat Kitnukul, op. cit.
a form that is easily intelligible to the consumers of the research effort. This concern was the main motivation behind a study by Gagni, Santos, and Cushman. The objectives of the study were (a) to determine the reading level of students in the national agricultural schools in the Philippines; (b) to ascertain the enterprise areas in which student manuals were most needed in the national agricultural schools; (c) to obtain suggestions for improving the student enterprise manuals for use by students, and (d) to revise and publish the most urgently needed enterprise manuals.

The population of the investigation included all students enrolled in Agriculture I-IV in the agricultural high schools in the Philippines during the 1968-69 academic year. The writers presented research findings at various levels of reading comprehension in the form of enterprise manuals. Questionnaires were supplied to some students selected by a stratified sampling procedure who used the manuals to assess their reaction to various questions including the range of reading difficulty. A "reading level" test was administered also.

38 See article by J. David McCracken in Agricultural Education Magazine 43 (November, 1970), 109-10.

39 Arsenio O. Gagni, Severino R. Santos Jr., and Harold R. Cushman, "The Effective Presentation of Agricultural Research Findings for Use by Students in Agricultural High Schools" (Staff Study, Cornell University, 1970).
The findings of the study indicated the following precautions that should be used when reporting research findings for utilization by students of the agricultural high schools: (a) instructional materials should be prepared in English at the top reading level of grades 7 to 8; (b) enterprise manuals in English for use by farmers should be written at the top reading level of grades 6 to 7; and (c) the study indicated the need to ascertain how available resources could be utilized to provide remedial reading programs adapted to the needs of agricultural high school students.

Agricultural Education for Development

It is often mentioned that agricultural education has a major role to play in the agricultural and economic development of developing countries. The reasons for this assertion are many, but Wharton\(^4^0\) stated rather emphatically that "the fundamental problem of agricultural growth is an educational problem." It was an aspect of this problem that Harold Freeman\(^4^1\) investigated in Thailand. Specifically, the objective of the study was to explore the extent to


which agricultural education was contributing to the development of the agricultural sector in Thailand. Freeman particularly had in mind programs at the rural secondary (grades 8-10), higher agricultural secondary school (grades 11-13), and technical agriculture school (grades 14-15) levels preparing students as farmers or as farm service workers.

Freeman also considered it important to study the persons who would teach students at these institutions and this necessitated a look at the agricultural teacher training school (grades 14-15) and the Bachelor's degree program in agricultural education. However, the major focus of the study was on the senior agricultural schools (grades 11-13) which at the time of the study were the main source of supply of farm service workers below the university level.

Freeman conducted an in-depth review of the agricultural situation and the government's philosophy, objectives and programs of agricultural and economic development in the country; the country's total educational system including the objectives of education and the development of vocational education programs with specific reference to agricultural education; and an in-depth examination of the objectives, curriculum and instruction, facilities and equipment, student selection procedures and teacher education programs of agricultural education and the occupational status of some graduates of the senior agricultural high schools.
Freeman's conclusion was that agricultural education was not being effectively used as an instrument of national policy for the agricultural sector of the Thai economy and that weaknesses existed in the essential components and linkages for agricultural education to contribute to agricultural development. The conclusions led to a number of recommendations which Freeman felt if seriously considered would make agricultural education a potent factor in the agricultural development of Thailand. Highlights of some of Freeman's recommendations were: (a) agricultural schools should be more selective in their entrance requirements - preference should be given to students with farm backgrounds; (b) the agricultural curriculum should be revised to include both technical and economic subjects as well as practical farming and experiences in farm and off-farm laboratories; (c) teachers should be assigned to their specific areas of training and interest and should be assisted with programs of in-service education; (d) the pre-service teacher education program should be evaluated; and (e) a regular evaluation of the agricultural programs and of graduates of these institutions should be conducted.

Evaluation

Research pertaining to evaluation of programs of agricultural education is usually concentrated in three areas. First, the evaluation of the program itself in
relation to the achievement of stated objectives; second, assessment of the prediction of success relative to certain variables; third, follow-up studies to determine the characteristics and occupational status of former enrollees of agricultural education programs. All three aspects of evaluation research are represented in the studies about this region being reviewed.

Vocational agriculture in Nepal is offered in multipurpose high schools which also offer courses in home science, trades and industry and secretarial science. In 1971, 29 multipurpose high schools were in operation in Nepal catering to grades 6 thru 10. Thomas Stitt conducted a study designed to evaluate selected multipurpose high schools to identify the status of the program and to make recommendations for support for continued development of the program. The secondary objective of the study was to afford the supervisory and administrative personnel of the system an opportunity for practice in evaluating programs.

Six multipurpose high schools were selected and data collected by interviews from 78 teachers and 2,100 students. The general findings of the study were that the vocational education programs were designed to stress more theory than

42 Warmbrod and Phipps, op. cit., pp. 96-97.

practice. Effectiveness of instruction was limited by a lack of adequate and appropriate equipment and facilities, textbooks, reference books and related teaching materials, supplies, large class sizes as well as a lack of technical knowledge, practical skills and related job experience of teachers. Also noted was a lack of administrative, school management and community support. However, the evaluation revealed a large measure of student participation, interest, motivation, and enrollment. One of the most important recommendations arising from the findings was the need for an upgraded and intensive teacher training program for which specific recommendations were made. Another recommendation was for a curriculum materials development program.

The prediction of student success in educational activities is a problem for many research efforts. Song investigated the relationships between certain variables and student achievement motivation and their relationship to academic performance in agricultural high schools in Korea. Song defined academic achievement motivation as "a self-report of how hard the individual strives to achieve success in school, and a set of attitudes and values related to school success."

---

Using a stratified random sampling for rural and urban high schools, 1,460 students and 191 teachers of agriculture were sampled from 13 agricultural high schools. Some of the variables considered were I.Q. scores, socioeconomic status, home status of the student, attitude toward agriculture of the agriculture teachers, and grade point average.

The findings were predictable. The students' academic achievement motivation was positively correlated with grades obtained in all courses, general academic performance especially in agriculture courses, and intelligence. However, academic achievement motivation was not influenced by socioeconomic status, home status, year in program of the students, and teachers' attitude toward agriculture. There was no significant difference between rural and urban schools. There was a positive correlation between academic achievement motivation and student performance in agriculture.

To describe the general characteristics of graduates (of 1964) from five-year vocational agriculture schools in Taiwan and to determine their educational and occupational attainments was the purpose of an investigation conducted by Paul Chen.45 To guide the study Chen sought answers

to the following questions: What is the role of the vocational agriculture program in Taiwan? What is the role of this system in the educational achievement of Taiwan? Does it contribute to the educational objectives of vocational agriculture in the country? Do graduates from the five-year vocational agriculture system enter and remain in vocations for which they were trained? Is this system an effective educational device for training people to enter the world of work?

A sample of 422 persons, stratified on the basis of whether they were graduates from provincial or county schools, was selected from the 1964 graduating class of the five-year vocational agriculture schools. Mailed questionnaires were used to gather data. Variables described were personal characteristics, further education, feelings about courses, curriculum and major subject areas, vocational agriculture program as a whole, and occupational and farming status.

Conclusions emanating from the study were that (a) the five-year vocational agriculture program was generally terminal for the graduates, only about six per cent of those polled had attended or were attending college; (b) the graduates felt the program should be revised to meet the needs of the students and their communities; and (c) 54 per cent indicated they made their own career choices only after graduation and that both they and their parents or relatives were most helpful in choosing their careers.
At the time of the survey 67 per cent of the graduates were in military service but of those not in the service 71 per cent were engaged in farming on either a full-time or part-time basis. Chen recommended that the system should develop and maintain guidance and placement services and supervised occupational experience programs in the vocational education system in Taiwan.

Lack of adequate guidance and placement services in the Malaysian agricultural school system was also mentioned in a study undertaken by Hashim46 about the educational and occupational plans of Malaysian students in agricultural institutions. The specific objectives of the investigation were to determine what kinds of occupational and educational aspirations and expectations pupils and students of Malaysian agricultural institutions had and whether or not their aspirations and expectations were related to certain socio-economic and cultural factors, and to determine what these students and pupils felt their problems were in making decisions about their occupational and educational plans.

The population of the study consisted of students of the College of Agriculture, a post-high school institution, and pupils of the schools of agriculture at upper high school level. Using questionnaires and interviews,

Hashim surveyed 103 second-year pupils of one school of agriculture and 165 second-year and 145 third year students from the College of Agriculture.

Hashim's findings were that students and pupils were generally homogeneous in their background characteristics relative to socio-economic status and cultural factors. Most of the students generally aspired to educational and occupational fields related to agriculture but had much lower expectations than aspirations for both occupations and education. Their occupational aspirations and expectations were significantly related to their educational aspirations and expectations. A majority of the students did not have problems finding jobs upon graduation but their knowledge of the job market was very limited.

The most important conclusion drawn by Hashim was that lack of guidance, counseling and placement services in the agricultural institutions had a great deal to do with the students' and pupils' occupational and educational choices and aspirations. He therefore proposed a massive program of vocational guidance and counseling service for the agricultural institutions in Malaysia.

In another study aimed at probing the post high school performance of graduates William Thuemmel47 compared the

farmer-performance of two kinds of senior graduates in Taiwan. Several comparisons were made of the senior graduates from high schools with the senior graduates from vocational agriculture (V-A) schools.

The population studied included all 1950, 1955 and 1959 male graduates of high schools and V-A schools in west central Taiwan. A stratified sampling procedure was used to select 203 graduates (46 from high schools and 157 from V-A schools) who were queried through comprehensive interviews. The relationships sought were between 11 independent variables and various dependent variables regarding the graduates' personal and farm characteristics, farming performance, participation in formal organizations, and perceptions and opinions about schooling for prospective farmers.

The conclusions drawn from the investigation were that more similarities than differences were found to exist between high school and vocational agriculture graduates. A higher proportion of the V-A school graduates were engaged in farming leading to the conclusion that V-A schools had greater potential to agriculture at the local and provincial levels. Recommendations emanating from the findings included: (a) a reevaluation of objectives of the V-A schools program; (b) the establishment of a post-middle school farm management training programs; and (c) the establishment of V-A advisory committees at the provincial level.
Vocational Training for Farming and Related Occupations

The World Conference on Agricultural Education, referring to vocational training for farming and related rural occupations in Asia and the Far East, declared:

It is safe to assume that for the next two or three decades, the increase of food and agricultural production in all developing countries will have to depend upon the present farmers. . . . Therefore, vocational training for farming in Asian countries should be directed to the present farmers, both old and young, men and women.

Adult Farmer and Extension Education

Increasing farmers' productivity seems to be the major aim of most programs of adult education in agriculture. Many times agricultural education teachers and extension workers go into the teaching situation with a "wide angle" approach but some experts advocate an approach that takes advantage of a narrow, specific concern whose amelioration is likely to produce the greatest impact on farmers.

The latter approach was the focus of a study by Buripakdi. The purpose of the study was looking into the

---

48 FAO/UNESCO/ILO, op. cit.

possibility of increasing the productivity of rice farmers in Thailand through the medium of education. The major objective was to identify those competencies that were achievable by farmers which were most likely to increase his productivity and to determine whether the competencies could be promoted through educational programs based on the farmers' environmental and situational factors.

Buripakdi selected three sites of heavy rice production in Thailand for an intensive study. Interview schedules were prepared and personal interviews conducted to collect a large amount of data from a sample of 254 persons representing household heads and families in the rice production areas and some government officials.

The general findings were that there was good potential for farmer education. The desire of the farmers for education, the availability of facilities in the primary school systems, the cooperation that could be forthcoming from all agencies connected with extension work and rural development programs and the presence of a large number of working adult farmers were factors that educational programs could depend on. Buripakdi proceeded to recommend and develop an extensive educational program for farmers with a spill-over for the education of other dependents of farmers in the rice production areas. Some of the recommendations made by Buripakdi were (a) the program should be conducted during the hot season, the period between harvest
time and the next cropping season; (b) the agricultural program should be conducted in conjunction with rural and community development programs; (c) the program should be carried on in the form of meetings between farmers and other participants and resource persons as well as the standard staff; and also by means of radio broadcasts which are a regular mass medium strategy used by the Kasetsart University and the Ministry of Agriculture. Formation of farm youth organizations was also mentioned as a means of reaching the younger and adolescent dependents of the farmers with educational programs in agriculture.

In another study H. S. Hanumanthappa wrote:

Several studies, past and present, have dealt with the adult education phase of vocational agriculture. But none directly dealt with the development of a series of principles and objectives of adult farmer education that would have definite implications for agricultural education programs in India.

With this concern in mind Hanumanthappa conducted a study to prepare an adult farmer education program for India. His objectives were to identify the basic and vocational education needs of the Indian farmer, relate these needs to the principles and objectives of operating adult farmer programs and propose an adult farmer educational program that could be utilized by the rural community and agricultural development agencies in India.

---

By means of questionnaires and interviews Hanumanthappa used the expertise and experience of adult educators and agricultural education experts in the Upper Mid-western states of the United States to develop a basis and a curriculum for an adult education program in agriculture for the farmers of India.

Hanumanthappa's recommendations were that (a) there should be a reorientation in the philosophy and objectives of the adult education programs in India; (b) greater emphasis should be accorded vocational agriculture education for adult farmers by means of the existing community development programs; and (c) adult farmer programs should be established as an integral part of the total community and rural development programs of the Indian Ministry of Agriculture.

Extension education has a long history in India, but in a study conducted by Phillips the following statement is noteworthy:

The economic conditions in India have led to the development of the agricultural extension program in that country. The effectiveness of this program is often open to debate.

Phillips was particularly interested in the extension program of West Godavari district, India, an area of 2,980 square miles with a population of almost 2 million. Phillips'...
stated objectives were (a) to describe the socio-economic conditions that have led to the development of the agricultural extension program as it existed in India; (b) to identify the agricultural needs of the people and determine if these needs were being shared by the extension service; and (c) to make recommendations regarding the extension agent's preprofessional educational program. The extension agents involved in the study were the Village Level Workers (VLW) who had direct contact with the village people.

Phillips used a combination of questionnaires and interviews to query 40 VLW's who had gathered at a center for in-service education and 89 VLW trainees receiving pre-professional training at the same center. Based on the findings of the study Phillips made these recommendations for program development: (a) when studying the village communities and developing programs based on village needs, upper caste theories and biases must be ignored for the common village inhabitant must become the most important consideration; (b) more practical experience in extension methods should be included in the VLW trainee program; (c) the subject areas of agriculture and animal husbandry should receive more emphasis in the training program; and (d) the syllabus of the earlier VLW training programs should be re-evaluated in terms of relevance to current village needs.
In another study on extension education programs in India, Lal Singh\textsuperscript{52} had the following objectives: (a) to analyze the administration of the agricultural extension service in India; (b) to identify the alternative forms of organization and administration of the extension service in the United States; (c) to analyze and interpret the opinions of AID participants and India extension personnel studying in the United States; and (d) to recommend alternative administrative and organization models of the agricultural extension service for agricultural colleges and universities in India.

Singh reviewed the historical development of the agricultural extension service in India and described in detail the existing philosophy, objectives, functions and programs of the extension service. He also probed and described the organization and administration of the service. He then made a comparative review of the extension service in the United States dating from the Smith-Lever Act of 1914. Singh used extensive library and documentary search to develop the historical overview of the extension service in both countries.

His findings were that the extension service in India was in the hands of the Ministry of Agriculture and the

organizational and administrative structure was not func­
tional enough to achieve its real objectives. Singh, there­
fore, established the rational for recommending that the
extension service be transferred from the control of the
Ministry of Agriculture and located in the colleges and
universities based on the American concept of extension
organization. Singh's main argument was that the exten­
sion service in all its varied activities is an educational
enterprise and should be properly managed by educational
institutions. Singh developed some organizational and
administrative models for India based on theory and research
as well as on practice in the United States.

The extension service in India is carried out by a
number of agencies depending upon the district in which the
service is concentrated. A study by Homer Hogle was con­
cerned with identifying the results of extension education
efforts in agriculture and determining how and why these
results have varied. The basic problems, therefore, was
to determine the influences of three extension agencies
and to account for any differential effects of their influences
on agricultural production and practices in selected villages
of the Kaira district in India. The three agencies were

53 Homer Lefevre Hogle, "The Influence of Agricultural
Extension In Selected Villages of Kaira District (Gujarat,
India)" (unpublished Ph.D. dissertation, University of
(1) Anand Institute of Agriculture, (2) Kaira District Block Development Programme, and (3) Kaira District Cooperative Milk Producers Union.

To identify and isolate the influence of the three agencies Hogle considered (a) village adoption of improved practices, (b) village production of crops, (c) the influence of farmer characteristics on adoption and production, and (d) the influence of village characteristics on adoption and production. A purposive sample of eight villages was selected to represent all possible combinations of influences from the three agencies. A random sample of farmers was selected from each village and administered a structured interview schedule. Other data were collected by observation and from reports and records.

The Institute and Block Programme agencies were found to have greater influence in overall production and improved farm practices than the Milk Cooperative. The extent of influence was related to the type and number of extension techniques of each agency. Despite the strong evidence favoring the joint presence of the agencies in the villages the findings also revealed that the difference among farmers and villages had a more significant influence on farmer performance in terms of greater adoption of improved practices and production of crops than any single or combined influences of the three agencies. However, all of the villages under study had been influenced to some extent by the three agencies.
Adoption of improved practices by farmers is the main focus of extension activities. The amount and types of innovations adopted by farmers are a function of socio-economic and situational factors because the adoption of innovations is considered a kind of behavior strongly affected by an individual's frame of reference which consists of functionally interrelated external and internal factors operating at a given time. Investigating these interrelationships was the subject of a study by Tufail S. Ahmad. Specifically the purpose of the inquiry was to ascertain the influence of certain socio-economic and cultural characteristics of villages on the adoption of agricultural innovations.

The study was confined to villages served by community development programs in the Sheikhpura area of the Mogyrh district of India. A random sample of 11 of 22 villages in the program area was selected. From the 11 villages a random sample of 253 families was chosen and the head of each family interviewed. Some of the variables probed were background factors of villages, socio-economic level of village families, exposure of village to outside world, and attitudinal characteristics.

---

Ahmad concluded that there was a higher level of adoption of agricultural innovations in smaller, homogeneous villages than larger heterogenous villages and that those that were closer to an extension agency adopted more agricultural innovations. The findings also suggested that the degree to which the villages were exposed to the extension agency, cities and mass media was positively related to the adoption of new ideas and practices. The study also tended to support the contention that personal characteristics of farmers had more to do with adoption of innovations than any single variable or a combination of variables.

The concept of young farmer classes being taught by vocational agriculture teachers is new but is fast catching on in the Asian countries. The idea is for the agriculture teacher to operate from his base in the agricultural high school or vocational agriculture department of the regular high school or multipurpose high school. A study by Stitt and Dhaubadel\(^55\) was undertaken to produce a handbook for the teachers of young farmers in Nepal. The investigators used an extensive library and literature search and analysis to develop the various sections of the handbook. The handbook set forth the role of the teacher, student, and administration,

\(^{55}\)Thomas R. Stitt and Akhanda P. Dhaubadel, "Young Farmer Handbook for Vocational Agriculture Teachers of Nepal" (Staff study, Southern Illinois University, 1971).
and provided some specific examples and illustrations of teaching and lesson plans, methods of teaching, and the principles of adult learning and teaching. This handbook is a counterpart to the one developed for vocational agriculture teachers in Nepal by Woods and Stitt. 56

Summary

Thirty-five studies about countries in Asia and the Far East have been discussed covering all levels of agricultural education. Of this total, nine studies were on India, seven on Thailand, five about the Philippines, four on Nepal, three on Taiwan and one each on the Ryukyu Islands, Korea, West Pakistan, Laos and Malaysia.

The studies about India, in a composite form, provide a detailed, comprehensive description of the country, its agricultural situation and an overview of the history and development of education, especially agricultural and extension education. It should be mentioned that extension education figured prominently in the total number of studies about India. The study on United States technical assistance programs brought into the open the difficulties and problems of external aid to certain countries in the area of education. Krishnaswamy assured the world that in spite of the problems

56 Woods and Stitt, op. cit.
a new approach in agricultural education at the higher level has been developed and is likely to show the desired results in the long run. In tracing the historical development of agricultural education some of the investigators stressed the need for well rounded programs of comprehensive secondary level education in agriculture with provisions for adult education.

More than half of the studies on India had adult farmer and extension education as their main emphasis. The need for functional adult education programs was stressed. India, like many developing countries, has an extremely large number of farmers who cannot be reached by formal regular school programs hence the need for extension services. The studies provided an insight into the organization, administration, activities and achievements of various extension activities and how these could be improved for effectiveness.

The studies on Thailand were concerned primarily with secondary education programs in agriculture, especially in the area of curriculum development. The need for curricular improvement was stressed in the UNESCO survey leading to the impression that curriculum deficiencies in the region has been a continuing problem. The emphasis in the research on this subject, therefore, has been directed toward an impelling need of region wide concern.
Freeman evaluated the contribution of agricultural education to the economic development of Thailand. His findings were that even though there was no specific national commitment to agricultural education, its potential could not be discounted and, with improvements, could be a potent factor in developing the agricultural sector of the country. The approach used by Freeman in the research could serve as an example to other countries to re-evaluate their agricultural education programs and assess their deficiencies and potentialities.

The research about the Philippines had teacher education, both pre-service and in-service, curriculum, and administration as the major concerns. In the teacher education area an evaluation of existing programs was conducted with a view to improving the pre-service and in assessing the need for in-service programs. Even though in one case no discernible differences could be isolated between the teacher education programs of United States institutions and that of Mindanao Institute of Technology in the Philippines, a basis for improvement was very evident.

Derogangon's investigation revealed the extent and magnitude of the problems of administration of agricultural high schools. Even though the inquiry was particularly focused on the Philippines the problems identified could be duplicated throughout the region as reported in the UNESCO survey. The suggestions proposed for eliminating
and controlling some of the problems, therefore, had region-wide appeal and application.

Mention should be made of the studies conducted about Nepal. The four studies included three staff studies all on agricultural education programs at the secondary level. Two handbooks were produced, one for regular agricultural high school programs and the other for adult farmer programs conducted from the high school base. The Woods and Stitt study placed a rare "commodity" in the hands of vocational agriculture teachers. In the absence of well qualified teachers, which seemed to be a great problem in the region, the handbook filled an urgent resource need of agriculture teachers everywhere in the region. With a few modifications to suit each individual country the two handbooks produced for Nepal provide a new emphasis in curriculum materials development for the region.

The most important impression indicated by the research is that teacher education in the several countries needed a great deal of improvement. Despite the fact that the investigators went their different ways to establish the kinds of programs needed in teacher education it could be said that the proposals and suggestions made for both pre-service and in-service education programs are well designed and worthwhile for the consideration of policy makers in the countries of the region.
The UNESCO survey provides a quick reference about agricultural education in the region. By the same token the study by Gagni and others relative to the exemplary programs also offers a reference resource for administrators and planners of agricultural education at the secondary level in the region.

Asia and the Far East is so far the only region about which research in agricultural education at all levels has been conducted and the total research offers a comprehensive source of reference.

Recommendations for Further Research

Many of the investigators raised other questions which need further probing. Some of them generated concerns which were peripheral but most were directly related to agricultural education. Below is a summary of the most frequently mentioned topics for further research.

Under various agreements between countries of the region and international technical aid agencies, many of the region's teachers at the various levels of higher education in agriculture are trained outside the region. A concern has been raised relative to the propriety of such external training. A suggestion has been made that research be conducted to determine what behavioral changes should be developed through foreign study and observation and what methods most effectively and efficiently train
agriculture teachers within their culture and offer the most effective training abroad.

A further area of research on the role of teachers was raised. It was recommended that teacher education programs place heavy emphasis on practice and that teacher educators model the behavior which should be performed by student teachers when they teach. Additionally it was suggested for investigation the evaluation of each school to identify behavioral objectives, determine the degree to which the school is meeting the objectives, prescribing school functions which would contribute toward meeting the objectives and identify the teacher's role in this setting. This research question ties in with the follow-up investigations of graduates.

A number of studies insisted that periodical evaluation of all high school programs should be conducted by means of a series of follow-up studies. For this purpose research has been recommended for detailed analyses of the specific academic and vocational skills required in the positions for which graduates from the agricultural high schools are hired (or required for the advanced schools the graduates attend) and the extent to which these graduates meet the requirements. Methods used to determine their effectiveness in meeting these skill requirements might include gathering employer and employee opinions, administering various tests and developing rating scales.
Other investigators recommend that studies should be undertaken to develop and use reliable and valid instruments to measure students' attitudes, aptitudes, interests, and other personal attributes not only to ensure that the right type of pupils are enrolled but also to help educators develop programs suitable to the needs and interests of high school and college students.

Freeman's study to determine the contributions of agricultural education to the economic development of Thailand revealed several shortcomings which tended to coincide with the problems of agricultural education unearthed by the UNESCO study in the region. The generalizability of the study was limited but the research was particularly relevant to the kinds of evaluation exercises that are needed more often in the region. Freeman, therefore, suggested that the study be replicated in other countries of the region using modified instruments and methodology suitable for the individual countries concerned.

The UNESCO study indicated a lack of qualified teachers in the region, and one reason given was limited appeal of the teaching profession possibly due to low prestige or renumeration. Personnel management experts maintain that renumeration is a secondary attraction that holds a person to his job. On the other hand turnover was mentioned

57 UNESCO, op. cit., p. 57.
in some of the studies also. These conflicting reasons for the lack of teachers in the region has generated a concern suggesting that an investigation be made in some of the countries to determine the reasons for the shortage of teachers of agriculture.

The adoption and diffusion theory is one of the fundamental thrusts of extension and rural development programs in developing countries. The few studies conducted about this region revealed findings which did not conform wholly to familiar patterns; many sociological, cultural and personal factors produced a number of conflicts. The conflicts in these cases were generated by the influence of personal and situational characteristics of farmers or rural people on adoption of new ideas and practices in spite of all other variables. The suggestion is that studies conducted on adoption and diffusion be replicated in India or other countries in the region using the same or modified versions of the instruments used.

In the area of adult and extension education suggestions have been made for studies relating to models for farmer education based on the sociological, cultural and agricultural factors in particular countries. The argument is that too much reliance has been placed on imports of educational packages developed in situations not at all comparable to those of receiving countries. Specifically the suggestion is for research in various phases of adult
farmer education; and for the preparation of teachers of adult education programs. Also mentioned was the development of a curriculum to provide in-service education for instructors in adult farmer programs and ways and means of providing work experience to prospective trainees in adult farmer education.

Above all, studies have been recommended for the development of evaluative procedures and instruments for adult farmer and extension education programs. The usual situation is that procedures and methodology for evaluation exercises are borrowed, modified and adapted from those in developed countries. The need is for instruments, procedures and methodologies developed in the countries to which they relate.
CHAPTER IV
LATIN AMERICA REGION

The Latin American region includes Mexico and Central and South America for a total of 22 independent countries inhabited by over 200 million people. The region comprises a geographical area approximately $2\frac{1}{2}$ times that of the United States.\(^1\) Latin America has an agricultural base but the importance of agriculture to the economy varies from country to country as can be seen from the data in Table 3 which indicate employment in agriculture and the contribution of this sector to the gross domestic product. The table only includes data for countries in the region covered by this section of the review.

It is estimated that 50 per cent of the population in the region lives in rural areas and earns its living principally in agricultural pursuits.\(^2\) But the agriculture of the region has lagged behind industrial development. One reason for the backwardness of agriculture in the region has been the failure to modernize it in the way that


\(^2\)FAO/UNESCO/ILO, *op. cit.*, p. 73.
### TABLE 3

**POULATION DISTRIBUTION AND GROSS DOMESTIC PRODUCT DATA OF COUNTRIES IN THE LATIN AMERICAN REGION**

<table>
<thead>
<tr>
<th>Country</th>
<th>Population (Thousands)</th>
<th>Population Distribution</th>
<th>Per cent per cent in Per cent Agricultural</th>
<th>Per cent</th>
<th>Agricultural Share of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>urban</td>
<td>rural</td>
<td>Agriculture</td>
<td></td>
</tr>
<tr>
<td>Bolivia</td>
<td>4,900</td>
<td>34.0</td>
<td>66.0</td>
<td>72.0</td>
<td>45.0</td>
</tr>
<tr>
<td>Brazil</td>
<td>98,400</td>
<td>46.0</td>
<td>54.0</td>
<td>58.0</td>
<td>25.0</td>
</tr>
<tr>
<td>Chile</td>
<td>10,200</td>
<td>74.0</td>
<td>26.0</td>
<td>30.0</td>
<td>14.0</td>
</tr>
<tr>
<td>Colombia</td>
<td>22,900</td>
<td>53.0</td>
<td>47.0</td>
<td>54.0</td>
<td>34.0</td>
</tr>
<tr>
<td>Jamaica</td>
<td>2,100</td>
<td>37.0</td>
<td>63.0</td>
<td>49.0</td>
<td>13.0</td>
</tr>
<tr>
<td>Mexico</td>
<td>54,300</td>
<td>59.5</td>
<td>40.5</td>
<td>58.0</td>
<td>25.0</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>2,700</td>
<td>N.A*</td>
<td>N.A.</td>
<td>24.0</td>
<td>12.0</td>
</tr>
<tr>
<td>Uruguay</td>
<td>3,000</td>
<td>81.0</td>
<td>19.0</td>
<td>58.0</td>
<td>27.0</td>
</tr>
</tbody>
</table>


*Not available*
mining, manufacturing, and many service activities have been modernized. The World Conference on Agricultural Education report indicates that the population growth and the accompanying demands on food supplies have put a great deal of pressure on the production of technicians, professionals and extension workers to man the programs of agricultural development and modernization. The report stated:

"...There is a ready awareness of the importance of agriculture and the need to modernize it. This has created a demand for agricultural specialists in government services which are constantly being improved and enlarged, particularly for the institutions and centers in charge of agricultural, animal husbandry, forestry and fisheries research, as well as extension services and programmes promoting agricultural development, credit, commercialization or marketing, and agrarian reforms."

The report went further to state that the awareness has generated a new sudden interest in all the countries of the region to reorganize and strengthen their colleges of agriculture and other agricultural institutions, hence the emphasis on all levels of agricultural education and training in the region.

Higher Education in Agriculture

In response to the need for professionals in agriculture the Monterrey Institute of Technology in Monterrey, Mexico

---


4 FAO/UNESCO/IL0, op. cit., p. 84.
has for some time stepped up its agricultural education programs. Armando Calleiro\(^5\) conducted a study designed to determine (a) the contributions of the School of Agriculture and Cattle, a division of the Monterrey Institute of Technology, in producing personnel in the field of agriculture who have knowledge of national agrarian objectives and capable of solving problems toward meeting the objectives and (b) whether the study programs and research activities of the School were consistent with national agrarian objectives.

The study began with a review of pertinent literature about agricultural education and training as it has been researched by various international development agencies and the Institute itself. In order to gather the specific data about the Institute and its School of Agriculture, Calleiro spent a six-week period on its campus and research stations, held interviews with officials, faculties, and students, and examined the curricula, study programs, and activities of the School of Agriculture.

Conclusions drawn by Calleiro indicated that the School of Agriculture's activities were not development-oriented, that the School was not producing or helping to

---

produce technical level personnel so badly needed to aid researchers and top level administrators in working with farmers, and that the higher education programs in agriculture were not appropriate to fulfilling the agrarian development needs in Latin America. Based on these conclusions Calleiro recommended the institution of new learning strategies, intermediate measures of technical level programs sponsored or pursued by the School at regional centers, and a revision of the existing study programs. In order for the School to help carry out a revision of the existing program Calleiro recommended that a detailed evaluation of the study programs and activities of the School should be conducted. He also recommended that the faculty and staff of the School should have a background in professional and technical education related to their fields.

Teacher Education

The World Conference on Agricultural Education, addressing the question of teacher education in the Latin American region, stated:

One neglected area is the training of agricultural teachers for the sub-professional agricultural education programmes. More emphasis has been given to the training of staff for higher education programmes and for degree courses in agriculture, than for the training of teachers for sub-professional and lower-level programmes.

\[\text{FAD/UNESCO/ILo, op. cit., p. 83.}\]
Aware of their shortcomings, several countries have made concerted efforts to develop and maintain teacher education programs. A Conference of Latin American agricultural educators indicated concern about the quality and appropriateness of such programs when they stated:

The fitness of teachers of agriculture depends upon (a) vocational experience, (b) scientific and technical preparation, (c) pedagogical preparation, (d) and aptitude toward rural development, and therefore, the institutions preparing such teachers should consider these items. 7

The teacher education program of one such institution in Puerto Rico was the subject of an investigation by Millan-Sambolin. 8 The study's purpose was to determine the technical and professional training needs of the prospective vocational agriculture teachers in Puerto Rico. The objectives were to assess the training needs of prospective teachers, compare them to existing programs of training and evaluation made by teachers, supervisors, and teacher educators; and on these bases, make recommendations for improvement in the teacher education program of the University of Puerto Rico.


Questionnaires providing for evaluation of the undergraduate program at the university and the evaluation of 143 technical and professional competencies in vocational agriculture teacher education were developed. The instrument was directed to three groups, namely, teachers of vocational agriculture, supervisors of agricultural education programs, and teacher educators at the University of Puerto Rico.  

Millan-Sambolin's findings indicated only 59 per cent of the 143 competencies identified as necessary in the undergraduate program were possessed by the prospective teachers at the beginning level. He found that a majority of the teachers of vocational agriculture did not follow the specialized undergraduate program in agricultural education. Most of the teachers, supervisors, and teacher educators favored a revision of the undergraduate program to allow for flexibility in the technical education courses, higher competency in the technical and professional courses and attract more of the students majoring in agricultural education. On the basis of these findings Millan-Sambolin

---

9 For an interesting discussion of the role of vocational agriculture teachers in conducting agriculture and young farmer programs in Puerto Rico see, Luis Camara Capra, "The Educational Association of Young Farmers of Puerto Rico is Born in the Region of Arecibo, P.R.," The Agricultural Education Magazine 45 (December, 1972), 135.
formulated a set of recommendations to the Faculty of Agriculture at the University of Puerto Rico for the improvement of the content of the undergraduate teacher education program. He recommended that a task force of teacher educators, technical agriculture professors, vocational agriculture supervisors and teachers should be set up to determine how the professional and technical competencies identified should be incorporated in the curriculum of the undergraduate program. This should include expanded laboratory and technical programs to increase the manipulative and professional knowledge and skills. He also mentioned that state and regional supervisors should develop intensive in-service education programs for serving teachers. The guidance and counseling services of the department should be upgraded and expanded; and teacher certification should be done in conjunction with the teacher education institution and be based on agreed professional and technical requirements.

Intermediate Level Agricultural Education

In addressing the problems of agricultural education at the intermediate level in the Latin American region, the report of the World Conference on Agricultural Education stated:

Some of the weaknesses observed in secondary vocational agriculture schools are the undefined objectives of the course, the lack of qualified staff trained in pedagogical subjects dedicated fully to teaching duties, the predominance of theoretical teaching, the
shortage of physical facilities, the lack of flexibility in the administration of school funds, the poor relationship of the school with the surrounding agricultural community, and the lack of awareness of the school of its role as part of the agricultural development process. . . .

Aware of these problems, 24 agricultural school directors and ministry officials in agricultural education from 12 Latin American countries met in Pamplona, Colombia from April 26 to May 23, 1970. This was a conference, sponsored by UNESCO, on agricultural education at the sub-university level that was designed to plan the future role of agricultural education in the development of the following countries represented at the conference: Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, El Salvador, Guatemala, Nicaragua, Paraguay, Peru, and Venezuela.

The conference participants discussed concerns in six major areas: (1) guidelines for teaching agricultural education; (2) objectives of the program in agricultural education; (3) relationships between agricultural education and rural development; (4) structure of agricultural education; (5) pedagogical necessities of teaching agriculture; and (6) preparation of teachers.

Among the recommendations emanating from the conference were (a) teachers of agriculture should have adequate training

---

10 FAO/UNESCO/IL0, op. cit., p. 80.
11 Ray Agan, op. cit.
in both technical and professional aspects as well as a sound grounding in general education; and (b) teaching methods and techniques should have as the major focus the optimum development of the student, transferability of concepts and the development of skills that have direct association with socio-economic development if agricultural education should realize its contribution to the economic and agricultural development of countries in the developing world.

Resolutions were also passed urging the individual governments represented at the conference to provide agricultural schools with adequate funding, facilities and equipment and resources. Resolutions were also passed requesting UNESCO to help the region establish an agricultural pedagogical institute for pedagogical research, preparation of teachers and in-service education programs, preparation of tests, instructional materials and aids, and as a resource center for the creation and dissemination of library materials and research information.

Agricultural Education for Development

The report of the Latin American Conference on Agricultural Education includes this statement:

The group recommended to their governments that solid relations be established in each country between the services of production agriculture, economic development, and agricultural education in order that the
educational programs in agriculture might meet the needs of the country in agriculturally prepared personnel.

This concern was the central focus of a study by San Giovanni which was designed to examine the role of secondary agricultural education in Chile in contributing to the achievement of agricultural sector goals for economic, political, and social development. This evaluative study was designed to obtain answers to these questions: (a) Did the government recognize the importance of secondary agricultural education in its overall economic planning? (b) What was the nature and quality of the secondary level agricultural education? (c) What provisions existed for articulating such a program with other levels of secondary education? (d) What coordination existed between the different educational agencies in the Chilean government for the promotion of secondary level agricultural education?

To answer these questions San Giovanni used a combination of documentary search and analysis of Chilean government reports and library material, interviews, and personal visits to a representative sample of 18 secondary agricultural schools (out of 13 public and 24 private schools) in Chile. Interviews were held with officials

---

12 Ray Agan, op. cit.

of the Ministries of Education and Agriculture, budget bureau, and national development agencies as well as with important community leaders in Chile.

The major findings of the study indicated that secondary agricultural education in Chile did not produce sufficient numbers of graduates with the specialized skills and knowledge to meet the goals for the development of the agricultural sector. Major problems included a lack of overall planning, a lack of articulation with other levels of secondary education as well as a lack of articulation between secondary and primary and university education; a lack of coordination between the Ministry of Agriculture and other government and private agencies; a lack of professional staff and finance; and inappropriate curriculums and teaching. However, San Giovanni concluded that a great deal of potential existed in the country for the development of a first class system of secondary agricultural education. Accordingly, several recommendations were offered to the Ministry of Education that would assist in improving secondary agricultural education to enhance the capabilities of the agricultural sector to contribute to achieving Chile's national development goals.

Among the recommendations San Giovanni indicated an immediate need to conduct a follow-up study of both graduates and drop-outs of all agricultural secondary schools to determine the strengths and weaknesses of the programs.
He recommended that this should be made part of the standard operating procedure for all schools. Also mentioned was the need for additional professional personnel, improvement in student services, curriculum revision, improvement in facilities, equipment and curriculum materials. He further recommended an intensive program of in-service education for teachers, supervisors and directors.

Developing Secondary Level Agricultural Education Programs

A trend in the Latin American region has been the creation of secondary type programs and the expansion of existing programs. A study by Arlen Etling\(^\text{14}\) was concerned with developing a vocational agriculture program in Bolivia. The purpose of the investigation was to explore the possibility of establishing a program of vocational agriculture education at the Instituto Rural Metodista of Montero, Bolivia. Etling was seeking answers to the following questions: (a) What were the unique problems of agricultural development of the area served by the Instituto Rural Metodista? (b) What were the needs pertaining to agricultural education and training in this geographic area of Bolivia? (c) What were the specific problems involved in

establishing a program in agricultural education at the Instituto Rural Metodista? and (d) What recommendations could be made to successfully establish this program?

Etling reviewed the agricultural situation of the Montero area and made a comparative analysis of the American Farm School in Thessaloniki, Greece which he had visited. He described the potential of the Instituto Rural Metodista, a secondary educational institution in Eastern Brazil, which was trying to formulate a program in agricultural education. Data collection was accomplished through literature search and analysis and personal visits and interviews.

From the data and information gathered, Etling concluded that the Instituto Rural Metodista was in a unique position to serve the Montero area in the field of vocational agriculture education for secondary school pupils and the farming communities. Based on this conclusion and the needs of the area, Etling recommended a detailed three-year program of intensive agriculture courses, drew up a detailed curriculum and developed guidelines for the selection of students, preparation of teachers, use of equipment and facilities, and planning of adult and rural development programs for the Montero area. Other recommendations included teaching methods, supplementary activities in communication with other agricultural organizations and institutions in the area.
A study by Carlos Tavares was concerned with the lack of training in agriculture at the secondary level in Brazil which he considered a great handicap to increased agricultural productivity and economic development. The study focused on the development of a secondary level agricultural education program. Specifically, the purpose of the investigation was to analyze the essential features of agricultural education so as to provide a basis for the creation of cooperative vocational agriculture programs in the country.

Tavares made a comparative study of some aspects of programs carried on in other countries like the United States and Canada pointing out the similarities and differences. The experiences of these and other countries were also considered and compared to show the need, in the words of Tavares, to "bridge the gap" between the levels of education as an integral part of the educational system and national, state and local agricultural policies. The study was primarily a literature search and analysis of Brazilian government reports and documents and reports of international aid organizations.

Tavares concluded that the development of a strong system of secondary level agricultural education programs

---

in Brazil was of utmost importance in view of the programs of agricultural development for increased productivity, agrarian reform, and "colonization" programs drawn up for Brazil. Tavares made detailed recommendations for the development of agricultural education programs at the secondary level. Included in the recommendations were an outline for a philosophy of agricultural education, the establishment of a national information service on secondary education programs, combined programs of agricultural and rural education and local and regional educational planning systems. Also mentioned was a system of teacher education that would ensure the quality and quantity of teachers required for agricultural education programs. Adult education for farmers utilizing the facilities of the regular secondary school programs for local rural communities was recommended.

Vocational Training for Farming and Related Occupations

The participants in the Latin American Conference on Agricultural Education indicated the necessity to establish relationships between agricultural education and rural development programs. It was felt that programs of agricultural education were a basic strategy for getting research and rural development information to institutions serving farmers. The responsibility has been recognized and extension services, according to the World Conference
on Agricultural Education, have contributed to the training of Latin American farmers. The organization and administration of extension services, the effects extension programs have produced and how farmers have perceived the role of extension services and personnel on their adoption behavior patterns constituted the subject of six studies about the region.

Organization and Structure of Extension Education

A study by Jaime Gutierrez was designed to examine and describe the agricultural extension service of the Colombian Agricultural Institute (ICA), an agency for stimulating and supporting rural development in Colombia. The specific objectives of the investigation were to examine the organization and structure of the agency and to develop bases for recommending changes in organizational structure and policy.

The respondents for the study included all professionals working for the agricultural extension organization at the agent level, the directors and supervisors of eight regions of Colombia, and the national director and coordinators of regional services. A total of 94 extension personnel were

---

polled by means of questionnaires and interviews. Gutierrez also used the "Q-technique" to develop structural and organizational propositions for operational policies of the extension services.

The conclusions drawn by Gutierrez were that the field agents were highly trained technical people but did not have any professional training in extension methodology and teaching methods; that new recruits to the service were not given orientation as extension agents; that the extension service did not have a well organized system of rewards and promotions especially at the agent level; and that regional supervisors were perceived to be in lower status than the regional directors.

Based on these conclusions Gutierrez recommended, since the extension service was a social organization, that new personnel should be introduced to the organization's policies and activities as well as the socialization process through orientation and pre-service education; that since the organization performed educational functions extension personnel should have a good grounding in appropriate teaching methods and techniques; and that the ICA extension unit should train its own field personnel to meet the organization's conditions of service and clients' situations.
Perceptions of the Extension Service and Extension Agents

Two studies had as their focus the clients' perceptions of the role of the extension service itself and of extension agents. One study was by Fabio Zapata which dealt with clients' perceptions of three extension organizations which operated in the state of Antioquia, Colombia and the other by Jose Garcia-B dealing with the perceptions of the extension agent's role in program planning in Colombia.

The three organizations in Zapata's study were represented by the Colombian Agricultural Institute (ICA), the Coffee Growers Federation, and the Secretariat of Agriculture. The main objective of the investigation was to determine the clients' perceptions of the extension services and the extension agents representing the three organizations and to determine the association of clients' perceptions with selected variables. The variables investigated were: educational background, age and economic status of the extension agents, practices learned from extension personnel, practices used in the farm out of those learned

17 Fabio Augusto Zapata, "Factors Associated with Farmers' Perception of Agricultural Extension in Antioquia, Colombia" (unpublished Ed.D dissertation, Louisiana State University, 1971).

from extension personnel, knowledge of agricultural concepts, exposure to mass media, and contact with extension personnel. Data were collected by personal interview schedules conducted by trained interviewers. Altogether 370 clients selected by both probability and non-probability sampling procedures were queried.

The most significant finding was that only the number of practices used was associated with favorable perception of the clients. This finding led Zapata to the conclusions that (a) some organizational problems existed with the extension service in Colombia; (b) the organizations should revise their extension programs and the methodology used to carry them out; and (c) the economic aspect of improved practices and ideas was important in determining what a farmer would or would not do as a result of extension teaching.

Program planning is one of the most important responsibilities of extension agents and the extent to which the extension agent and others perceive the agent's role in this function was the subject of Garcia-B's\(^{19}\) study. The objectives of the inquiry were to determine (a) the perceptions of the extension agent's role in program planning as identified by six role definers; (b) the obstacles encountered by extension agents in their role performance tasks; and (c) the amount of assistance received by agents in performing the tasks related to program planning.

\(^{19}\)Garcia-B., op. cit.
The role definers were identified as regional managers, national extension staff, directors of divisions and heads of departments, regional directors, subject matter specialists, and other extension agents. A program planning model consisting of seven phases and 64 tasks were used. Major obstacles isolated for the study included lack of communication with the national Extension staff, limited contact with supervisory and administrative staff, lack of training, crowded schedules, lack of clarity of instructions for evaluation, insufficient direction from the national extension division, lack of background information and lack of interest by local leaders.

Garcia utilized questionnaires to collect data from 152 extension personnel. Included were questions probing age, position held, persons working at the level of position, tenure in extension, level of formal education, discipline in which highest degree was earned, formal coursework in community development and related areas, frequency of staff meetings at level of position, subject most frequently discussed at staff meetings, and the percentage of time devoted to program planning.

The major findings of the study were that (a) there was a large measure of congruence on the perceptions of the extension agent's role in program planning by all the parties polled; (b) the most frequently mentioned obstacles to the agent's program planning tasks were lack of training
in education and evaluation, lack of help from regional extension directors and crowded schedules; (c) the extension agents received most assistance from other extension agents, next from regional directors, next the national extension staff members and the least from subject matter specialists. A very significant conclusion emerging from the study was that none of the role definers were satisfied with the job performance in program planning by the extension agents. Garcia, therefore, made a number of recommendations almost identical to the concerns Gutierrez raised.

Concern about job performance of extension workers was the subject of a study by Henderson. Thomas Henderson studied the relationship between the job performance of extension workers and certain factors. Specifically the main purpose of the study was to determine the factors associated with the effectiveness of job performance among extension officers in Jamaica, West Indies. The objectives of the investigation were (a) to determine the background, personal and professional variables associated with the effective job performance among advisory and development extension officers in Jamaica; and (b) to establish whether these correlates of effective job performance coincided with

generally accepted predictors of effective job performance among extension workers in the United States.

Henderson used interview schedules to poll 33 advisory, 62 development, and 17 land authority officers in a census survey. Questionnaires were also utilized to gather other types of data. Peer nomination and supervisors' ratings were used to measure job performance level. Twenty-three independent variables were developed and grouped into five clusters: (1) Pre-service background variables; (2) In-service background variables; (3) Personality variables; (4) supervisor-rated variables; and (5) self-rated variables.

Henderson found that while in-service background variables did not have any significant relationship to job performance, pre-service background, personality, supervisor-rated, and self-rated variables had positive relationships, in varying degrees, to job performance of extension workers in Jamaica. He also found out that the type of extension workers level and amount of contact with the farmer related positively to their job performance. He concluded that the findings were in a large measure consistent with similar findings about extension personnel in the United States.

Impact of Extension Programs

Extension programs are designed to introduce into the farmers' practices and techniques improvements and new ideas and to change the farmers' behavior patterns in
adopting innovations. Occasionally the impact of extension programs are evaluated. Two studies had this concern as their main focus. The studies were conducted by Carlos Rucks\textsuperscript{21} and George Patrick.\textsuperscript{22}

Rucks studied the impact of extension programs in certain areas of Uruguay. The objective of the investigation was to measure the extent of the adoption of certain practices between two areas based on or associated with selected demographic, socio-economic, socio-psychological and psychological characteristics of individual farmers on one hand and the relationship between backgrounds and interaction factors of individual farmers on the other. Rucks indicated that from 1965 to 1967 a pilot extension program was carried out in the southeastern region of the country. The program was aimed at increasing the technological level of agricultural production. The purpose of the study, therefore, was to evaluate the impact of the pilot project as compared to a section of the country which was outside the project area. The project area was designated the experimental area and the other designated the control area.


\textsuperscript{22}George F. Patrick, "Education and Agricultural Development in Eastern Brazil" (unpublished Ph.D. dissertation, Purdue University, 1970).
Personal interviews by trained extension workers were utilized to gather data from 60 farmers in the experimental area and 50 farmers in the control zone. In addition to the interview schedule a brief questionnaire was used to secure specific information from the former extension agents of the experimental area.

Rucks found that the extension project did not make any difference between the experimental and control areas in respect to demographic and socio-economic characteristics but certain methods or techniques were better in promoting adoption behaviors in the experimental than in the control area. He concluded that the individual characteristics and situations of farmers had greater relationships to adoption of improved agricultural practices than an extension program per se. Another conclusion was that extension agent's perception of amount of extension work, locality propensity to change, farmers' self-perception, innovativeness, economic land classification, and model of farm practices developed for a specific extension project could be used as predictors to adoption of improved farm practices.

The objective of Patrick's study was to evaluate the potential contribution to agricultural development in Eastern Brazil in terms of increased outputs from investment in formal schooling and extension activities. Patrick selected five areas in the eastern region of the country.

---

23Patrick, op. cit.
for an in-depth analysis of their agricultural potential, improvements and productive capacities and also their agricultural extension activities as well as educational attainments of and possibilities open to farmers. Patrick conducted documentary search and analysis of Brazilian national and regional government reports, Ministry of Education and Ministry of Agriculture documents, policy and program reports and plans, and interviews with government officials in various ministries concerned with development programs in Brazil.

Patrick's findings indicated that investments in extension activities had a higher pay-off than investments in formal schooling in four of the five areas studied, whereas the reverse was true in the remaining area. His conclusion was that extension activities could be used in part as a substitute for formal schooling. He maintained that while it was impractical to attempt to give formal schooling to most of the existing farmers, they could be exposed to new techniques and information through extension activities. However, Patrick warned that this finding was not sufficient reason to discontinue formal schooling in the rural areas of eastern Brazil.
Summary

The conclusions by Armando Calleiro expressed region-wide concerns about the relationship of higher education programs in agricultural education to the manpower and technical needs of agriculture of the countries concerned. Calleiro concluded that the school of agriculture of the Monterrey Institute of Technology had programs and research efforts that did not contribute in any significant way directly to the national objectives in agricultural development. This conclusion echoed one of the most pressing problems which the participants in the World Conference on Agricultural Education expressed in the following statement about the region:

Some of the agronomy universities unfortunately have shut themselves up into ivory towers of academia. They hardly ever collaborate with the organizations of the governments active in agrarian concerns. As a result, neither the staff nor the students really know what the agrarian problems in the country are, and do not participate in any of the programmes of development in the rural area.\(^{24}\)

Even though Calleiro and San Giovanni were addressing themselves to different levels of agricultural education, they basically came to the same conclusions about the role of agricultural education toward the achievement of the objectives of the agricultural sector of Mexico and Chile respectively.

\(^{24}\)FAO/UNESCO/IL0, op. cit., p. 89.
Etling and Tavares were concerned with the development of secondary level agricultural education programs in Bolivia and Brazil respectively. The basis of their recommendations for the establishment of these programs arose from the contention that agricultural education at the intermediate level was a potential factor in producing the professional and technical personnel so badly needed to man the programs of rural and agricultural development.

Agricultural extension is a well entrenched system of farmer training and diffusion of new information and practices in the region, because the emphasis has been the close relationship between agricultural education and rural development. The World Conference on Agricultural Education, discussing the education of adult farmers, stated:

Apart from the literacy programmes and other means that are being used to try to incorporate marginal populations into the development process, . . . it should be noted that there is a marked tendency in Latin America to intensify the education of rural adults, principally by means of extension and training services. . . .

The organization and structure of the extension service, job performance and perceptions of the roles of extension workers, and the impact of extension activities were the main topics of six research studies about the region. The study dealing with clients' perceptions of

25 Ibid., p. 96.
extension agents and extension activities of three extension agencies in Colombia indicated that farmers had a favorable appreciation of the extension service only in terms of the number of new and improved practices that farmers adopted. The conclusion is that the extension service must produce rather than merely create visibility by its size and structure. This was further amplified by the study in Uruguay which concluded that individual characteristics and situations of farmers had greater relationship to adoption of improved agricultural practices than the extension program itself even though certain extension techniques produced more favorable perceptions among farmers.

In another study, even though the finding was inconsistent with the stated objective, the investigator concluded that the extension agent's perception of amount of extension work, locality propensity to change, farmers' self-perception, innovativeness, economic land classification and model of farm practices used by the extension agency could be used as predictors to adoption of improved practices. The conclusion to be drawn is that for the impact of extension to be felt adequate training of extension workers, use of specific training methods and techniques, knowledge of rural conditions and people, and suitable organizational structures are very essential for adoption of innovations by farmers.
The job performance by extension personnel in relation to certain factors was the subject of another study. The finding was that job performance by extension field workers was positively related to personality, pre-service background, positive self-perception and amount of contact with farmers. This indicated that the personal characteristics, educational background, and the professional training of extension workers were very important pre-service and in-service factors for extension personnel in direct contact with farmers.

The investigation which produced the above conclusion related to another study which concluded that the extension organization should make sure that professional training of new recruits was conducted by the organization to ensure that (a) the worker was professionally prepared in extension teaching and methodology, (b) the worker was introduced or inducted into the social system of the organization, and (c) the worker was thoroughly aware of the objectives of the organization and its programs.

The investigation pitting extension activities against formal schooling in rural areas of eastern Brazil concluded that extension education could be substituted for schooling but did not indicate the long term benefits of formal schooling for rural people who would not necessarily go into farming or agriculturally related occupations.

Three of the six studies on extension education were about
Colombia, and taken together, they provided an in-depth look at the organization, administration, and activities of the different extension agencies that conduct programs in that country.

Recommendations for Further Research

Since 57 per cent of the studies about the region were on extension education many of the suggestions for further research were in this general area.

One investigator indicated that the extension service in the Antioquia district of Colombia covered only five per cent of the district, this was typical of much of the extension services of the countries in the Latin America region. It was, therefore, suggested that studies should be made to identify ways by which extension education programs could be made available to the largest numbers of farmers or rural people. Tied in with this focus is the need to determine and rectify those factors which hamper the effectiveness of extension services.

Mention was frequently made of ways to improve the image of the extension service and personnel in the region. Even though a few role perception studies have been conducted in the past some of the investigators maintained that enough has not been done. Further suggestions were indicated for more studies of farmers' perceptions of the role of extension workers at all levels. In conjunction with this emphasis
is the request for assessing the job performance of extension workers using variables that represent standards or criteria used by farmers or other extension clientele to rate job performance of extension workers. This calls for the development of appropriate instruments.

Concern was raised also about the doubts surrounding educational programs directed toward farmers. One investigator, therefore, suggested that a study or studies be conducted to determine the external effects of educational activities.

Another area mentioned was curriculum development. In some of the studies it was pointed out that there was a great deal of disparity between the agricultural conditions and needs in several Latin American countries and the programs of agricultural education in various institutions. The need here is a study or studies to determine how the school curriculum can be set up in content and orientation to be made more relevant to agricultural productivity requirements.
CHAPTER IV

THE NEAR EAST REGION

The studies representing this region are about Greece, Iran, Iraq and Syria. With the exception of Greece, much of this region has fairly comparable geographic and climatological problems, and until the recent dramatic emergence of oil as a source of wealth it has been a region wholly dependent upon its agrarian economy. Table 4 gives a summary of the agricultural orientation of the countries included in this section of the review.

Aware of their dependence on an agrarian economy the governments of the countries in this region have made strenuous efforts to develop agriculture through numerous development projects. In spite of these efforts over the past two decades, the region as a whole has been a net importer of food and agricultural products. The reason for this situation is expressed in the report of the World Conference on Agricultural Education held in Denmark in

1Greece is normally not included in this region by geographers or United Nations agencies but its inclusion here is made in terms of its proximity and agricultural situation.

2FAO/UNESCO/IL0, op. cit.
<table>
<thead>
<tr>
<th>Country</th>
<th>Population (Thousands)</th>
<th>Population Distribution</th>
<th>Per cent in Agriculture</th>
<th>Per cent Agricultural Land Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greece</td>
<td>8,892</td>
<td>48.5</td>
<td>51.5</td>
<td>53.0</td>
</tr>
<tr>
<td>Iran</td>
<td>28,360</td>
<td>40.8</td>
<td>59.2</td>
<td>60.0</td>
</tr>
<tr>
<td>Iraq</td>
<td>9,690</td>
<td>47.2</td>
<td>52.8</td>
<td>68.0</td>
</tr>
<tr>
<td>Syria</td>
<td>6,182</td>
<td>43.7</td>
<td>56.3</td>
<td>68.0</td>
</tr>
</tbody>
</table>

146

1970 as follows:

A major factor responsible for this state of affairs has been the failure of the systems of agricultural education and training to meet the requirements of the expanded agricultural programmes and policies being developed throughout the region. Both from a quantitative and a qualitative point of view, technical agricultural education has so far been unable to meet the demands for technically qualified personnel at the various levels required, even though the recently expanded programmes of agricultural education and training should go so far to so doing in the next few years.

Another part of the same report includes the following statement:

...The Near East, in common with other developing regions is facing a social, economic and agrarian revolution; the challenges are indeed daunting. In the agrarian sector, it is the adequacy of the education and training of the skilled manpower needed at all levels, which will finally dictate the success with which these challenges are met.

It is against this background that the studies reviewed in this section were conducted. The studies primarily concern vocational training for farming and related rural occupations and intermediate level agricultural education. According to the report of the World Conference on Agricultural Education there is a general agreement that preparatory agricultural schools for the training of youngsters in practical agriculture in the

\[3 \text{Ibid., p. 97.}\]

\[4 \text{Ibid., p. 114.}\]
region are of little value.\textsuperscript{5} It is little wonder, therefore, that the studies reviewed in this section have extension and adult education programs as their main focus.

\textbf{Training for Farming and Related Rural Occupations}

\textit{Extension Education}

Experts maintain that economic development in developing countries should be based on a viable agricultural development program and the place to start in such a program is the education of farmers and the upgrading and sharpening of the agricultural skills and practices of the rural farming population. Rassi,\textsuperscript{6} Alsamarrae,\textsuperscript{7} and El-Zoobi\textsuperscript{8} in their studies on Iran, Iraq, and Syria, respectively, developed specific recommendations for well rounded extension education programs in their countries. Alsamarrae's main objectives were:

1. It identify appropriate sociological and educational models which would be useful in stimulating the adoption of agricultural and educational innovations in Iraq.

\textsuperscript{5}\textit{Ibid.}, p. 101.


\textsuperscript{7}Hatim A. Alsamarrae, "A Proposed Educational Program for Development in Iraq" (unpublished Ph.D. dissertation, The Ohio State University, 1968).

2. To identify the most effective educational processes that the government might use to bring about change in the method and technique of farm practices and to induce the farmers to adopt or utilize innovations.

3. To recommend a plan for implementing the educational programs to bring about the adoption of farm practices.

Alsamarrae's findings were that (a) most of the farmers owned the land they farmed following land reforms; (b) the land reform benefitted the farmers by eliminating their indebtedness to rich landlords and thereby ensuring them higher incomes than before the reforms; (c) the general condition of farmers was characterized by low yield per unit of land, subsistence living, high rate of illiteracy, and poor housing and health. Alsamarrae concluded that extension education was the most effective way by which farmers could be reached to improve their practices and methods of farming.

Agricultural development in the countries of this region immediately touches on the question of land reform and rural development. Land reform has long been a sine qua non of agricultural development programs in Iran, Iraq, and Syria and Alsamarrae's mention of the subject in his findings represents the general concern of the three studies.

---

All three studies involved extensive documentary search and analysis and related literature as well as personal interviews and contacts. These interviews and contacts were with experts in the area of rural development and agricultural extension education in the several countries and in the institutions in the United States where the investigators studied and did their research. Documents searched and analyzed included government reports and papers, reports and studies of several international aid agencies and organizations, textbooks and library materials and reference books.

The purpose of Rassi's study was to establish the philosophical framework and develop guidelines for extension education in Iran. Basically Rassi's purpose was very similar to that of the other two inquirers. Rassi reported the following conclusions:

1. Whenever rural development is a major concern, a clear understanding of the various concepts of rural development is extremely important.

2. In agrarian countries where both community development and extension or similar programs exist, preliminary administrative coordination is essential with emphasis on sound training of personnel to more precise, economical, and effective teaching activities.

3. Extension education can help people and their communities to rapidly raise their level of living. ... Education and extension education could then reciprocally work toward helping people to help themselves to work out their destinies, which is the central purpose of existence.
Alsamarrae addressed similar sentiments in different terms and proposed the following guiding principles:

1. The main purpose of extension education should be recognized as assisting rural families through education to realize the maximum benefits from the use of their available resources;

2. Extension education should be understood to mean the teaching technical knowledge useful in solving recognized problems of rural families. It also involves developing the confidence of the rural people in cooperative work; and

3. Extension education should serve and be available to all people equally without favor or cost to any individual.

El-Zoobi echoed the same basic philosophy when he stated that:

1. . . the development of agriculture in developing countries has become a stated goal or objective in the last two decades as a major means of increasing per capita income and raising the living standard; . . . it is believed that agricultural extension education lies at the heart of development, and that agricultural extension released the potentialities not of the few, but of the many.

The overall objective of El-Zoobi's study was to investigate the relationships between agricultural extension educational programs and agricultural development and to formulate guidelines for a rapid agricultural and rural development in Syria. His findings, conclusions and recommendations were basically similar to those of Rassi and Alsamarrae.
Job Performance of Extension Workers

Regarding extension education and personnel, the World Conference report had this to say:

Although the extension services in the region are a comparatively recent development they have already taken firm root and every ministry of agriculture has an extension department. There is at least an awareness of the importance of extension work even though it is not easy to assess the impact that has been made for more has been achieved "on paper" than in fact.......

In the same breath the report went on to say:

In a number of countries, it has been poorly organized with inadequate facilities and often shortage of properly trained and effectively motivated personnel. Senior administrators are seldom sympathetically inclined towards extension, the purposes and functions of which would often seem to elude them. . . .

It was in an effort to isolate some of the variables related to extension workers' job performance and attitudinal orientation that Alfarhan\(^{11}\) conducted a study to investigate the relationship between job performance of Iraqi agricultural agents and selected background and psychological factors. In specific terms the study was concerned with identifying relationships between job performance of agricultural agents located in the middle and

\(^{10}\text{FAO/UNESCO/IL}O, \text{ op. cit.}, \text{ p. 103.}\)

southern regions of Iraq and their training needs, the importance of selected areas of competency to effectiveness as extension workers, satisfaction in extension work, attitude toward in-service training, professional aspirations and commitment to the job. Alfarhan used two sets of questionnaires to poll (a) directors of provincial agricultural departments responsible for extension workers to assess job performance ratings of the agents and (b) the 149 extension agents in the regions to collect data on other variables.

The general findings of the study were that age, level of education and tenure status of the extension workers were positively related to job performance, whereas, prior employment, in-service training needs and requirements, competency needs, attitude toward in-service programs, aspirations, and commitment to job were not related to job performance in any significant way. These findings did not seem wholly compatible with other studies which indicated relationships between job performance and the selected variables. In a number of studies Alfarhan cited about extension workers in the U.S., the findings were consistent regarding the positive relationship between job performance of extension workers and age, level of education, tenure status, prior employment (length of prior employment), attitude toward pre-service and in-service programs and needs, aspirations and commitment to job. Alfarhan explained that other extraneous variables like limited employment opportunities, overbearing
"bossism" of the provincial directors of extension services, and the very nature of extension personnel preparation might have accounted for the unusual findings. In any case, Alfarhan recommended that training for field workers in extension education should receive maximum attention because the key to the success of extension work under any condition is adequate training for its employees before and after their employment. In short, he maintained that the achievement of any extension service is contingent upon well prepared extension field workers with well grounded and appropriate backgrounds, education, attitudes, personality and technical knowledge.

Intermediate Level Agricultural Education

The World Conference on Agricultural Education report indicates that in the Near East region the intermediate level of agricultural education has suffered most from uncertainty in its objectives and from constant changes in policy. The intermediate level here includes all programs at the secondary and immediate postsecondary stages. The report further maintains that the demand for intermediate level technicians as agriculture improves may be great and, therefore, it is this level of training which is most in need of careful reappraisal, quantitatively and qualitatively. Perhaps, Greece started doing some serious thinking ahead of the other countries in the region as posited by
this statement in the World Conference on Agricultural Education report:

Greece and Turkey very recently have relied almost entirely on forms of vocational education based on 5 to 6 years of primary education. But secondary agricultural schools, linked either to longer periods of general education or following up vocational education, have either been introduced or are planned for the very near future. An important reason is the increasing need for assistant and technical staff in the advisory services in order to supplement the work of graduates of higher education.

A study by Dangas discussed new legislation introduced by the Greek government to reorganize agricultural education along with other aspects of vocational education in the country. Reviewing the background to the legislation Dangas gave the following account:

Recently, a committee submitted a draft proposal for a bill on technical and vocational education in Greece. This legislation follows a more general one, which in 1964 reformed the whole educational system. According to the above draft, the state undertakes the responsibility to establish free technical and vocational education in all main fields below college level all over the country. Agricultural education courses provided will be optional and will be available to interested pupils. It is hoped that the new bill, if implemented, will satisfy a great need in Greek education.

\[12\text{FAO/UNESCO/ILO, op. cit., p.61 (Vol.II).}\]

Specifically, the purpose of Dangas' study was to look into the problem of implementing an agricultural education program at the intermediate level in accordance with the proposals presented in the bill. Dangas' findings were that agriculture had become more technical but less efficient in Greece and that in the future, as envisaged by the proposed legislation, the number of persons likely to be employed in agriculture and related occupations (agribusiness) would considerably increase. He also found that education, mainly at the elementary and secondary levels, was structurally defective up until 1964 when it was reorganized and that the new legislation was an attempt to reorganize the vocational and technical aspects of education including agricultural education. He concluded that the conditions were ripe for a restructured agricultural education in Greece and that the legislation was the right move at the right time.

Curriculum Development

In the area of curriculum development Zareian\textsuperscript{14} conducted a study dealing with the development of a technical curriculum for technician preparation in agricultural mechanization for Iran. Zareian indicated that the development

of farm power and machinery in Iran had increased the need for trained technicians in agricultural mechanization and that mechanization of Iranian farms had been hampered by lack of technicians trained to operate and maintain the necessary equipment.

The major objective of this study was to develop a curriculum for a two-year, post-high school agricultural mechanization training program in Iran by (a) identifying the competencies needed in specific areas in the mechanization program and determining the degree of importance of each competency as rated by a jury of experts; and (b) reviewing the curriculum of agricultural mechanization technician training programs in some American colleges and universities as an input for (c) formulating the curriculum for such a program with an Iranian emphasis.

A jury of experts in the area of agricultural power and machinery was selected to rate a list of competencies which Zareian developed from research and literature appropriate to the field. The jury of experts consisted of eight technicians from eight major companies manufacturing agricultural machinery, eight teachers of two-year, post-high school farm equipment service and sales programs and eight educators teaching agricultural mechanization at Michigan State University. The major findings which provided the guidelines for the development of a curriculum were stated as follows: (1) the technician should have the
necessary competencies to adjust, service and maintain all agricultural machinery and equipment in the shop and on the field; (2) be able to perform minor repair jobs on all agricultural machinery; (3) be able to make major repairs in some sub-areas such as small engines; and (4) have some background knowledge in basic and elementary science including applied electricity, mechanics, and mathematics.

Zareian used these guidelines and other data in the study to prepare a two-year post-high-school agricultural mechanization technician training program consisting of 13 courses: (1) applied mathematics; (2) applied electricity; (3) applied mechanics; (4) service shop; (5) small engines; (6) farm tractors; (7) gas engines; (8) diesel engines; (9) planting and tillage equipment; (10) harvesting machinery; (11) hydraulic systems; (12) power testing unit; and (13) seminar.

Follow-up of Graduates

Taking a cue from a concern expressed in the World Conference report Mohammed Behnia15 conducted a study to determine factors that influenced occupational choices of graduates of Agricultural Senior High Schools (ASHS) in Iran.

---

To justify the study, Behnia stated:

The graduates of agricultural schools are called technicians. Technicians are the link between specialists and workers. If this link is weakened, then the transmission of new knowledge to the workers will not occur.

The training of agricultural technicians is delegated to agricultural schools. Many problems arise because the schools do not know precisely how many schools, in what areas and for what organizations they are training students.

By attempting to discover where the graduates of ASHS's go for employment after graduation, it is possible to obtain information which will assist in preparing and defining the program, curriculum, length of courses and goals of agricultural schools.

Behnia used a combination of mailed questionnaires, personal interviews and documentary search and analysis in his investigation. Five sets of questionnaires were used to extract data and information from the administrators and teachers of the agricultural senior high schools, the second and third year students of agricultural training centers, the 1964-65 graduates of the agricultural senior high schools and the senior students of three agricultural colleges.

Behnia concluded that in order to establish the basis for appropriate objectives for the agricultural senior high schools in Iran the country should (a) determine its and each community's agricultural manpower needs in both the private and public sectors and (b) develop a curriculum based on the community's needs with sufficient flexibility and with special areas of emphasis. The major
finding generating this recommendation was the fact that most of the graduates of the agricultural schools did not become farmers or enter employment fields even remotely related to their agricultural training. He blamed low financial attraction in the agricultural sector.

Other findings were that the curriculum in the schools were not related in any practical terms to the needs of graduates and that the graduates left the programs without adequate knowledges and skills to enter the job market. A total of 34 subjects were offered in the programs many of which were unrelated to the basic agricultural training needed by students for initial entry into occupations. It was also found that the teachers and administrators of these schools were inadequately prepared in several important areas and the schools lacked adequate and suitable facilities for agricultural education. Student selection was also a "haphazard" affair. Behnia then made recommendations for student recruitment to these schools, teacher and administrator selection, curriculum, facilities, program development and evaluation.

Summary

The thrust of the majority of studies reviewed in this section has been the extent to which extension education, in itself and in conjunction with rural and community development programs, could contribute to the agricultural
development of the region. Each of the investigators went
to great lengths to review the agricultural, social, and
economic conditions of the countries. The amelioration
of these conditions was the main concern; and no doubt the
proposals, guidelines, and curriculum developed by the in­
vestigators constituted new emphases that might have far
reaching consequences if the suggestions reached the policy
makers in the countries concerned.

One of the most important findings that emerged from
all the studies was the lack of a national philosophy and
clear objectives of agricultural education to which the
policy-makers of the national governments could commit
themselves. To this end Behnia's statement about Iran
seemed relevant:

... agricultural education at all levels has
not followed its aims and has not achieved its
objectives. For example, various fields of
study are being pursued and expanded without
any considerations given to the countries
needs; such fields of study have been expanded
without any recognized programs and have
evolved or developed by chance or because of
the particular interests of administrators.16

The amount of international aid and cooperation in
developing extension education in the region has been con­
siderable17 but the extent of achievement would only depend

16 Behnia, op. cit., p. 16.
17 FAO/UNESCO/IL0, op. cit.
on how much the gap between stated (or implied) national objectives and the achievement itself has been closed or narrowed. Narrowing the gap was undoubtedly the major concern of the studies in which specific recommendations, guidelines and detailed programs of extension education were provided.

Alfarhan's findings from the inquiry into the relationship between job performance and certain variables provided revealing insights into and deviations from other research findings. Several studies have indicated that there is a positive relationship between job performance and those variables and the findings have been consistent. However, Alfarhan found that job performance was not influenced by length of prior employment, in-service training needs and requirements, aspirations and commitment to job. He explained that other extraneous variables may have accounted for the inconsistency. The type of instrument used to call for the data may have also accounted for the findings but he did not mention that.

Behnia found in his study of graduates of agricultural senior high schools in Iran that the occupational status of the graduates was quite different from the focus of their initial training. Even though he cited low financial returns to education in the agricultural sector, it would be reasonable to look at some other plausible reasons gleaned from some of the research reviewed: (1) agricultural
education was contributing to the controlling purposes of
general and vocational education in Iran; (2) agricultural
training was just as good as any educational programs in
the country in providing knowledge and skills required by
the general employment sector; or (3) the agricultural
schools were not doing an adequate job of preparing compe­
tent workers for the agricultural sector. These are
possible explanations that could be duplicated over and
again not only in this region but also in several other
developing countries from impressions gathered in other
studies in the review.

If the agricultural schools were not doing an ade­
quate job it would be easy to say that an inadequate or
inappropriate curriculum might be one of the reasons. This
idea was behind the study by Zareian whose objective was
to develop a curriculum for an agricultural mechanization
training program for Iran. If similar conditions and
needs existed in other areas of the region this curriculum
could have some appeal and set the pace for developing
specific curriculums for various areas of the agricultural
education program.

Dangas' study provided an account of what had to be
done by policy makers who for some reason became aware of
the inadequacies of vocational and agricultural education
in a country. It also provided an indication of the fact that
to reinforce or change the direction of agricultural (or
any other) educational systems based on changing needs the force of law is probably the most assured way of getting the change effected.

Recommendations for Further Research

In the studies reviewed about the Near East region some of the investigators indicated other areas which they felt needed further investigation as supplemental or sequel to their investigations. These research topics are provided in the following summary.

Alfarhan was concerned about the non-significance of the relationship between the extension workers' job performance and certain variables. Among the possible explanations he cited the use of an instrument which was highly questionable under the circumstances of the country concerned. His suggestion was that the study be replicated in Iraq or elsewhere in the region with a much improved instrument or a set of instruments of unquestionable validity.

Further development of extension programs was frequently mentioned by the investigators. For example, El-Zoobi proposed that an investigation be made to develop an agricultural extension programs for the settlement of the Bedouins in Syria. The Bedouins are, in fact, nomadic tribespeople found in many countries of the region.
The general impression emanating from the studies was that vocational agriculture and extension education were the combined responsibility of Ministries of Agriculture in almost all the countries of the region. It was, therefore, mentioned that there was need for research for developing a role performance model for vocational agriculture curriculum to link this model with extension education programs undertaken by the same ministry.

Some of the investigators found that agricultural extension and rural and land reform programs have engendered gradual structural and technological changes. The need was indicated to investigate the impact of these changes on employment, income, and living conditions in rural areas to enable extension educational programs to be designed in terms of specific requirements for agricultural development.

Even though the investigators did not dwell to any great extent on the impact of cooperatives El-Zoobi indicated that in Syria alone over 1,000 cooperatives were in operation but the programs were spread out over different program areas like marketing, production, supply and services supervised by different agencies. Mentioned was the need for evaluation of these activities to ensure maximum benefits to farmers.

The basis for in-service education for various categories of workers in the agricultural mechanization area was indicated by one investigator only but it expressed
the general requirements for curriculum improvements in other subject areas. To this end investigations were suggested for developing curriculum programs for technicians already employed without adequate initial training and also to prepare qualified teachers for instruction in agricultural mechanization training programs as a basis for adoption in other areas of the agricultural education program.
CHAPTER VI

DESCRIPTION OF THE RESEARCH REVIEWED

A total of 70 studies was reviewed. Of this total 35 were on Asia and Far East, 17 on Africa, 11 on Latin America, and seven on the Near East. Table 5 shows the major subject areas into which the research was classified and the number of studies identified for each area for each region.

TABLE 5

DISTRIBUTION OF STUDIES BY SUBJECT AREA AND BY REGION

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Number of Studies by Region</th>
<th>Near</th>
<th>Latin East</th>
<th>America</th>
<th>Africa</th>
<th>Asia and Far East</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational Programs</td>
<td>1</td>
<td>4</td>
<td>8</td>
<td></td>
<td>13</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Curriculum Development</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
<td>6</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Teacher Education</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
<td>7</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Evaluation</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td></td>
<td>5</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Extension Education</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td></td>
<td>4</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td>7</td>
<td>11</td>
<td>17</td>
<td>35</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td><strong>Per cent</strong></td>
<td></td>
<td>10</td>
<td>16</td>
<td>24</td>
<td>50</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

The studies were broadly classified into agricultural education as a part of the country's formal system of education on one hand and extension education on the other.
Within agricultural education were the subject areas of educational programs, curriculum development, teacher education and evaluation. Extension education was considered as one major subject area.

Studies in the "educational programs" category included research on agricultural education at the university level (professional) other than teacher education and at the elementary and secondary (high) school levels; agricultural education as a strategy for agricultural or economic development; general or comprehensive programs at all levels excluding professional and teacher education programs; history of agricultural education at the secondary or high school levels; and administration of agricultural high schools.

The "curriculum development" category covered studies dealing with the development of curriculum content, curriculum guides and curriculum materials including teachers' handbooks. Also included were curriculums for adult education programs taught in high schools.

The "teacher education" studies included the development of pre-service programs and studies to determine in-service needs of teachers. Included in this category was one study dealing with the perceptions of the role of agriculture teachers.

"Evaluation" studies encompassed the evaluation of educational programs, follow-up investigations of former
enrollees in agricultural programs, educational and occupational aspirations and plans of both high school and immediate post-high school students, and academic achievement of enrollees in agricultural high schools.

The category "extension education" included all research dealing with the development of programs and curriculums and programs for training extension personnel. Also included were studies dealing with role perceptions of extension personnel and evaluation of extension programs and personnel.

Approximately 37 per cent of the studies were in the area of educational programs, 29 per cent in extension education and 13 per cent in teacher education; evaluation and curriculum development made up the remainder with 11 per cent and 10 per cent, respectively.

The emphasis in the research varied considerably among the four regions as illustrated in Table 5. Thirty-seven per cent of the Asia and Far East studies and approximately 50 per cent of the Africa region studies were on educational programs, whereas 20 per cent and only six per cent, respectively, were on teacher education. It would be easy to say that the concerns in agricultural education in the two regions were more directed toward formal agricultural education programs. Between Africa and Asia the impression is that while agricultural education has made
some notable gains in receiving recognition as part of the educational systems in Asia with much greater need for improving teacher education, Africa is still groping for a system of agricultural education that begs for due recognition as has been achieved in Asia and other developed countries but with little concern for teacher education. As already noted, ability to teach in most African institutions resides only in technical competence and, therefore, teacher training in agricultural education, for example, was not of major concern as long as university graduates are deemed capable of teaching without any special professional training.

The emphasis in the Latin America and Near East regions was on extension education with 57 per cent and 55 per cent respectively of the research concentrated in that area. The inevitable impression is that agricultural education through extension activities was the major concern of the investigators from these regions even though to a lesser extent the total field of agricultural education was behind the primary focus.

Gordon Swanson\(^1\) stated:

\[\ldots\] It would be interesting to know whether the inquiries are focused at the level of policy or at the level of practice. Again, I would suspect that most of them are more concerned with practice than with policy.

\(^1\)Personal correspondence from Dr. Gordon Swanson dated February 26, 1974; (see Appendix B for complete correspondence).
Swanson's hunch was well founded; but contrary to his expectations, many more of the inquiries were concerned with policy than with practice. Approximately 74 per cent of the research involved policy matters; only 26 per cent was concerned with practice at the teacher or supervisor level. Conceivably, it would be safe to say that the research in curriculum development and, in some cases, evaluation were at the level of practice since they were meant to generate improvement in existing practices. On the other hand, the sweeping recommendations for substituting existing systems with new or reoriented systems of agricultural programs and the organization and administration of agricultural and extension education were issues that could only be implemented by major policy changes.

**Types of Research**

The types of research used in classifying the studies reviewed (Table 6) were experimental, descriptive, information gathering, and historical. In actual practice, information gathering and descriptive research could be classified into the broad category of descriptive studies. Van Dalen\(^2\) classifies descriptive research into (1) survey studies, (2) interrelationship studies, and (3) developmental studies. He further classifies survey studies into (a) school

\(^2\)Van Dalen, *op. cit.*, p.196.
surveys, (b) job analysis, (c) documentary analysis, (d) public opinion surveys, and (e) community surveys. The studies categorized as information gathering, therefore, could be very well included with survey studies. However, in view of the fact that merely gathering information formed the major basis and a prominent feature of the research so classified, it was deemed necessary to give the method of data collection a more distinctive descriptor.  

The research identified as descriptive was mostly interrelationship research which Van Dalen categorizes into case studies, causal-comparative, and correlational and regression studies. Information gathering was the same as descriptive survey which consisted mostly of documentary search and analysis of university catalogs and bulletins, textbooks, government reports and papers, and reports and documents of international aid agencies and organizations.  

The two studies classified as historical were analyses of agricultural education programs and were based purely on documentary search and analysis. The two experimental studies also included information gathering and survey techniques but in each case the educational program developed was based on the findings of experiments conducted by the investigators.

---

TABLE 6
DISTRIBUTION OF STUDIES BY SUBJECT AREA 
AND TYPE OF RESEARCH

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Experimental (Number of Studies)</th>
<th>Descriptive (Number of Studies)</th>
<th>Information Gathering (Number of Studies)</th>
<th>Historical (Number of Studies)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational Programs</td>
<td>0</td>
<td>6</td>
<td>18</td>
<td>2</td>
<td>26</td>
</tr>
<tr>
<td>Curriculum Development</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Teacher Education</td>
<td>0</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Evaluation</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Extension Education</td>
<td>2</td>
<td>12</td>
<td>6</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2</strong></td>
<td><strong>34</strong></td>
<td><strong>32</strong></td>
<td><strong>2</strong></td>
<td><strong>70</strong></td>
</tr>
<tr>
<td><strong>Per cent</strong></td>
<td><strong>3</strong></td>
<td><strong>49</strong></td>
<td><strong>46</strong></td>
<td><strong>3</strong></td>
<td><strong>100</strong>*</td>
</tr>
</tbody>
</table>

*Does not total 100 per cent due to rounding.

Warmbrod and Phipps indicate that "the research in agricultural education has been to a considerable extent descriptive in nature." The research reviewed in this study is no exception to that statement. A preponderance of the studies, 95 per cent to be precise, could be broadly classified as descriptive. Even though research experts frequently criticize the preponderance of descriptive studies in educational research, yet descriptive research in itself is probably the most appropriate research strategy to use to investigate educational problems especially in

---

4Warmbrod and Phipps, *op. cit.*, p. 112.
evaluation and other *ex post facto* situations. But one of
the general weaknesses of the research reviewed was the
extensive use of content analysis as the major method of
data collection. On this score Van Dalen points out the
following shortcomings:

Some documentary research findings are of
little value because the investigators
failed to analyze a representative sample
of source materials.

. . . Another weakness found in some docu-
mentary studies is the failure to analyze
the worthiness of source materials. Printed
and written materials are not necessarily
accurate.\(^5\)

These weaknesses could be associated wholly with the
studies that used content analysis or documentary search
and analysis as the major mode of investigation. In the
process of information gathering the investigators relied
heavily on university catalogs or bulletins, textbooks,
reference works, government documents, reports of experts
and international aid agencies. The findings, conclusions,
and recommendations, therefore, were based strictly on docu-
mentary search and analysis. In some cases, the investiga-
tors relied on "the identification of desirable practices
through studies of the present status or the solicitation
of opinions of knowledgeable persons concerning desirable
practices and procedures."\(^6\)


\(^6\)Warmbrod and Phipps, *op. cit.*, p. 112.
Approximately 95 per cent of the research was in the descriptive category with 49 per cent classified as correlational, *ex post facto* and case studies and 46 per cent classified as descriptive surveys or information gathering. The distribution was therefore, heavily skewed in one direction. Only six per cent of the studies were included in the historical and experimental categories.

**Sampling Techniques**

Table 7 tabulates the type of sampling plans used in the studies. The plans identified covered both probability and non-probability sampling techniques and censuses. In essence, several techniques for studying the population were used. However, 25 studies did not report sampling procedures of any kind; these studies were those that dealt primarily with documentary search and analysis. Van Dalen makes it quite clear that in descriptive research both the kind of data obtained and the exact nature of the population must be reported.\(^7\) In other words, the total documents or books used as sources of data must be indicated as well as whether the data were collected from the population or from a representative sample of the population. In this respect, many of the studies failed to follow the procedures of identifying the population and indicating specific sources of data.

\(^7\)Van Dalen, *op. cit.*, p.194.
TABLE 7
DISTRIBUTION OF STUDIES BY SUBJECT AREA AND SAMPLING TECHNIQUE

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Random Deliberate</th>
<th>Stratified Random</th>
<th>Census</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational Programs</td>
<td>2</td>
<td>7</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Curriculum Development</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Teacher Education</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Evaluation</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Extension Education</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8</strong></td>
<td><strong>16</strong></td>
<td><strong>8</strong></td>
<td><strong>13</strong></td>
</tr>
</tbody>
</table>

*Does not total 70 because some studies did not report the use of procedures.

However, it was observed that the studies in the evaluation and teacher education categories provided for the identification of populations through sampling plans or a census. In three studies combinations of deliberate sampling and census and deliberate and random sampling techniques were used. Deliberate sampling refers to what other research experts designate "purposive" sampling. Deliberate or purposive sampling was the most frequently used procedure for identifying the sample, followed by census and then random and stratified random sampling procedures.
Data Gathering Instruments

Wick and Dirkes, in describing the characteristics of doctoral dissertations, identified ten types of data collection instruments. But these instruments are not all relevant to the research reviewed; only four were applicable as Table 8 shows.

TABLE 8

DISTRIBUTION OF STUDIES BY SUBJECT AREA AND DATA GATHERING INSTRUMENT

<table>
<thead>
<tr>
<th>Data Gathering Instrument</th>
<th>Inter- view</th>
<th>Questionnaire</th>
<th>Content Analysis</th>
<th>Test</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational Program</td>
<td>9</td>
<td>16</td>
<td>22</td>
<td>0</td>
<td>47</td>
</tr>
<tr>
<td>Curriculum Development</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Teacher Education</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Evaluation</td>
<td>6</td>
<td>7</td>
<td>0</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Extension Education</td>
<td>17</td>
<td>11</td>
<td>7</td>
<td>0</td>
<td>34</td>
</tr>
<tr>
<td>Totals</td>
<td>36</td>
<td>39</td>
<td>40</td>
<td>2</td>
<td>117*</td>
</tr>
</tbody>
</table>

*This large total is explained by the fact that several of the studies involved more than one type of instrument. Interview and questionnaire in combination was most common.

It was observed that content analysis was the most frequently used data gathering instrument followed by

Wick and Dirkes, op. cit.
questionnaires (including two opinionnaires) and interviews. In 11 cases the researchers used a combination of interviews, questionnaires and content analysis; a combination of interviews and questionnaires was used in another 27 studies. In the two evaluation studies a standard test was used in conjunction with an interview schedule in one case and in the other a personality test was utilized along with interview and questionnaire schedules.

**Data Analysis Techniques**

Table 9 presents data analysis techniques used in the studies. The most common techniques identified were analysis of variance, t-test, correlational and multiple regression analysis, Chi-square, and percentages. The frequencies shown in Table 9 were, strictly speaking, not independent because several combinations of the techniques were used at the same time depending upon the interpretation sought from the data. In 11 studies two to three combinations were used in the same study. In all investigators for 45 studies did not report using any data analysis techniques.

Of the number of times the various data analysis techniques was used, percentages was the most frequently used (30 per cent of the studies) followed by Chi-square with approximately 25 per cent of the studies. Analysis of variance was next with 24 per cent followed by correlational and multiple regression analysis with 17 per cent
TABLE 9
DISTRIBUTION OF STUDIES BY SUBJECT AREA
AND DATA ANALYSIS TECHNIQUE

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Analysis of Variance</th>
<th>Correlation t-test</th>
<th>Chi-square</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Programs</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Curriculum Development</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Teacher Education</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Evaluation</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Extension Education</td>
<td>8</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>2</td>
<td>8</td>
<td>12</td>
</tr>
</tbody>
</table>

*Forty-five studies did not report any data analysis techniques.

and t-test the least used with only four per cent.

Significant Aspects of the Studies

In most of the studies it was necessary to collect the data in loco in addition to the extensive library and documentary search of materials and government publications available in the U.S. colleges and universities. In 35 studies the investigators made trips to the country to which the research applied. In the other 35 cases, mailed questionnaires or interview schedules and content analysis were mainly used. In those cases where mailed interview
schedules were utilized knowledgeable persons in the institutions from which the investigators originally came to the United States were asked to conduct the interviews and mail the data back to the United States.

Seventeen (approximately 25 per cent) of the investigations were conducted by persons who were non-natives of the countries studied; 53 (75 per cent) of the studies were undertaken by investigators native to the countries concerned. Of the 35 studies in which the investigators travelled to the country all the non-native investigators made such a trip, but in four instances the investigators were in the countries as part of their normal duty tours.

One of the significant aspects of the studies was the amount of information and data generated by the studies individually or as a whole about the agricultural situation, educational system, and institutions relating to agricultural science, education, research, and rural conditions of the several countries. In a few cases the investigator went into detailed descriptive analysis of the historical, social, economic, and political evolution of the specific countries. This action resulted from the apparent desire of the investigators to acquaint readers with the background and setting for the studies. Unfortunately, however, some investigators overburdened the substantive problems under inquiry with too much detailed but basically peripheral introductions. Since the studies generally represented
the focal points of a great deal of literature and docu-
mentary search and analysis, many of the reports could be
said to be repositories of very exhaustive and comprehensive
secondary sources of information and data about specific
countries. Of particular interest was the research on
educational programs and curriculum development in which
extremely valuable, and in some cases, knowledgeable curric-
ulum content, materials, and resources were provided.

Excluding the FAO and UNESCO studies the investi-
gators of the 67 studies were students and staff of 25
different U.S. colleges and universities, four of which
do not have departments of agricultural education. These
four universities were Stanford University, University of
Michigan, the Catholic University of America, and University
of California, Los Angeles. The universities with the highest
number of investigators were Cornell University accounting
for three dissertations, two theses and two staff studies;
the University of Minnesota with four dissertations and
three theses; Michigan State University, five dissertations;
and Oklahoma State University, two dissertations and three
theses. These institutions were followed by the University
of Wisconsin, The Ohio State University and Purdue University
with four dissertations each and Southern Illinois University
with one thesis and three staff studies. Stanford University
and the University of Illinois were represented by three
dissertations each. The remainder of the colleges and uni-
versities had a range of one to two studies each of either
dissertations or theses.
Purpose

The primary purpose of the study was to review and synthesize the research in agricultural education conducted in the United States from 1965 to 1972 that pertained to other countries. The study was intended to identify some "benchmark" to indicate (1) the state of the research and (2) what suggestions had been and needed to be made for the solution of agricultural education problems in countries other than the United States.

The Center for Vocational and Technical Education of The Ohio State University commissioned two studies which were published in 1966 and 1970 dealing with the review and synthesis of research in agricultural education. The main clientele of these publications was the producers and consumers of research in the United States. Consequently, there was a gap in terms of the availability of such a resource to producers and consumers of research in agricultural education pertaining to other countries. The intent of the study was to fill this gap by providing a resource that had hitherto not been available.
In order to achieve the purpose and intent of the study the following specific objectives were formulated:

1. To review, analyze, and synthesize the research for the period 1965 to 1972 indicating the findings, conclusions, and trends emerging from the research.

2. To analyze and describe the design and methodology employed in the research.

3. To indicate areas of needed research and suggest further research problems based on the research reviewed.

The United States has attracted and continues to attract international students and scholars in agricultural education. Experts maintain that agricultural education is one of the strategies which can promote food production and help alleviate the crises of food shortages in developing countries. Since American agriculture has made such phenomenal strides the United States is a fertile ground for international students and scholars to acquire the necessary skills and knowledges in agricultural education. It was, therefore, hoped that the study would be of value to international students and scholars as well as producers and consumers of research concerned with the practice and problems of agricultural education in countries other than the United States.
Procedure

In order to establish a convenient pattern for the review, the studies were classified by regions and by the levels of agricultural education according to a classification schedule used by the World Conference on Agricultural Education. The subject areas were then considered in relation to the distribution of the studies by regions, types of research, sampling procedures and types of data collection and analysis procedures used.

Since the study was primarily concerned with research conducted in the United States the population of studies reviewed was comprised of doctoral dissertations, masters' theses and staff studies on file in United States colleges and universities offering programs in agricultural education. These were studies listed in Dissertation Abstracts International and Summaries of Studies in Agricultural Education. However, a few studies by UNESCO and FAO which were immediately available in The Ohio State University library system were also included in the study.

The criteria used to select the research reports were: (a) the research was initiated and/or wholly or partly conducted in the United States; this was relaxed to allow inclusion of United Nations studies; (b) the research was about countries with developing agricultural economies; and (c) the report was located in a library or resource center and was available to researchers and students in
the United States. Once the studies were identified steps were taken to assemble the materials. The Center for Vocational and Technical Education at The Ohio State University acquired copies of all doctoral dissertations and made them available for use. Master's theses and staff studies were obtained through the university interlibrary loan service and by direct communication with the colleges and universities holding the reports.

Summary of Findings

For a complete overview of the major findings and conclusions emerging from the studies the reader should refer to the summary section at the end of the chapter for each region.

In all 70 studies representing 30 different countries were reviewed and analyzed. The studies comprised 43 doctoral dissertations, 18 master's theses and eight staff studies of which three were UNESCO and FAO studies. (See Appendix B and the Bibliography for a complete listing of the studies included in the study). Of the 70 studies, 35 studies (17 doctoral dissertations, 12 master's theses and six staff studies) were on Asia and Far East; 17 studies (11 doctoral dissertations, four master's theses and two staff studies) were on Africa; 11 studies (nine doctoral dissertations and two master's theses) on Latin America; and seven studies (six doctoral dissertations and one master's thesis) on the Near East. The studies were distributed
over five major subject areas identified as educational programs (37 per cent of the studies); curriculum development (10 per cent of the studies); teacher education (13 per cent of the studies); evaluation (11 per cent of the studies); and extension education (29 per cent of the studies).

Descriptive research was the major type of research strategy used which included surveys, case studies, ex post facto and correlational and regression studies. Ninety-five per cent of the studies reviewed were classified as descriptive studies. Two studies each of historical and experimental research were also reviewed.

In 35 studies the investigators travelled to the countries being studied to collect data. In the other 35 cases, data collection was mainly confined to library and documentary search of materials available in the United States. Of the 35 studies in which the investigators travelled to the countries concerned 17 of the investigators were non-natives of the countries.

Both probability and non-probability sampling procedures were used. The most common techniques were random sampling, purposive sampling, stratified random sampling and censuses. In some cases a combination of two or three sampling techniques were used depending upon the levels of population under study. Data collection was accomplished by four main types of instrumentation, namely, interviews, questionnaires, content analysis and standard tests. The
most frequently used technique was content analysis and the least used technique was standard tests. In approximately 27 studies, various combinations of interviews, questionnaires and content analyses were used.

Since the majority of the studies concentrated on content analysis of documents and other literature very few data analysis techniques were necessary. The most common data analysis techniques encountered were: analysis of variance (11 studies); correlational and multiple regression analysis (eight studies); chi-square (12 studies); percentages (14 studies); and F-test and t-test (one study each). Forty-three studies did not report any data analysis techniques. In those studies that report using data analysis techniques, various multiple combinations of the techniques were utilized depending upon the interpretation sought from the data.

Conclusions

Warmbrod and Phipps stated:

It is clear that an individualized approach to research in agricultural education has been most prevalent.¹

Even though this statement is in reference to a slightly different situation, it expressed one of the most significant observations that emerged from the research as a whole. Identified were 13 countries about which a

¹Warmbrod and Phipps, op. cit., p. 113.
range of two to nine studies each were conducted. Upon close examination it was evident that each study was a strictly individualized effort in which no reference was made to other studies even though the studies were in the same field or, in some cases, same areas of concern. If each investigation had been considered part of a major problem with multiple concerns many of them could ultimately have contributed to cumulative research efforts especially in those areas that are amenable to such a concerted approach.

The different emphases of the research were obviously the result of external influences. According to the World Conference on Agriculture Education more than ten international organizations involved with agricultural education operate in Latin America. The major focus of these agencies is in the area of extension services. By the same token, the UNESCO and FAO have been very active in the Near East region charged with the responsibility of assisting countries in the region to build up their extension services and activities.

The activities of UNESCO and FAO as well as the USAID have been directed in the African region to helping the countries develop their agricultural education programs via the formal educational systems. For this reason about 90 per cent of the studies on Africa were conducted by investigators whose graduate work was sponsored by USAID, Ford Foundation, FAO, and other international organizations
whose major interest has been the promotion of formal agricultural education programs.

The World Conference on Agricultural Education also indicated that as a result of decisions taken at a regional conference of government officials in agricultural education held in Bangkok, Thailand in 1965, considerable progress had been made at all levels of agricultural education but the greatest concern had been at the intermediate level as reported by the FAO survey on Agricultural Education in Asia. The effort in reorganizing and expanding agricultural education programs has received considerable external boost.

The World Conference on Agricultural Education noted:

...there are many other development projects on agricultural education and training in many Asian countries that have been assisted by many agencies, which include FAO, UNESCO, ILO, UNDP, the World Bank, the Colombo Plan, the Agricultural Development Council (ADC), private foundations and a few others.

The emphases in the studies have, therefore, been related to the influence exerted by external aid agencies and organizations.

In many developing countries agricultural education is emphasized at levels other than at the secondary or intermediate level. On this score Swanson further noted:

My experience suggests that in other parts of the world agricultural education at the higher level and at the elementary level are of much

\[2\text{FAO/UNESCO/ILO, op. cit., p. 41.}\]
greater significance than is the secondary level.

On the other hand agricultural education in these parts of the world is sometimes located outside the regular educational system. For example, the UNESCO survey reports that in 18 Asian countries agricultural education is administered equally between the Ministries of Education and Ministries of Agriculture.\(^4\) In another FAO study on Africa agricultural education at all levels is 95 per cent controlled and administered by the Ministries of Agriculture. Also, according to the studies reviewed agricultural and extension education in the Near East is administered totally by the Ministries of Agriculture. In respect to Latin America the World Conference on Agricultural Education reports a similar situation. Thus for agricultural education to be merged with the educational systems would need the force of law or major policy changes to implement.

In the studies which recommended the establishing of new educational programs the implicit exhortation was a major shift of direction from existing systems and emphases to the American system of agricultural education at the secondary and/or technical levels.

\(^{3}\) Swanson, *op. cit.*

\(^{4}\) FAO, *op. cit.*
In the studies which made extensive policy recommendations the investigators failed to involve policy makers and high level officials in developing the programs of agricultural and extension education. The investigators relied heavily on content analysis and on reactions to questionnaires which were distributed to respondents not directly concerned with decision making processes of the countries to which the research made reference.

Most of the studies dealing with the development of educational programs in agricultural education and extension education considered those programs as if they should exist in watertight compartments of vocational agriculture education on one hand and extension education on the other. In most developing countries agricultural education at all levels and extension education constitute the common responsibility of Ministries of Agriculture or agencies that have combined responsibility for agricultural, rural and community development. The World Conference on Agricultural Education insisted that agricultural education and training at all levels could not be divorced from rural and community development in developing countries. Yet not even one study looked into the problem of developing an integrated program of agricultural education, extension education and rural development for any country.

The countries represented in the studies are all heavily dependent upon agriculture (with the possible
exception of Japan) as the basis for their national and economic development. Low productivity due to lack of technical information and improved practices of agriculture is a concern in each country. Agricultural education at all levels, therefore, can be regarded as a genuine need in all the countries. However, with the specific situations of each country and/or each region it would seem that the strategies for conducting agricultural education would be basically different from one country or region to another depending upon how each country considers the part agricultural education should play in the rural and community development programs.

Unfortunately, the general pattern that emerged from most of the studies was to make American agricultural education and the extension service the criterion against which their own programs should be measured. In view of the fact that American conditions are not in any way comparable to those of other countries, the conclusion that can be drawn is that the focus of the whole research effort by the various investigators was inconsistent with the agricultural education problems and needs of the countries to which the research made reference. For example in one study the investigator's objective was directed to developing an educational program to combat the incidence of protein-calorie malnutrition conditions causing Kwashiorkor among the rural people. From a purely agricultural extension
viewpoint a more suitable investigation would have been a program developed to teach the rural people to raise and consume small animals as a source of increased protein intake.

Also, several of the studies on extension education extolled the benefits and virtues of extension education and activities to bring about the agricultural revolution of the specific countries. The investigators dwelled on this point so firmly that the inevitable impression was that extension education was the way out of the agricultural miseries of developing countries. It was evident that there was little basis for the conclusions drawn because the investigators merely formulated their findings and recommendations from documentary search and analysis. The primary interest could be seen to be residing in setting up and administering extension services per se and not in what could be achieved with or should be done via extension education. The inevitable conclusion is that the influence of external aid programs has had a great deal to do with the inconsistencies and de-emphases of the problems and needs in agricultural and extension education and the general direction of the research effort.

Discussing the implications of research John Best stated:

Fundamental, or pure, research is the formal and systematic process of deductive-inductive analysis, leading to the development of theories. Applied research adapts the theories developed
through developmental research to the solution of problems. . . . Most educational research is applied research, for it attempts to develop generalizations about teaching-learning processes and instructional materials.

By the same token, it should be expected that research in agricultural education would, especially in countries still in the transitional period of developing suitable and effective educational programs, be concentrated at the level of practice, that is, developing generalizations about teaching-learning processes and instructional materials. On the contrary the emphasis was more in the area of policy making in agricultural education. In the process of conducting the research a large amount of secondary sources of data and information was utilized. The inevitable conclusion is that investigators shied away from developing and utilizing primary data and information urgently needed in developing countries.

By leaning heavily on a descriptive survey type of research it is easy to see how the investigators systematically shied away from conducting other types of research like correlational, ex post facto, quasi-experimental and true experimental research. The latter types of research mentioned are more appropriate for developing and utilizing

---

primary data and, consequently, developing generalizations about teaching-learning processes and instructional materials which are properly within the province of educators of the caliber that conducted the studies reviewed in this inquiry.

It would appear reasonable to suggest that in future studies other types of research strategies should be considered in order to develop and utilize primary data and information. In other words, applied research which makes use of theories of teaching and learning and of adoption and diffusion in extension education should constitute a major strategy in the research effort of students and scholars from developing countries. This approach will, inevitably, require the utilization of research designs and methodology that will involve the use of appropriate data collection instruments, sampling techniques and data analysis techniques.

Recommendations for Needed Research

The research reviewed brought several issues into the open, primarily because of their absence rather than because of their presence. The purpose of this section is to highlight those issues which because of their conspicuous absence, constitute some important suggestions for needed research.

The restricted resource base for research on agricultural education in other countries appears to be a critical issue for the producers and consumers of research.
There is need for enlarging the source of research materials pertaining to agricultural and extension education in other countries. The primary concern of this study was to review the research conducted partly or wholly in the United States even though a few FAO and UNESCO studies which were readily available were also included. It is recommended that another study with a wider focus be undertaken. Studies by FAO, UNESCO, ILO and USAID and other international organizations and recent studies conducted in U.S. colleges and universities should comprise the population of studies for the proposed review.

It is apparent that there is need for a shift in emphasis from research dealing with policy to research concerned with practice. The reasoning is that research findings which concern practice within existing agricultural education systems are more likely to be welcome by teachers and supervisors having little to do with policy decisions and upon whom program effectiveness largely depends. One such area is curriculum development. Curriculum, according to Ralph Tyler,⁵ must seek to take the following questions into consideration:

1. What educational purposes should the school seek to attain?

2. What educational experiences can be provided that are likely to attain these purposes?

3. How can these educational experiences be effectively organized?

4. How can we determine whether these purposes are being achieved?

To develop effective curriculums these questions should be adequately answered. It does appear then that research in curriculum development should not stop with just identifying the content or guidelines; it must go beyond the stage achieved by a few of the studies reviewed. The need, therefore, is for research studies that will identify clear-cut objectives, content appropriate to the objectives, teaching methods, techniques, materials, and resources that could be used to operationalize and supplement the content. Also needed is research to develop evaluative instruments that not only measure results but also offer bases for curriculum improvements. The research should go beyond rationale statements and should take into account the existing systems of agricultural and extension education in the countries concerned.

Closely related to curriculum content is the identification of knowledges and skills needed in agriculturally related occupations. None of the studies even touched lightly on these concerns. Clearly, therefore, research is needed to identify knowledges, skills, and attitudes that should be acquired in agricultural education programs at the
various levels. Such studies should be tied to the identification of employment opportunities, both farm and non-farm, to which trainees could aspire after going through educational programs.

Another important concern for a major research effort is manpower need and resource surveys with implications for vocational and technical education in agriculture. This is basically a policy issue but it is a task for agricultural and vocational educators and should be directed toward utilization of existing agricultural education systems in specific countries.

There is need for a series of evaluation and follow-up studies to be conducted more often. Ralph Tyler indicates that evaluation must appraise behavior changes of students, it must involve more than a single appraisal, and it must also involve follow-up studies to determine the permanence or impermanence of learnings.  

In policy formulation, investigations for the development of a philosophy and objectives of agricultural education were lacking; even though the studies that recommended comprehensive agricultural education programs talked vaguely about the need for delineating objectives. Objectives should derive from the philosophical foundations upon which policy-makers base their plans for general and vocational

---

6Ibid.
education programs. Not one study probed the basic issue of developing national objectives in vocational and agricultural education on which other concerns hinge. There is room for studies that have as their main focus the development and integration of a philosophy and objectives of vocational and agricultural education. Such investigation should involve policy-makers and officials charged with the implementation of policy changes in the countries studied.

Most developing countries are basically agricultural countries. But agriculture has a poor image and only the less academically inclined students get involved with agricultural education programs. The World Conference on Agricultural Education and Training was concerned about this situation and discussed ways and means of improving the impact of agricultural education. The Conference made the following recommendations:

"...it was generally agreed that in the developing countries there is great value to all sections of the community in creating an awareness of the nature and significance of agriculture in the life and future progress of the nation. ...In particular, there is a need to define the form in which agriculture should be taught in schools, whether through its incorporation in the teaching of science, ecology and geography or in courses combining agriculture, sociology and economics."

\[\text{FAO/UNESCO/ILO, op. cit., p. 42. (Volume II)}\]
It is evident from the above statement that there is a request for research efforts in developing not only vocational agriculture but also general and avocational education in agriculture. Once again the studies should take into consideration the existing systems of agricultural education in the countries concerned.

The shortage of agricultural teachers is a problem in developing countries. The situation is explained in several ways but in most cases these explanations are mere hunches rather than based on facts developed by research. In order to offer bases for improvement, both from the policy and practice points of view, studies are needed to isolate the real causes of shortages of teachers and proposals or recommendations made to remedy the situations in the countries. Within the same general area should be research to determine in-service education programs for existing teachers and for those who would be drawn into teaching from other sources without previous professional training.

The studies that proposed agricultural education programs for other countries at the intermediate level were based on the American concept and conduct of agricultural education. No doubt the American system has evolved in conjunction with the evolution of industrialization. Agricultural education in the United States, therefore, is oriented to agriculture as an industry. Many developing countries, on the other hand, have not yet reached that
stage and agriculture is still a way of life. How can an agricultural education program be designed and conducted to cope with agriculture as a way of life? This complicated question is undoubtedly a prime topic for investigation.

Agricultural education and extension services are the combined responsibilities of Ministries of Agriculture and other agencies charged with rural and community development as part of agricultural education. There is need for studies that would have as their main focus the development of integrated programs of agricultural and extension education related to specific countries and integrating all levels of agricultural education and training. Within this general area of concern also exists the need for the development of appropriate curriculums for elementary, secondary and university level programs, teacher education and professional training for extension services; and the need for developing organizational and administrative structures that will effectively deliver the goods. Topics for research abound in the extension education arena; for example, the diffusion and adoption theories need to be tested under the conditions of developing countries. The knowledge in this area has been accumulated over the years from developed countries and has little real applicability in developing countries.
Another possible topic for research is a follow-up investigation of all graduates in agricultural education who were in the United States colleges and universities during a specific period; the population of investigators identified by this study, for example, could be used for such inquiry. The objective of the investigation would be to determine the post-U.S. study pursuits and activities of the graduates in the area of agricultural and extension education in an effort to determine what could be termed the "action gap," meaning the achievement between their recommendations and plans while they were in the U. S. colleges and universities and their post-U.S. study pursuits. Another objective of the investigation would be their evaluation of the educational and occupational experiences in agricultural and extension education while studying in the United States.

To reiterate a point made earlier, Travers stated that "any research that is reviewed must be appraised partly in terms of the extent to which it was adequately designed."\[^8\] This study avoided evaluating the design and methodology employed in the studies reviewed and, therefore, provides room for further investigation. A skill that is frequently expected of students or scholars in advanced studies from developing countries is the ability to do research. Whether

\[^8\]Travers, *op. cit.*., p. 76.
or not this competency has been achieved can be ascertained in part from the students' theses or dissertations presented at the completion of their formal educational programs. The suggestion is that a study be undertaken which would have as its major objective the evaluation of research studies in agricultural education conducted by international students and scholars. The population for such an investigation could be the studies identified and reviewed in this study and other studies subsequently undertaken. The investigation should cover a general review of the research and an appraisal of the design and methodology used in the research.

Interview and questionnaire schedules were a very popular method of data collection in the studies reviewed. In many cases there was clear admission that the validity of the instruments was in serious question. This condition will continue as long as these instruments are adapted from those in use in cultures that are different from one another. Most of the interview schedules and questionnaires as well as opinionnaires the investigators used were primarily developed in the U.S. In attitude scales or opinionnaires the dissimilarity between cultures is very critical. Interviews, questionnaires, and opinionnaires should be able to measure what they are actually intended to do without question. There is need for a study or studies aimed at developing and refining instruments and techniques that have validity and reliability in measurement appropriate to other countries or different parts of the world.
APPENDIX A

List of Studies By Author
<table>
<thead>
<tr>
<th>Author</th>
<th>Degree and University</th>
<th>Country Studied</th>
<th>Subject Area</th>
<th>Type of Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ahmad, S. Tufail</td>
<td>M.S., Maryland, 1966</td>
<td>India</td>
<td>Extension Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Alfarhan, Kassim M.</td>
<td>Ph.D., Wisconsin, 1969</td>
<td>Iraq</td>
<td>Extension Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Alsamarrae, Hatim A.</td>
<td>Ph.D., Ohio State, 1968</td>
<td>Iraq</td>
<td>Extension Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Asante, Daniel Christian</td>
<td>M.S., Washington State, 1968</td>
<td>Ghana</td>
<td>Extension Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Baffuor-Senkyire, J. K.</td>
<td>Ph.D., Purdue, 1971</td>
<td>Ghana</td>
<td>Extension Education</td>
<td>Experimental</td>
</tr>
<tr>
<td>Behnia, Mohammad R.</td>
<td>Ph.D. Minnesota, 1970</td>
<td>Iran</td>
<td>Evaluation</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Boateng, Alfred K.</td>
<td>Ph.D., Purdue, 1972</td>
<td>Ghana</td>
<td>Extension Education</td>
<td>Experimental</td>
</tr>
<tr>
<td>Boma, Alaric Nikut</td>
<td>M.S., Cornell, 1968</td>
<td>Cameroon</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Boma, Alaric Nikut</td>
<td>Ph.D., Cornell, 1971</td>
<td>Cameroon</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Buripakdi, Chalio</td>
<td>Ph.D., Stanford, 1971</td>
<td>Thailand</td>
<td>Curriculum</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Calleiro, Armando</td>
<td>Ph.D., Catholic, Washington</td>
<td>Mexico</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Chen, P. Mean-Song</td>
<td>M.S., No.Dakota State, 1971</td>
<td>Taiwan</td>
<td>Evaluation</td>
<td>Descriptive</td>
</tr>
<tr>
<td>de la Cruz, Teofilo C.</td>
<td>M.A., Minnesota, 1971</td>
<td>Philippines</td>
<td>Teacher Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Dangas, Stefanos E.</td>
<td>M.A., Minnesota, 1966</td>
<td>Greece</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Derogangon, Macaurog B.</td>
<td>M.S., Cornell, 1967</td>
<td>Philippines</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Effanga, Aloysius</td>
<td>M.S., Virginia State, 1972</td>
<td>Nigeria</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>El-Zoobi, Ahmad M.</td>
<td>Ph.D., Ohio State, 1971</td>
<td>Syria</td>
<td>Extension Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Etling, Arlen W.</td>
<td>M.S., Kansas State, 1969</td>
<td>Bolivia</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Name</td>
<td>Institution</td>
<td>Degree</td>
<td>Place</td>
<td>Field</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------------------------------</td>
<td>-----------------------</td>
<td>--------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Food &amp; Agr. Organization</td>
<td>Staff Study, FAO Rome, 1969</td>
<td></td>
<td>Africa</td>
<td>Educational Programs</td>
</tr>
<tr>
<td>Freeman, Harold</td>
<td>Ed. D., Stanford, 1965</td>
<td></td>
<td>Thailand</td>
<td>Educational Programs</td>
</tr>
<tr>
<td>Gagni, Arsenio &amp; Others</td>
<td>Staff Study, Cornell, 1970</td>
<td></td>
<td>Philippines</td>
<td>Curriculum</td>
</tr>
<tr>
<td>Gagni, Arsenio &amp; Others</td>
<td>Staff Study, Cornell, 1971</td>
<td></td>
<td>Japan, Korea Taiwan and Thailand</td>
<td>Educational Programs</td>
</tr>
<tr>
<td>Gapasin, Caledonio M.</td>
<td>Ph. D., Penn State, 1972</td>
<td></td>
<td>Philippines</td>
<td>Teacher Education</td>
</tr>
<tr>
<td>Garcia-B., Jose R.</td>
<td>Ph. D., N.C. State, 1972</td>
<td></td>
<td>Colombia</td>
<td>Extension Education</td>
</tr>
<tr>
<td>Go, Samuel S.</td>
<td>Ph. D. Minnesota, 1970</td>
<td></td>
<td>Philippines</td>
<td>Teacher Education</td>
</tr>
<tr>
<td>Gutierrez, Jaime</td>
<td>Ph. D., Missouri, 1971</td>
<td></td>
<td>Colombia</td>
<td>Extension Education</td>
</tr>
<tr>
<td>Hanumanthappa, H. S.</td>
<td>Ph. D., Minnesota 1966</td>
<td></td>
<td>India</td>
<td>Educational Programs</td>
</tr>
<tr>
<td>Hashim, Mohamad Y. N</td>
<td>Ph. D., Illinois, 1971</td>
<td></td>
<td>Malaysia</td>
<td>Evaluation</td>
</tr>
<tr>
<td>Henderson, Thomas H.</td>
<td>Ph. D., Wisconsin, 1969</td>
<td></td>
<td>Jamaica</td>
<td>Extension Education</td>
</tr>
<tr>
<td>Hogle, Homer L.</td>
<td>Ph. D., Michigan, 1970</td>
<td></td>
<td>India</td>
<td>Extension Education</td>
</tr>
<tr>
<td>Joshi, Subarna M.</td>
<td>M. S., So. Illinois, 1968</td>
<td></td>
<td>Nepal</td>
<td>Educational Programs</td>
</tr>
<tr>
<td>Kishimoto, Honsai</td>
<td>M. S., Maryland, 1966</td>
<td></td>
<td>Ryukyu Is.</td>
<td>Teacher Education</td>
</tr>
<tr>
<td>Kitnukul, Manat</td>
<td>M. S., Oklahoma State, 1972</td>
<td></td>
<td>Thailand</td>
<td>Curriculum</td>
</tr>
<tr>
<td>Kitnukul, Suneenart</td>
<td>M. S., Oklahoma State, 1972</td>
<td></td>
<td>Thailand</td>
<td>Curriculum</td>
</tr>
<tr>
<td>Krishnaswamy, M. S.</td>
<td>Ph. D., Kansas State, 1970</td>
<td></td>
<td>India</td>
<td>Educational Programs</td>
</tr>
<tr>
<td>Lohdi, Tanweer Ahmad</td>
<td>Ph. D., Ohio State, 1966</td>
<td></td>
<td>W. Pakistan</td>
<td>Teacher Education</td>
</tr>
<tr>
<td>Name</td>
<td>Degree, University, Year</td>
<td>Country</td>
<td>Field</td>
<td>Type</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------------</td>
<td>------------------</td>
<td>--------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Markham, A.E.G.</td>
<td>Staff Study, FAO Rome, 1967</td>
<td>Africa</td>
<td>Extension Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Maxwell, Robert H.</td>
<td>Ph.D., Cornell, 1970</td>
<td>Kenya</td>
<td>Evaluation</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Millan-Sambolin, Jose A.</td>
<td>Ph.D., Louisiana State, 1972</td>
<td>Puerto Rico</td>
<td>Teacher Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Mondeh, Renner E.</td>
<td>Ph.D., Illinois, 1970</td>
<td>Sierra Leone</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Okoye, Anazodo A.</td>
<td>Ph.D., Purdue, 1966</td>
<td>Nigeria</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Pan-Nga, Ammuay</td>
<td>M.S., Oklahoma State, 1972</td>
<td>Thailand</td>
<td>Curriculum</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Patrick, George F.</td>
<td>Ph.D., Purdue, 1970</td>
<td>Brazil</td>
<td>Extension Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Paul, Prodeep Kumar</td>
<td>M.S., West Virginia, 1971</td>
<td>India</td>
<td>Extension Education</td>
<td>Historical</td>
</tr>
<tr>
<td>Phillips, James David</td>
<td>M.S., Montana State, 1970</td>
<td>India</td>
<td>Extension Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Rassi, Jaffar</td>
<td>Ed.D., Utah State, 1966</td>
<td>Iran</td>
<td>Extension Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Reeves, Wade H.</td>
<td>Ph.D., Ohio State, 1972</td>
<td>Cameroon</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Rucks, Carlos A.</td>
<td>Ph.D., Wisconsin, 1969</td>
<td>Kenya</td>
<td>Extension Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>San Giovanni, R.A.</td>
<td>Ph.D., Stanford, 1965</td>
<td>Chile</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Schneider, Robert N.</td>
<td>Ph.D., Michigan State, 1969</td>
<td>W. Pakistan</td>
<td>Teacher Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Shah, Jafar Ali</td>
<td>M.S., Washington State, 1967</td>
<td>S.E. Asia</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Shah, Jafar Ali</td>
<td>Ph.D., Penn State, 1970</td>
<td>Thailand</td>
<td>Teacher Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Shirley III, Delbert W.</td>
<td>Ph.D., Michigan State, 1968</td>
<td>Ethiopia</td>
<td>Teacher Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Sibanda, Ronald Isaac</td>
<td>Ph.D., Minnesota, 1972</td>
<td>Uganda</td>
<td>Teacher Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Siegenthaler, Irvin E.</td>
<td>Ph.D., Oklahoma State, 1965</td>
<td>Ethiopia</td>
<td>Evaluation</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Name</td>
<td>Degree and Institution</td>
<td>Country</td>
<td>Program</td>
<td>Type</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------------------------------------</td>
<td>-------------</td>
<td>----------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Singh, Lal</td>
<td>Ed.D., Oklahoma State, 1965</td>
<td>India</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Sinha, Hari H.P.</td>
<td>Ph.D., Missouri, 1965</td>
<td>India</td>
<td>Educational Programs</td>
<td>Historical</td>
</tr>
<tr>
<td>Sogie-Thomas, Mimoso</td>
<td>M.S., Virginia State, 1968</td>
<td>Sierra Leone</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Song, Hae-Kyun</td>
<td>Ph.D., Illinois, 1971</td>
<td>Taiwan</td>
<td>Evaluation</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Dhaubadel, A.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tavares, Carlos A.</td>
<td>M.A., Minnesota, 1968</td>
<td>Brazil</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Teana, Dharm</td>
<td>Ph.D., Wisconsin, 1968</td>
<td>Thailand</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Thipphawong, Buonong</td>
<td>Ph.D., Michigan State, 1966</td>
<td>Laos</td>
<td>Teacher Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Thuemmel, William L.</td>
<td>Ph.D., Michigan State, 1970</td>
<td>Taiwan</td>
<td>Evaluation</td>
<td>Descriptive</td>
</tr>
<tr>
<td>UNESCO</td>
<td>Staff Study, Paris 1971</td>
<td>Asia</td>
<td>Educational Programs</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Williams, Saudiq K.T.</td>
<td>Ph.D., Cornell, 1967</td>
<td>Nigeria</td>
<td>Extension Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Stitt, Thomas R.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zapata, Fabio Augusto</td>
<td>Ed.D., Louisiana State, 1971</td>
<td>Colombia</td>
<td>Extension Education</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Zareian, Soleiman</td>
<td>Ph.D., Michigan State, 1969</td>
<td>Iran</td>
<td>Curriculum</td>
<td>Descriptive</td>
</tr>
</tbody>
</table>
APPENDIX B

Correspondence
October 29, 1973

Dr. Paul Kemp
Professor and Chairman
Division of Agricultural Education
357 College of Education Bldg.
University of Illinois
Urbana, Illinois 61801

Dear Dr. Kemp:

Kamima Saah, a doctoral candidate in Agricultural Education at Ohio State, is writing his dissertation on, "A Review and Synthesis of Research in Agricultural Education Pertaining to Countries Other Than the United States." The study is concerned primarily with an analysis of theses and dissertations conducted in the United States between 1965 and 1972 that pertain to agricultural education in other countries.

The studies to be reviewed are those listed in Summaries of Studies in Agricultural Education and Dissertation Abstracts International. We are exploring the possibility of borrowing copies of the studies completed at your university directly from you rather than through interlibrary loan or by purchase of microfilm. If available in your department, will you loan us a copy of each of the studies listed on the attached page? After review, the theses or dissertations will be promptly returned to you.

We appreciate your cooperation in this project.

Sincerely,

J. Robert Warnbrod
Professor
Agricultural Education Department

Encl.

cc: Kamima Saah,
Research Associate
October 29, 1973

Dr. Paul Marvin  
Professor and Chairman  
Department of Agricultural Education  
College of Education  
University of Minnesota  
St. Paul, Minnesota 551-1

Dear Dr. Marvin:

Kwamina Saah, a doctoral candidate in Agricultural Education at Ohio State, is writing his dissertation on, "A Review and Synthesis of Research in Agricultural Education Pertaining to Countries Other Than the United States." The study is concerned primarily with an analysis of theses and dissertations conducted in the United States between 1965 and 1972 that pertain to agricultural education in other countries.

The studies to be reviewed are those listed in *Summaries of Studies in Agricultural Education* and *Dissertation Abstracts* International. We are exploring the possibility of borrowing copies of the studies completed at your university directly from you rather than through inter-library loan or by purchase of microfilm. If the studies listed on the attached page are available in your department, will you loan us a copy of each? After review, the theses or dissertations will be promptly returned to you.

We appreciate your cooperation in this project.

Sincerely,

J. Robert Warmbrodt  
Professor  
Agricultural Education Department

JW/1
Encl.
cc: Kwamina Saah,  
Research Associate
January 21, 1974

Dr. Robert Price, Head
Department of Agricultural Education
Oklahoma State University
Stillwater, Oklahoma 74074

Dear Bob:

One of my graduate students, Kwamina Saah, is writing his dissertation on "Review and Synthesis of Research on Agricultural Education in Countries Other Than the United States." In attempting to obtain the following reports through the Interlibrary Loan Service, he was informed that these reports are not available from Loan by the Oklahoma State University Library.

Manat Kitnukul, "Plans for Developing and Implementing Short Courses in Livestock Production for Adults Through Vocational Agriculture Schools in Thailand," Master's report, 1972.


Do you have copies of these reports in your department library that you would loan for a short period of time? If so, we would appreciate your mailing them to us. The reports will be returned to you promptly.

Very truly yours,

J. Robert Warmbrod, Professor
Department of Agricultural Education

JRW:cr
January 28, 1974

Dr. William E. Drake  
Professor and Chairman  
Division of Agricultural  
and Occupational Education  
Cornell University  
Ithaca, New York 14850

Dear Bill:

One of my graduate students, Kwamina Saah, is writing his dissertation on "Review and Synthesis of Research on Agricultural Education in Countries Other Than the United States." In attempting to obtain the following reports through the Interlibrary Loan Service, he was informed that these reports are not available from Loan by the Cornell University Library.


Do you have copies of these reports in your department library that you would loan for a short period of time? If so, we would appreciate your mailing them to us. The reports will be returned to you promptly.

Very truly yours,

J. Robert Warmbroad, Professor  
Department of Agricultural Education

JRW:cr
Dr. Gordon Swanson
Dept. of Agricultural Education
College of Education
University of Minnesota
St. Paul, Minnesota 55101

Dear Dr. Swanson:

I am a doctoral candidate in Agricultural Education at the Ohio State University and I am writing my dissertation on "A Review and Synthesis of Research on Agricultural Education in Countries Other Than The United States." The study is concerned primarily with an analysis of theses and dissertations conducted in the United States between 1965 and 1972 that pertain to agricultural education in other countries.

The studies being reviewed are those listed in Summaries of Studies in Agricultural Education and Dissertation Abstracts International. My understanding is that you have considerable interest and expertise in international agricultural education and, therefore, I am requesting your inputs regarding (a) your knowledge of other sources of materials that may be relevant to the topic and (b) the approach you would recommend in such a study. The study is already in progress but I shall be most willing to incorporate any ideas or suggestions that you can graciously offer.

Thanks in advance for your co-operation.

Sincerely yours,

M. Kwamina Saah
Research Associate
Dept. of Agricultural Education.
February 26, 1974

M. Kwamina Saah  
Research Associate  
Department of Agricultural Education  
208 Agricultural Administration Building  
2120 Fyffe Road  
Columbus, Ohio 43210

Dear Mr. Saah:

This is a response to your February 20th letter. I'm delighted to know that someone is addressing himself to the topic you've picked for your dissertation. It is a study that has needed doing and it is one that requires more than the usual amount of courage.

I dwell on the hope that your inquiry will look analytically at the context of research in agricultural education as well as other factors. To illustrate this point I am enclosing a paper which I've done rather recently on Career Education in Europe. It highlights the questions of context and alerts the reader to the pitfalls of assuming that labels in one country are the same as labels in another.

To do this with agricultural education it will be necessary I think, to identify the areas of research not covered by dissertations. In all fields most of the dissertations are done in the United States, Canada, Germany, England and France. Very few are done elsewhere. As might be expected the dissertations are affected by the structure and format of the discipline as found in these countries.

In your inquiry it would be interesting I believe, to know who has done the theses on agricultural education in countries other than the United States. My guess is that most of them have been done by students from other countries. It would also be interesting to know whether the inquiries are focused at the level of policy or at the level of practice. Again, I would suspect that most of them are more concerned with practice than with policy. Moreover, I would suspect that most of them done in the United States deal with secondary level agricultural education rather than with other levels. My experience suggests that in other parts of the world agricultural education at the higher level and at the elementary level are of much greater significance than is the secondary level.
The above is not necessarily a recommendation for an approach for such a study, but is somewhat of an indication of the kinds of things one might encounter. Further it gives some indication of the kinds of emphases that one could look toward because of their absence rather than because of their presence.

The best basic document for your examination would be the report of the World Conference on Agricultural Education, held in Copenhagen in 1970. Volume II of this report gives regional analyses of agricultural education all over the world. It would be of some value for its analysis as well as for its citations.

As you can see from the above I am much interested in the work that you are undertaking and I dwell on the hope that I might see a copy of your dissertation when it is finished.

Sincerely,

Gordon I. Swanson
Professor and Coordinator

jkw

Enclosure
BIBLIOGRAPHY


Lohdi, Tanweer Ahmad. "Developing A Pre-Service Education Program for Agriculture Teachers at West Pakistan Agricultural University, Lyallpur (Pakistan)." Unpublished Ph.D. dissertation, The Ohio State University, 1966.


Books


Magazine Articles


**Published Report**