Evalation of the Training and Visit System in El Minia Governorate

By
Ismail Abd El Fattah ALY
B. sc. (Agricultural Extension) Ain Shamse University 1976
M. sc. (Agricultural Extension) El Minia University 1989

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Supervisory Committee

Dr. K. H. Abu El Seoud
Prof. of Agricultural Extension
Faculty of Agri. Cairo University

Dr. A. D. E. Zaiton
Prof. of Agricultural Economics
Faculty of Agri. El Minia University

Dr. Y. A. E. Zaharan
Prof. of Agricultural Extension
Faculty of Agri. El Mansora University

Dr. M. K. Swan
Assistant Prof. of Agricultural and Extension Education College of Human Development and Education
North Dakota State University

Department of Agricultural Econmics, Faculty of Agriculture, El Minia University

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Approval Sheet

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Ismail abd El Fattah Aly

Discussion Comittee:-

This Dissertation Has Been Discussed & Approved By:-

1) Dr. Bahgat M. Abdel-Maksoud. Sign. Abdel-Maksoud
Professor of Agricultural Extension, Faculty of Agriculture, Assiut University.

2) Dr. El Shahat M. Zaki Abou El Shahat. Sign.
Professor of Agricultural Extension, Faculty of Agriculture, Zagazig University.

3) Dr. Ahmed D. E. Zaaitoun. Sign.
Professor of Agricultural Economics, Faculty of Agriculture, El Minia University.

Deposited In The Faculty Library Under No. . . .

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ABSTRACT

Aly, Ismail Abd El Fattah, Ph.D. North Dakota State University and El Minia University. An Evaluation Study of the Training and Visit System in the rural area of El Minia Governorate. Major Advisors: Dr. Khiry H. Abu El Seoud, Dr. Yehia Aly Zaharan, Dr. Ahmed D. Zaitoun and Dr. Michael K. Swan.

The overall purpose of this research was to evaluate the Training and Visit (T&V) system as a new agricultural information system, used for the first time in Egypt in 1983. The specific research objectives were to determine a) the current status of the extension service T&V system in El Minia Governorate (visits, training, fortnightly training sessions, and monthly workshops), b) the perceived appropriate methods for providing the T&V system through the extension service (visits, training, fortnightly training sessions, and monthly workshops), c) the perceived ideal quality indicators of the extension T&V system (visits, training, fortnightly training sessions, and monthly workshops), and d) specific modifications to improve the effectiveness of the extension T&V system according to the Egyptian conditions (visits, training, fortnightly training sessions, and monthly workshops).

The study was carried out on all agricultural extension workers in six of the nine districts of El Minia Governorate who worked with the Training and Visit (T&V) system through El Minia Agricultural Development Project.

Results revealed some improvments in the application of the T&V system: 1. Extension workers need more practical and theoretical training on how to make a successful field

visit. 2. Extension workers need more opportunities for practical training during training sessions. 3. Library facilities and audio-visual aids for training sessions must be improved. 4. Teaching aids for training sessions must be improved. 5. Monthly workshops would be much more effective if agricultural researchers and extension workers willingly worked together in resolving farmer-related problems. 6. Selection of contact farmers must be based on objective criteria, and they should continue as contact farmers for longer periods of time. 7. All extension worker groups agreed that their current training met their expectations for ideal training. 8. Training sessions would more closely resemble the ideal as perceived by all extension worker groups if discussions occurred in smaller groups, if more opportunities existed for practical application, and if more topics relevant to trainee needs were selected. 9. Ideal monthly workshops should include regular contact between agricultural researchers and extension workers and should include lead trainers and researchers assigned to each crop.

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CHAPTER 1

INTRODUCTION

Many studies and program evaluations have identified weaknesses in the linkages between institutions responsible for agricultural research and those concerned with transferring technology to farmers (World Bank, 1985). In response to this, leaders of these institutions, as well as those who fund and oversee them, have attempted to identify policies and organizational structures that would strengthen the relationship between research and technology transfer.

A number of models have been proposed as possible solutions. Among the most prominent is the US Land Grant model, which combines research, extension, and education in one institution. The Training and Visit (T&V) system which involves subject-matter specialists and regular training of extension workers, provides continuous feedback from farmers to extension and research and continuous adjustment to farmers' needs. Farming systems research (FSR) emphasizes the roles of constraint diagnosis and on-farm trials. Other suggestions include setting up joint committees of various sorts and establishing or strengthening agricultural information departments.

Experience has shown, however, that it is impossible to come up with general recommendations that would be appropriate in all circumstances. Solutions that work well in one context perform poorly in others. While some

characteristics are common to all situations where technologies are successfully developed and delivered, these tend to be of a general nature; the specific mechanisms for maintaining the links between research and technology transfer vary considerably from one situation to another (Kaimowitz, Snyder & Engel, 1990).

By the late 1970s, after the new international system had been put in place, it again became apparent that limitations in the capacity of national agricultural research and extension institutions were a serious constraint on the effectiveness of the new international system. The ability to take advantage of prototype technologies being generated by the international centers is dependent on the development of national research and extension capacity.

It is hypothesized that the factors that determine the political and economic viability and scientific and technological productivity of national agricultural research and extension systems can be grouped under two broad headings: (a) the structure and organization of the research and extension system itself and (b) the economic and political organization of the society in which the research and extension service is being developed (Ahmed & Ruttan, 1988).

The primary purpose of this study was to evaluate the Training and Visit (T&V) system, a new agricultural

information system, used for the first time in Egypt. Agricultural extension workers utilized the T&V system in El Minia Governorate through an agricultural development project (El Minia Agricultural Development Project) financed by the International Fund for Agricultural Development (IFAD) through the World Bank (1983). A secondary purpose was to develop recommendations to modify the T&V system to make it more appropriate to the Egyptian agricultural conditions.

Background

The Egyptian Agricultural Sector

In this study we will deal with the Egyptian agricultural conditions prior to 1982 (before the application of the Training and Visit System through the I. F. A. D. project). Despite its huge land area, only three percent of Egypt, or 6.5 million feddans (2.7 million hectares) that lie along the River Nile and its Delta, are actually cultivable (World Bank, 1982). Soils close to the Nile River and its Delta are of excellent quality, and the warm subtropical temperatures permit year-round plant growth. The topography is such that erosion is not a concern, and land is well-suited for irrigation. Almost all cropland is irrigated because the country is virtually rainless, and abundant water of good quality flows down the River Nile and is distributed to farms through a well-

developed storage and distribution system. Such a mixture of conditions allows for high-intensity cropping with yields substantially above world averages. The average size of land holdings is extremely small. Population density with respect to arable land is one of the highest in the world.

The world population is estimated to be at least six billion by the year 2000 according to demographic experts. Unless food production is improved, the discrepancy between available food supplies and the population may widen (Prawl, Medlin, & Gross, 1984). According to La Rouche, (1988)

> . . . the biggest problem in world agriculture was that, with a projected harvest of less than 1.5 billion tons of grain in 1988, the production was less than half the grain needed to feed the world's 5 billion people. (p. 2)

Rosa and Tennenbaum (1988) asserted that production of food could not keep pace with demand and cited the example of world milk production that stagnated in 1987 and decreased by 1988. In addition, world sugar supplies were less than the demand, and world cereal production had fallen dramatically by 1988. "The world's largest cereal harvest, achieved in 1984, was 1.8 billion tons. In 1987, only 1.6 billion tons were harvested and in 1988 the expectation was 1.2 to 1.3 billion tons" (Rosa & Tennenbaum, 1988, p. 13). Between 3.4 and 3.6 billion tons of cereal are needed to feed five billion people. The need to increase production by rural small farmers is urgent. Small farmers continue to represent the largest portion of the world's poor.

The largest portion of Egypt's economy is agriculture even though the development strategy for a 25-year period favored industry. Agriculture constitutes 41% of Egypt's work force, generates 25% of its gross domestic product (GDP), and produces the majority of its export earnings (World Bank, 1982). The textile industry and the bulk of the service sector (transport, commerce, finance, and government) have important links to agriculture that are quickly impacted by changes in aggregate agricultural output or its composition.

The dominance by the agricultural sector in terms of GDP is a common feature to the economies of developing countries. National economic development, therefore, relies on increasing agricultural production. A significant portion of the population relies on the agricultural sector for its livelihood in developing countries due to the intense population growth rate. Such dependence often yields lower average incomes and not only slows economic growth, but also complicates many other social problems (Hyung, 1986).

The performance of the Egyptian agriculture has seriously declined in recent years. Between 1960 and 1981, Egypt became less self-sufficient on food production (94.5% in 1960 to 52% in 1981). Agricultural output growth declined from about 4% to 1.5% per annum, whereas the population increased by 2.9% in 1980 alone (World Bank,

1982). Dependence upon imports did not become significant until 1974 when agricultural imports value excee ded exports for the first time. "Major imports are wheat, flour, maize, sugar, vegetable oil, broad beans, lentils, red meat and poultry meat" (World Bank, 1982, p. 2). According to the World Bank, wheat imports comprised 75% of Egypt's total wheat supply, and imports of other foods comprised between 26% for red meat and 94% for lentils. The only major staple food for which Egypt is currently self-sufficient is rice. The amount of available rice for export is diminishing, however. In 1970, the net surplus on the agricultural balance of payments was $311.7 million in US dollars. By 1980, the deficit was $3.3 billion.

"Agricultural production is influenced by the quantity and quality of human resources" (Finley & Price, 1994, p. 195). Available labor (i.e., people) is what makes land and other kinds of resources productive. Highly skilled agricultural work forces are unavailable in many developing countries because adequate training facilities are lacking. Often times illiteracy tends to be high while skill training is low. Public schools are also frequently inadequate, so the ability of workers to produce quality labor and therefore to command good employment options is limited. Farmers who have experience with education tend to accept new agricultural technology more readily.

Without literacy and job skills for significant portions of the population, options are narrowed and income potential declines. Evidence points to education as a catalyst for the development of modern agriculture. Investments in basic and technical skills, therefore, greatly improves the potential for increasing all goods and services in developing economies (Finley & Price, 1994).

When compared with other sectors, agriculture has grown slowly, an average increase of only two percent between 1975 and 1980. Services, conversely, increased an average of 8% and petroleum by 30% (World Bank, 1982). By 1980, the services sector (23%) surpassed the agricultural sector (21%) as the major contributor to Gross Domestic Product (GDP).

Because growth in agricultural employment has been slower than growth of rural populations, migration from rural to urban areas and to other Arab oil-producing countries resulted. "Foreign exchange earnings from petroleum exports, remittances from workers abroad, the Suez Canal, and tourism have allowed the economy to grow in real terms between 8 percent and 10 percent in most years since 1975" (World Bank, 1982, p. 2). Since 1975, economic investment estimated at 30% yearly has been focused on industry and mining, petroleum, and transportation and communication. By comparison, the agricultural sector received little investment in the same period.

"Development of agriculture is an integral part of economic development. Few countries have experienced sustained economic development without growth of the agriculture sector" (Benor, Harrison, & Baxter, 1984, p. 5). Along those same lines, countries that have experienced significant agricultural growth have also experienced a more rapidly growing economy in general. Development of the agriculture sector, then, directly benefits overall economic development.

"The capacity to develop and manage technology in a manner consistent with a nation's physical, human and cultural endowments is the single most important variable accounting for differences in agricultural productivity among nations" (Ahmed & Ruttan, 1988, p. 69). Doing so depends upon the nation's ability to organize and sustain its institutions responsible for producing and diffusing scientific and technical knowledge, its ability to manifest new technology through equipment and materials, the capacity of its rural people for skill in husbandry and other educational endeavors, the efficiency of its input and product markets, and the efficacy of its social and political institutions.

Egyptian Research and Extension Systems

"The most important agricultural research centers in Egypt are:

1. Faculties of agriculture at different universities

in the country. At present, there are thirteen agricultural faculties. The oldest four among these are at Universities of Cairo, Ain Shams, Alexandria and Assiut.

2. Agricultural research centers at the Ministry of Agriculture.

3. The National Center for Research (Agricultural Section) in Giza.

4. Academy of scientific research and technology in Cairo" (Abdel-Maksoud, 1983, pp. 212-213).

In the Ministry of Agriculture, "agricultural research is organized through the Agricultural Research Centers (ARC), a semi-autonomous organization with headquarters at Giza" (World Bank, 1983, p. 98) that has 11 research institutes for cotton, field crops, horticulture, soil and water, crop protection, animal production, animal health, agricultural economics, deserts, plant diseases, agricultural extension, and rural development. In addition, there are eight research stations located in different regions in the governorates, each of which focuses on the main commodity of regional importance and coordinates research programs with the Giza headquarters.

Agricultural university faculties also conduct research concerning agricultural issues, much of which is not oriented toward practical farm issues and is usually limited by availability of funds. Implications for agricultural research and its relationship with extension efforts are

discussed in greater detail in Chapter 2.

Existing Extension Organization

The goal of increasing food production will likely be the result of providing both training and incentives for extension service professionals. "Extension workers are the conduit for agricultural technology, technical knowledge and skills, agricultural credit, organizational services, land reform, and general development information" (Finley & Price, 1994, p. 231). Although some believe technology that is both sound and profitable will become diffused without the efforts of extension workers, diffusion of technology will not occur rapidly unless poor and uneducated farmers are given enough knowledge to use that technology correctly.

Extension workers link farmers to the outside world and often make judgments about what farmers receive of various farm production inputs. When the ratio of farmers to extension workers is unfavorable, extension workers cannot favor one sector of the agricultural community. Locally, extension workers train farmers from the standpoint of adopters, leaders, or promoters. Doing so assists the extension personnel in servicing people in several communities while providing a wide array of up-to-date services (Finley & Price, 1994).

National Level

In Egypt, the extension system continues to be upgraded and re-organized. The Ministry of Agriculture manages

agricultural programs within a sizable organization. Prior to the latest re-organization of extension, the Ministry was structured around 12 departments that operated under different secretaries for activities such as agricultural economics, cooperatives, plant protection, seeds, horticulture, livestock, fisheries, finance and administration, and extension (World Bank, 1983). Because distinct departments oversaw nearly all activities associated with agricultural production, extension department activities provided only communication support. Various technical activities were handled at the governorate, district, and field levels by those who performed extension-related services in the context of their own activities.

Recently, the Ministry of Agriculture fundamentally reformed Egypt's extension system. Under the new structure, positions of Undersecretary and Director General of Extension were eliminated. The extension organization became "merged with research (Agricultural Research Center) to form a semi-autonomous Directorate General of Research and Extension" (World Bank, 1983, p. 112). The ministerial order pertains only to re-organization of agricultural research and extension on a national level. Governorate levels and those below have not yet re-organized. "Action remains to be taken even at the national level to provide for the post of Director General of Research and Extension"

(p. 112).

By ministerial order, the basic concept of agricultural extension in Egypt has been reformed. "The reorganized service seeks to provide for effective linkages between research, as the source of technical know-how, and extension as the organization concerned with its dissemination down the line to the farmers" (World Bank, 1983, p. 112). Under such an arrangement, research would combine with extension to become a professional organization fundamentally concerned with professional support for generating and disseminating agricultural know-how. Such activities become separated from other governmental department functions aimed at regulating areas under different crops and distributing inputs such as fertilizers, seeds, and pesticides. Also included are services such as plant protection and legal matters such as land reforms. These "would be served as a separate stream of organizational structure down to the village level" (World Bank, 1983, p. 112). The combined research and extension organization becomes semi-autonomous, a status that provides administrative and financial authority to accomplish its responsibilities effectively. The intent behind the re-organization seems to be one of consistent structure at all levels to ensure "a single line of command for the organization" (World Bank, 1983, p. 112).

Governorate Level

Egypt is structured around 25 governorates and 165

districts. El Minia Governorate, the focus of this study, has nine districts and administers its agricultural programs through an Undersecretary of Agriculture and four Director Generals: agriculture, livestock, cooperatives, and administration and finance. The agricultural Director General oversees "a number of directors and section heads for agricultural affairs, pest control, horticultural, animal production, mechanization, seeds, cooperatives, and 'extension'" (World Bank, 1983, p. 113). A Director of Agriculture administers each district with the help of section heads to provide the entire range of governorate-level activities.

"El Minia Governorate has 350 villages along with a number of subsidiary villages and hamlets which are grouped into 66 local units" (World Bank, 1983, p. 113). Villages have cooperative/agricultural units and a director, an extension agent, and several supporting technicians. The local unit level supervises the work of these individuals. Village technicians receive assignments for particular functions such as pest control, horticulture, animal production, mechanization, and seeds as appropriate for that level. The technicians function as general extension agents providing various services to groups of farmers within the village. Village technicians have typically completed agricultural secondary school, whereas supervising officers at both village and local unit levels typically have

completed Bachelor of Science degrees in agriculture (World Bank, 1983).

The Egyptian government has increasingly become concerned about effectively transferring sophisticated agricultural technology to farmers in order to raise farm yields. In the light of this concern, it is considering what steps may enhance the agricultural extension organization, generate more purposeful agricultural research, and solidify the link between research and extension (World Bank, 1983). "These problems were examined by a World Bank mission in September 1981, and two Extension Study Teams set up by the US Agency for International Development [USAID] in November 1981 and April 1982" (World Bank, 1983, p. 107). In addition, a United States Presidential Mission on Strategies for Accelerating Agricultural Development in Egypt was developed in April, 1982. "Comprehensive, far reaching proposals for strengthening of research cum extension organizations in Egypt have been made by these groups" (World Bank, 1983, p. 107), and the Egyptian government has taken action to consider and implement some of their recommendations.

Essentially, this approach provides for "a professional extension service exclusively devoted to extension, with strong linkages with research" (World Bank, 1983, p. 107). The World Bank has emphasized the setting up of "extension systems" in addition to the re-organization. Concern was

expressed that USAID projects and those sponsored by other foreign agencies in the area of research and extension "should all be integrated to give major emphasis to strengthening the overall research and extension institutions, rather than focus on a number of small projects that may not contribute to the long term improvement of these basic institutions" (World Bank, 1983, p. 107). The World Bank mission recommended a pilot project for re-organizing agricultural extension that would involve one or two governorates, and the Egyptian government agreed that a pilot project could be developed under the proposed IFAD-assisted Agricultural Development Project for El Minia Governorate (World Bank, 1983). Through this project the Training and Visit (T&V) system entered Egypt for the first time.

Statement of the Problem

The Training and Visit (T&V) system has been carried out in Egypt in El Minia Governorate since 1983. Since its inception, there has been little or no evaluation of the perceived effectiveness of the T&V system on extension workers.

The primary research questions were:

1. What is the current status of the extension service Training and Visit (T&V) system in El Minia Governorate through the extension workers' perceptions toward the T&V?

2. What are the appropriate methods for providing the T&V system through the extension service in El Minia Governorate?

3. What are the perceived ideal quality indicators of the T&V system in El Minia Governorate?

4. What is an ideal concept model for delivering a T&V system in El Minia Governorate?

Research Goal and Objectives

The overall purpose of this research was to evaluate the Training and Visit (T&V) system as a new agricultural information system, used for the first time in Egypt. The specific research objectives included

1. determining the current status of the extension service T&V system in El Minia Governorate (visits, training, fortnightly training sessions, and monthly workshops);

2. identifying perceived appropriate methods for providing the T&V system through the extension service in El Minia Governorate (visits, training, fortnightly training sessions, and monthly workshops);

3. identifying perceived ideal quality indicators of the extension T&V system in El Minia Governorate (visits, training, fortnightly training sessions, and monthly workshops); and

4. determining specific modifications to improve the

effectiveness of the extension T&V system according to the Egyptian conditions in El Minia Governorate (visits, training, fortnightly training sessions, and monthly workshops).

Limitations of the Study

The following limitations were recognized:

1. This study was limited to evaluating one main agricultural extension system/model, the Training and Visit (T&V) system, and the agricultural extension workers in El Minia Governorate, Egypt.

2. There is a general lack of research studies on the evaluation of the T&V system in El Minia Governorate-Egypt.

3. The study was limited to perceptions of agricultural extension workers selected from six of the nine subdivisions in El Minia Governorate.

4. The respondents' self-reported responses may reflect attitudes associated with experiences held by the respondents.

Definition of Terms

Contact farmers. Frequent contact between a Village Extension Worker (VEW) and all farmers in his circle is not possible. Instead, while being responsible to all farmers, on each fortnightly visit the VEW focuses on a small, selected number of farmers--"contact farmers"-- in each

farmers' group, and meets with any other farmers who are willing and interested to attend his visits and seek his advice (Benor et al., 1984, p. 76).

District Director of Extension (DDE). Responsible for the technical content of the extension program in his district, through systematic training of field staff, in groups, for one day each fortnight, and through technical guidance and supervision of their field work, two to three days each week (World Bank, 1982, p. 30).

Education. The process of training and developing knowledge, skill, mind, and character, the production of changes in the behavior of an individual (Finley & Price, 1994, p. 196).

Fortnightly Training. The chief means of continuously upgrading and updating the professional skills of Village Extension Workers (VEWs) and Agricultural Extension Officers (AEOs) is the fortnightly training session, which is held for one full day each fortnight. The organizer of the training session is the Subdivisional Extension Officer (SDEO), helped by the Training Officer; the trainers are primarily subdivisional Subject Matter Specialists (SMSs) (Benor et al., 1984, p. 78).

Improved Technology. Refers to any standardized means for attaining a desired objective (Mya, 1989, p. 20).

Innovativeness. The degree to which an individual adopts new ideas in comparison with others in the relevant social system (Mya, 1989, p. 18).

Learning. The process by which individuals, through their own activity, become changed in their behavior, their ways of thinking or doing, or their ways of feeling (Finley & Price, 1994, p. 196).

Less Developed Country (LDC). According to the United Nations, the following are general characteristics that differentiate between LDC and more developed country (MDC). LDC's have: (UNESCO, 1971, p. 69).

1. A relatively low per capita income.
2. Comparatively low productivity per person.
3. Little commerce and high self sufficiency.
4. High rate of illiteracy.
5. Limited transportation and mass media facilities.
6. Inadequate nutrition.
7. Little industry and few skilled technicians.
8. politically unstable governments.
9. High birth and death rates and short life expectancy.

Modernization. The process by which individuals and/or social systems change from a traditional way of life to a more complex, technologically advanced, and rapidly changing style of life. Change from a traditional method of cultivation to use of more productive, science-based methods is a kind of modernization (Mya, 1989, p. 19).

Monthly Workshops. The monthly workshop is the main venue of in-service training for Subject Matter Specialists (SMSs) and of regular contact between extension and research workers. Monthly workshops should be held at a district level, if possible. They require considerable advance planning (Benor et al., 1984, pp. 77-78).

Social Change. The process by which alteration occurs in the structure and function of a social system. The three steps involved in social change are invention, diffusion and consequence (Mya, 1989, p. 20).

Village Extension Worker (VEW). The extension agent at the field level to be wholly effective, should reach farmers in their area in manageable groups, on fixed days at fixed hours, once every week. It is thus proposed that a VEW would provide for a group of about 200 farm families each, covering them in groups of 50 per day spread over four working days each week. The VEW would reach these families

through a number of contact farmers, each of whom would represent about 6-7 farmers. The VEW would visit these contact farmers, whose fields would serve as classrooms and demonstration areas on the basis of eight per day spread over four working days each week (World Bank, 1982, p. 29).

Agricultural Extension Officer. The importance of the Agricultural Extension Officer (AEO) in good agricultural extension is frequently underestimated. The AEO has two basic functions. The first is to review and assist in the organizational aspects of the job of the Village Extension Worker (VEW); the second, to provide technical support to the VEW, in particular to see that production recommendations are effectively taught to farmers and that field problems encountered by a VEW, and which he himself cannot resolve, are passed on immediately to appropriate authorities. Like the VEW, the AEO is primarily a field worker. He spends at least eight days each fortnight in the field visiting each of the eight or so VEWs of his area of jurisdiction, in particular to make sure that farmers are being visited regularly by the VEW, and that the recommendations they receive are appropriate and are adopted. He reviews whether contact farmers have been correctly selected, farmers' groups are properly delineated, and all farmers are aware of the VEW's visit schedule and activities. The AEO should also conduct some farm trials in

farmers' fields, participate in fortnightly training sessions, and hold a fortnightly review meeting with his VEWs (Benor et al., 1984, p. 74).

Subject Matter Specialist (SMS). Would be provided for groups of 80-100 field workers for ensuring their training in small manageable groups of 20 to 25 for one day each fortnight, through four training sessions each fortnight. Each team of SMSs may include a crop agronomist, a horticulture agronomist and a plant protection specialist (World Bank, 1982, p. 30).

Subdivisional Extension Officer (SDEO). The Subdivisional Extension Officer has overall responsibility for effective agricultural extension in his subdivision. Through leadership, planning, and supervision, he must ensure that extension has a significant impact on agricultural production and farmers' incomes. To do this, the SDEO must use his initiative to take any action required to increase the effectiveness of the extension service. The SDEO is active in two main areas-field visits and training-in addition to coordinating information on the actual and likely supply and demand of agricultural inputs and on market conditions in his subdivision. He makes field visits on at least three days each week to review both technical and organizational aspects of the work of extension staff in

his subdivision. He is the organizer, convener, and leader of fortnightly training sessions. Monthly and zonal workshops and other extension/research meetings are attended by the SDEO mainly to ensure that significant relevant local conditions are taken into account in the formulation of recommendations and research activities. The SDEO should also ensure that extension staff of his subdivision receive adequate and appropriate special training (Benor et al., 1984, p. 75).

Traditional Agriculture. Farming in which the technology used has been developed by keen observation overtime by people who lack knowledge of and access to science-based and industrial technology (Mya, 1989, p. 20).

Traditional Agricultural Technology. Traditional agricultural methods are those that have been passed on verbally and by demonstration from one generation to the next, based upon much observation and experience in local farming areas over the years (Mya, 1989, p. 20).

Visits. A key feature of the Training and Visit (T&V) system of agricultural extension are the regularly scheduled visits to farmers' fields by extension staff. Visits are made, on the one hand, to advise and teach farmers recommendations on relevant agricultural technology and to

encourage them to adopt these and, on the other, to establish in extension and research an awareness of actual farmer conditions and needs. Field visits by AEOs, SMSs and SDEOs are an important means of support for VEWs (Benor et al., 1984, p. 77).

The Importance of the Study

"Sustained high levels of agricultural production and incomes are not possible without an effective agricultural extension service supported by agricultural research that is relevant to farmers' needs" (Benor & Baxter, 1984, p. 3). Because linkage between extension and research systems that is strong and responsive to farmers best serves the agricultural sector, the Training and Visit (T&V) system is especially beneficial in developing countries. Its processes emphasize precise "areas of staff responsibility, fixed work schedules, regular training of extension staff, and regular and frequent meetings of extension and research" (Benor & Baxter, 1984, p. 6). This study aims to ascertain the effectiveness of the T&V system under the Egyptian conditions in El Minia Governorate by asking those who have experienced it for their feedback.

Theoretical Framework

In his foreword to Agricultural Extension: The Training and Visit System by Benor, Harrison, and Baxter (1984), Ernest Stern wrote,

> The central theme of the [Training and Visit] system--efficiency in the use of resources available to government and farmers--has proved particularly useful in a period during which many governments had to scale down the level of new investments and recurrent expenditures.... The training and visit system is not without cost to governments: Resources are needed to set up the system and operate it, and officials must overcome ingrained habits to change lines of command in building a single-purpose system of professional advice to farmers....
>
> While the T & V system of agricultural extension is in the first instance concerned with cultivation practices on the farm, it reaches into other areas of governmental policy and resource allocation. The closest interaction is with agricultural research, the main source of messages recommended to, and adopted by, the farmer to increase his productivity and income. The unique method of feedback by the farmer to extension and research helps to reorient research towards solving actual production constraints on the farm. (Benor, Harrison & Baxter, 1984, pp. v-vi)

The Training and Visit (T&V) system is structured around "simplicity in organization, objectives, and

operation" (Benor & Baxter, 1984, p. ix). Its model of operation provides feedback on a continuing basis from the farmers to extension workers and researchers so that all involved may adjust to farmers' needs. Additionally, its popularity is due to increases in agricultural production and farmers' incomes and because it is well suited as a management tool for departments of agriculture in several developing countries. Where T&V system has been implemented, changes in emphasis and clarifications or other adjustments have resulted. T&V objectives are not weakened by such adjustments; rather, they allow the extension system to take full advantage of T&V's strongest feature--feedback from the field.

Because it is based on the frequent and regular training of extension workers, with particular emphasis on field visits, the system is quite simply called Training and Visit (T&V). The agricultural extension T&V system has proven itself to be especially effective. The primary contributions of this system lay in its organizational structure and in its identified model of operation ensuring regular visits to farmers by extension workers and farmer assistance that is directly related to production needs. Extension workers can rapidly transmit problems encountered by farmers back to specialists and research for resolution or continued investigation. Through regular training, extension staff continuously upgrade their knowledge and

their professional ability to serve the technological demands of farmers (Benor, Harrison, & Baxter, 1984).

At the heart of the Training and Visit (T&V) system are the field-level agents. They are the only extension workers in regular and direct contact with farmers who can teach them and process the feedback concerning their problems as well as their reactions to the extension/research system. All other extension staff direct their support toward field workers through training and in-field guidance. Successful transmittal of agricultural know-how is fundamental to the T&V system and places a high value on "professionalism, specialist staff support, training, and close linkages with research, other sources of know-how, and agricultural universities" (Benor et al., 1984, p. 10).

According to Benor et al., the Training and Visit (T&V) approach to extension features four points beyond basic management and leadership principles. First, a framework of regular training and visits can be adapted as needed to facilitate all levels of agricultural sophistication. Local needs, for example, may precipitate an increase in the "number and level of technical specialists and field extension agents (including perhaps specialized agents for farmers who have already attained very high levels of technology)" (Benor et al., 1984, p. 11). Another locality may benefit more by increased emphasis on the "complementary support of field extension worker[s] that can be provided by

well-coordinated mass media activities" (Benor et al., 1984, p. 11).

Second, the T&V principles and organization may seem straightforward, but they are complex and interconnected. "All components need to operate well if the system as a whole is to have the desired effect" (Benor et al., 1984, p. 12). Field visits must be regular and scheduled; the technology diffused to farmers must be useful and relevant; extension workers must have the capacity to diagnose farmers' own production conditions; and supervision in the field must be ongoing and effective. Training sessions, to be successful, help extension workers understand how to adapt production recommendations to local conditions and individual farmers' needs. Sessions must also increase extension worker capacity to "advise farmers on the full range of their interconnected farming operations, and encourage professional interaction between extension and research" (Benor et al., 1984, p. 12).

Third, "training and visit extension is a flexible system within a rigid framework" (Benor et al., 1984, p. 12). Its flexibility is manifest in handling several different crops, pest and disease issues, and additional farm-based production activities; in adapting to various settlement patterns, seasonal conditions, and input supply systems; in responding to farmer and extension staff sophistication; and in taking full advantage of extension

activities that complement one another. Its rigidity is manifest in regular field visits and training programs and in the insistence that "extension staff and supporting research services focus on relevant and economically viable ways to increase farmers' agricultural production and income" (Benor et al., 1984, p. 12). Inasmuch as extension systems typically operate through a wide range of geographic, technological, and administrative conditions, the solidity of T&V's framework ensures its impact.

Fourth, regular training and visits require extensive administrative re-organization. In fact, radical changes in the behavior and work methods of staff often result. Such changes have enormous implications for various key relationships: farmers/extension, extension/research, extension/agricultural support services, extension service/ Department of Agriculture, and farmers/government. "The adoption of a professional extension system, therefore, is not a single, static decision" (Benor et al., 1984, p. 12). Like any productive system, it evolves over time and reveals implications only gradually. Its essential value lies in "continually upgrading extension staff's ability, research support, and operations of other agricultural support services, not to mention the way in which the extension service itself operates to serve farmers effectively" (Benor et al., 1984, p. 12).

Theoretical Hypothesis

There are differences between extension groups and their perceptions toward the effectiveness of the Training and Visit (T&V) system.

CHAPTER 2

REVIEW OF LITERATURE

Definitions of Agricultural Extension

Agricultural extension has been defined and viewed in different ways by scientists and practitioners throughout the world, perhaps because it was organized to accomplish a wide variety of objectives.

Mya (1989) cited Leagans' 1961 definition of agricultural extension as "a kind of non-formal education and a two-way communication between client and source" (Mya, 1989, p. 23). According to Leagans' definition, agricultural extension is a process involving the communication of information from the source to clients who then appropriately apply the information and communicate the results back to the source. Agricultural extension is thus interactive and problem-solving programming.

According to Chang (1962) the Food and Agriculture Organization (FAO) of the United Nations defined agricultural extension as "an informal, out-of-school educational service for training and influencing farmers to adopt improved practices in crop and livestock production, management, conservation, and marketing" (Chang, 1962, p. 7). Agricultural extension, whether it is a service or system, assists farm families to improve their farming methods and techniques, to increase their production efficiency and income, to raise their standard of living,

and to promote the social and educational benefits of rural life through educational procedures (Farquhar, 1963).

The Organization for Economic Co-operation and Development (OECD) (1965) defined agricultural extension as "the provision of informal education, including advice and information, to farm people to help them solve their problems. Improving the efficiency of the farm business, increasing farm incomes and raising levels of living has been its aim" (OECD, 1965, p. 9).

Swanson and Claar (1984) viewed agricultural extension as an essential component in the agricultural development process. They stated that agricultural development implied the shift from traditional methods of production to new, science-based methods of production that included new technological components such as new varieties, cultural practices, application of fertilizers and pesticides, new crops and/or even new farming systems. To adopt these new production technologies successfully, according to their definition, the farmers must first learn about these technologies and then learn how to apply these technologies effectively in their farming systems. For the adoption process to occur, an educational and communication input would be required.

Swanson and Claar (1984) also suggested that agricultural extension had these two dimensions because agricultural extension is an on-going process of getting

useful information to people (the communication dimension) and then in assisting those people to acquire the necessary knowledge, skills, and attitudes to use effectively this information or technology (the educational dimension). Generally, the goal of the extension process is to enable people to use these skills, knowledge, and information to improve the quality of life.

Mathur (1976) stated that the term "extension" developed in the United States where this program operated in universities under two different forms--university extension and agricultural extension. University extension was primarily meant for those adults who could not attend regular classes at universities. They could learn at home by correspondence or enroll in night classes or summer schools when they were free from their professional or vocational work. Agricultural extension was meant for farmers who were taught improved farm practices on the farm and improved ways of living at their homes through appropriate extension methods such as group discussions, demonstrations, exhibitions, workshops, visits to homes, farms, etc. According to Mathur, the purpose of agricultural extension was to remove difficulties and/or to help solve problems of farmers. The extension agent was responsible for giving comprehensive, accurate, and technical scientific information to farmers.

According to Swanson and Claar (1984), agricultural extension was a difficult term to define because the agricultural extension service had been organized in different forms to accomplish a wide variety of objectives. Thus, different types of agricultural extension models have emerged in the world. These different models or approaches have some common features, however. "Some people tend to equate agricultural extension with the term 'technology transfer.' This was incorrect because technology transfer included the additional functions of input supply and agri-services" (Swanson & Claar, 1984, p. 28). According to Baker (1984), technology transfer was "an integral part of the extension process, involving the transfer and spread of technology and information or know-how from information sources or developers through those who communicate it to those who receive it" (Mya, 1989, p. 25).

According to True (1928), the spread of agricultural extension-type activities in Europe, Australia, New Zealand, and Canada tended to parallel events in the United States, but their organizations developed somewhat differently. Baker (1984) said that agricultural societies, popular in Canada as well as the United States in the 18th and 19th centuries, organized informal learning by using their members to disseminate practical agricultural information to other farmers.

Types of Extension Systems

Although several authors have described extension systems (Oxenham & Chambers, 1978; Orivel, 1981; Pickering, 1987; Ray, 1985; Weidemann, 1987), there is some confusion regarding both terminology and modalities. Pickering (1987) differentiated the following systems:

1. the commodity-focused approach in extension, designed to facilitate the production of a single crop;

2. the community development-cum-extension approach, incorporating a broad definition of the functions of the extension agent, which tends to dilute the agent's specific agricultural extension responsibility;

3. the technical-innovation centered approach, set up to transfer technology from outside to the farm, sometimes specifically to sell a number of technical innovations;

4. the Training and Visit (T&V) system approach, organized to serve the farmer by mobilizing the extension system, as well as its linkage with the research system, through regular visits by agents to farmers and by regularizing of agent training; and

5. the rural animation approach, associated with francophone Africa. This approach involves participatory rural development where specialists work directly with small farmers to develop, test, and demonstrate improved agricultural technology.

According to Prawl, Medlin, and Gross (1984), extension systems have sponsoring agencies, typically government departments or bureaus. Although extension systems tend to vary significantly in terms of their organizational structure, most extension systems are comprised of workers who have expertise in technical agricultural production. The first government-sponsored national agricultural extension system in the world was formed by Japan in 1893. Similar systems followed in other countries as shown below:

Table 1

Inception of Government Sponsorship of National Agricultural Extension System

Country	Year of Origin
Japan	1893
United States	1914
United Kingdom	1946
Israel	1948
India	1952
Pakistan	1952
Egypt (United Arab Republic)	1953
The Netherlands	1953
Nigeria	1954
Taiwan	1955
Brazil	1956
Belgium	1957

Lele (1975) placed extension broadly under two major rubrics: the take-it-or-leave-it approach, where farmers are free to accept or reject development innovations, and the contract farming approach. In the latter, farmers are granted a license to produce certain commodities on the condition that they use a particular innovation and follow project guidelines set down by the extension organization.

Weidemann (1987) identified an additional model for describing extension delivery: conventional agricultural extension, the Training and Visit (T&V) system, university-organized agricultural extension, the commodity development and production system, integrated agricultural development programs, integrated rural development programs, and farming systems research and extension programs.

Oxenham and Chambers (1978) and Orivel (1981) suggested another approach for describing extension delivery: representative participation as exemplified by the Taiwanese Farm Information Dissemination System (FIDS), in which local governments and farmers have input toward controlling the extension system. Axinn (1987) further categorized approaches to extension delivery according to the source of system control: the delivery approach (top-down, supervisory, and supply-driven) and the acquisition approach (bottom-up, farmer-determined, participatory, and demand-driven).

Such top-down delivery systems have proven themselves reasonably able to meet demands of farmers who are rich in resources and of large- and small-scale producers whose commodities are high in value. Directly or indirectly through their farm organizations, these producers communicated their needs to researchers and evaluated prior to implementing the recommendations made to them by agents in the extension system. Conversely, a lack of effective cooperation between research and extension systems has slowed both development and diffusion of technology designed to assist resource-poor, smaller scale farmers. Most of these are in low-potential, heterogeneous, agro-ecological areas and have no effective organizations to help them express their needs (Ewell, 1990).

Ray (1985) described three categories for extension delivery but recommended a hybrid that combines all three. Ray labeled the models as directive (top-down delivery systems), participatory (systems involving farmer participation), and contractual (systems where farmers contract directly with public agencies or private companies to receive extension services).

Although extension systems in several developing countries were not formalized until the 1950s, extension-type activities routinely occurred earlier in the century as colonial governments sponsored such activities as well as research. Crops such as cotton, sugarcane, rubber,

palm oil, groundnut, tea, and coffee were given particular governmental support to increase the export of these crops. Traditional food crops were seldom given any research or extension support by colonial governments (Swanson & Claar, 1984). In addition to those listed above, many other countries established agricultural extension systems after World War II, after independence, as noted earlier.

Categories of Agricultural Extension

The literature revealed various attempts to delineate categories of agricultural extension systems. Lele (1975) categorized extension systems broadly under two major headings: the "take it or leave it" (Lele, 1975, p. 64) type, in which farmers may choose whether or not to accept innovations, and the "contract farming" (Lele, 1975, p. 64) type, in which farmers agreed in advance to accept innovations and were granted a contract to produce specific commodities.

Blanckenburg (1984) identified three categories of agricultural extension based on administrative structure:

1. Sectoral governmental service occurres most commonly. Ministries of Agriculture delegate primary responsibility for agricultural development to their Departments of Agriculture, which are subdivided into divisions that focus on research, extension, and training. Additional divisions within Departments of Agriculture hold

responsibility for technical, economic, financial, and administrative matters. Even though those divisions responsible for extension activities are typically small, the internal structure reaches from the national level to the village level through the use of division, district, or equivalent political/geographic units. In many instances, agricultural extension workers perform noneducational duties such as regulation, data collection, and supply distribution, which reduces the level of trust farmers are willing to invest in the extension system.

2. Subsectoral parastatal intervention service describes an extension system created in West African countries formerly under French colonial rule. The features common to these countries include not only agricultural issues such as weather patterns, insects, plant diseases, and soil composition, but also the limitation of export trade solely with France. Subsectoral countries export only one or a few important crops that were controlled by the imperial government. Extension activities, therefore, concentrate on exportable crops, tack responsibility for rural development in a specified region, and generally have a high degree of autonomy. As long as crop production satisfied export expectations, the Ministry of Agriculture limited its role to that of planning, coordination, and regulation work, and allowed the extension service much latitude.

3. Unified service with mobilization of local resources developed in the far eastern countries of Korea and Taiwan. An extension system that evolved from effective use of local and regional human, natural, financial, and scientific resources, this system was not centralized extension programming, nor was development work assigned to one service in particular.

Baker (1984) distinguished three types of extension systems based upon the source of financial support for operations and technology transfer activities:

1. public sector, such as governments or universities;

2. private sector, such as fertilizer companies, financial agencies, or other profit-oriented firms; and

3. voluntary sector, such as volunteer organizations, farm societies, or commodity groups.

Axinn (1987) also categorized approaches by point of control: the "delivery" approach (top-down, supervisory, supply-driven) and the "acquisition" approach (bottom-up, farmer-determined, participatory, demand-driven). In the industrial and high-income countries with more highly educated farmers, he says, extension had become demand driven. In the low-resource, less developed countries, extension had become supply driven and involved hierarchical, top-down, technology-packaged delivery systems.

Pickering (1987) divided agricultural extension into six approaches:

1. the commodity-focused approach,
2. the community development-cum-extension approach,
3. the technical-innovation centered approach,
4. the Training and Visit (T&V) system approach,
5. the "animation" rural approach, and
6. several more or less overlapping other approaches.

Weidemann (1987) enumerated seven categories for extension delivery:

1. conventional agricultural extension approach,
2. Training and Visit (T&V) approach,
3. university-organized approach,
4. commodity development and production approach,
5. integrated agricultural development programs,
6. integrated rural development programs, and
7. farming systems approach.

Baxter, Slade, and Howell (1987) classified agricultural extension into four major systems:

1. rural extension,
2. commodity-specific extension,
3. university-based extension, and
4. Ministry of Agriculture field service extension.

Rivera, Secpersad, and Pletsch (1988) classified agricultural extension services into three categories according to institutional settings:

1. Agricultural (production-related) Extension Services. In this case, extension institutions undertake production-related knowledge transfer either as their sole function or as their primary function with adjunct service activities and programs not strictly production-related (e.g., youth development work).

2. Integrated Agricultural Extension Services. This type involves institutions that include agricultural extension as an integrated function along with one or more other functions--as with certain agricultural research programs, cooperatives, etc.

3. Supportive Information Transfer Services. This type includes institutions that consider information transfer as a supportive function auxiliary to their main concerns (e.g., seed and fertilizer companies).

Rivera et al., (1988) had also examined agricultural extension from the standpoint of its purposes rather than its organizational form:

1. Agricultural performance. Agricultural extension was viewed only in terms of improving production and profitability of farmers.

2. Rural community development. Agricultural extension was viewed as serving to advance rural

communities, including improvement of their agricultural development tasks.

3. Comprehensive nonformal continuing and community education. Agricultural extension was viewed as a provider of non-formal continuing education to various audiences in agricultural areas.

The preceding review of agricultural extension literature--though brief in terms of the voluminous writings on extension, technology transfer, adoption and diffusion of innovations, etc.--illustrated the difficulty of achieving a single, multi-purpose categorization of extension efforts. Some conceptual trends were evident: top-down vs. bottom-up approaches (Axinn, 1987), integrated vs. commodity or other area-specific approaches (Rivera et al., 1988), production-focused vs. community-focused work (Rivera et al., 1988), centralized vs. decentralized efforts, etc. It was not surprising, however, that the global diversity of farming systems, development needs, governmental forms, and so forth resisted an easy classification of agricultural extension efforts.

Agricultural Extension in the Developing Countries

Agricultural extension was organized in developing countries primarily post-World War II: Asian, Latin American, and Caribbean mostly in the mid 1950s and African nations mostly in the 1960s and 1970s (Mya, 1989). Most

developing countries received foreign assistance as their agricultural extension systems became organized. Because several newly independent countries sought to formalize their extension structure at a time when they did not have well-established colleges of agriculture, extension was administered by ministries of agriculture. Later, when agricultural colleges were established, there was no strong link between extension and research efforts underway in colleges of agriculture.

Although extension systems in developing countries generally preceded university-sponsored agricultural research, "research has invariably been the preferred career choice among university graduates in agriculture" (Bennell, 1990, p. 144). Low status, low salaries, low prestige, and poor working conditions made it difficult for extension to attract quality professionals--a situation that prompted some governments to require their graduates in agriculture to accept extension positions. Doing so only increased employee resentment and dissatisfaction with their jobs.

According to Bennell (1990), recruitment standards within extension have continued to decline in many developing countries such as Nepal, the Philippines, Sri Lanka, Taiwan, and South Korea. "Many agricultural extension organizations have found it difficult to retain their more able and experienced senior staff, especially where private sector employment opportunities have been

relatively plentiful" (Bennell, 1990, p. 144). The Asian Productivity Organization (APO) (1980) reported that in 1965 48% of South Korea's extension agents were university graduates. By the late 1970s, this figure had dropped to 25%. Due to such a high attrition rate, extension workers tend to be too young to develop positive relationships with older, more experienced researchers.

Agricultural extension workers in developing countries have attempted to improve their situations, but doing so has made the organizational structure unstable. Only a few succeeded in achieving a positive social identity, and they did so by joining research organizations. "The other individualistic response postulated by SIT [Social Identity Theory] . . . may have occurred in some developing countries, with professional extensionists trying to distance themselves from subprofessional junior colleagues" (Bennell, 1990, p. 144).

Although an extension system is only one segment of the agricultural sector, "the quality, capability, and performance of farmers in agriculture are fundamental indicators of the level of the agricultural sector's efficiency, productivity, development and sustainability" (Maalouf, Contado, & Adhikarya, 1991, p. 59). In developing countries, the majority of farmers lack formal education; very few have had opportunities for formal study of agriculture. Given the rapid rate of change in technology

and performance requirements in farming, the few who have been formally educated also have difficulty keeping up with emerging trends and requirements.

Agricultural extension, therefore, needs governmental support and development. Worldwide, annual expenditures are estimated, in U.S. dollars, at $6 billion with 600,000 extension personnel employed to serve the agricultural sector (FAO, 1990). Most governments administer some form of extension services, yet only a small fraction of farmers are actually reached by an extension system. "By the end of the century, it is estimated that some 1.25 million extension workers will be needed" (Maalouf, Contado, & Adhikarya, 1991, p. 59). The Food and Agriculture Organization (FAO) further reported that the number of farmers who are not being served by an extension system may number in the hundreds of millions. "In Africa, two out of every three farmers have no contact with public extension services; in Asia, three out of four; in Latin America, six out of seven, and five out of six in the Near East" (Maalouf, Contado, & Adhikarya, 1991, p. 59).

Although it is widely recognized that agricultural extension performs a vital role in agricultural development, opinions concerning what specific functions extension should undertake vary greatly: "extension as a purely technology transfer function" on one end and "as a non-formal agricultural education or rural human capital development

function" on the other end (Maalouf, Contado, & Adhikarya, 1991, p. 60). If agricultural extension systems are to be made better in order to meet the growing needs of agricultural sectors in developing countries, both functions must be seriously considered. Both functions exemplify "extension's two major problems of coping with large numbers of farmers needing extension types of assistance (the coverage problem) and limited resources available for extension work (the resource problem)" (Maalouf, Contado, & Adhikarya, 1991, p. 60). In addition, both will influence institutional configurations as well as the way in which agricultural extension services are designed and administered in developing countries.

Impact of Extension Programs on Agricultural Development

"Extension programs can have a tremendous impact on the agricultural and rural development of every nation" (Finley & Price, 1994, p. 226) because it is the nature of extension to develop the capacity for effective use of resources. Extension agents, provided they are well trained, can infuse knowledge from the researchers to those who generate farm economies. Although it is an ideal, governments in developing nations should take seriously their role in support of agricultural development. "Assisting emerging nations to develop an effective extension program may be the greatest contribution that developed nations can make" (Finley & Price, 1994, p. 226).

According to Finley & Price (1994), "the extension program of a nation should be organized on a legal basis" (p. 226), should be appropriate for "each country's political structure," and "should provide for adequate financing and staff to meet the needs of the smallest political entity" (Finley & Price, 1994, p. 227). Organized in such a way, extension would likely receive increased financial support and recognition from its government. In simplest terms, the role of extension workers is that of making contact with individual farmers and educating them in the effective management of their own land, labor, and capital resources. Even in the most highly developed countries, farmers will not readily accept and use new technologies or updated procedures if they do not understand them well. Extension, therefore, "is a necessary prerequisite to widespread and sustained agricultural development" (Benor, Harrison, & Baxter, 1984, p. 7). As research advances, a gap is created between new products and new technologies on the one hand and local conditions and individual needs on the other. Filling that gap is the mission of the extension service--a mission that takes on even greater significance in developing nations. "Extension also has a vital role in ensuring that the agroeconomic and social environment of farmers and the day-to-day production problems they face are appreciated by research" (Benor, Harrison, & Baxter, 1984, p. 7). As feedback is passed from

researchers to farmers and back to researchers, problems affecting production can be resolved in a timely way and with a continual reordering of research priorities that serves farmers' needs. "It is extension, however, that helps farmers take advantage of research findings and technological advances, quickly adjust to seasonal and economic conditions, and effectively use support services to increase their production and income" (Benor, Harrison, & Baxter, 1984, p. 7). Farmers would find themselves unable to realize their potential without the assistance and guidance of extension workers.

Agricultural Research in the Developing Countries

"Every nation needs some research capacity" (Finley & Price, 1994, p. 250). The need for research in agriculture is especially strong in developing nations. Research enables producers to adapt to improved food crops, livestock breeds, and the local environment. Experimentation and outreach programs vary greatly, but limited funding is particularly troublesome in many of the developing nations.

Because the Gross National Product (GNP) in many developing nations is comparatively small and must support the entire economic sector, a low percentage of the GNP is reinvested in "agricultural research, education, and production" (Finley & Price, 1994, p. 250), which results in the need for outside assistance to manage their agricultural

problems: low levels of trained workers, research institutions that focus on strong development and problem resolution, and agricultural research procedures and policies that are well-supported at the national level. A further complication for implementing research policies and procedures may be found as developing governments change over time and lack the consistency needed for research support and comparatively high salaries.

As a mechanism for assisting farmers to resolve their problems, agricultural research is widely recognized as vital. "Without local research support, agriculture will remain traditional with low yields and low productivity" (Benor et al., 1984, p. 6). Not only do farmers require information to increase their yields and improve their management of machinery, crops, pests, and diseases, but they also need continuing research support to manage physical and economic changes. "To be effective in the long run, it should be relevant to the actual production conditions and needs of farmers" (Benor et al., 1984, p. 6).

Although agricultural research is widely recognized as vital for resolving farmers' problems, "the need for agricultural extension is not [so] clearly recognized" (Benor et al., 1984, p. 6). In 1974 in Rome, the World Food Conference determined that "priority be given to the development of agricultural education and training" (Finley & Price, 1994, p. 226). The aim was to develop a political

and social framework for agricultural education and training that included "training of research and extension workers in management techniques, special basic and in-service training for graduate and middle-level extension personnel, and farmers' training programs for rural women and children" (Finley & Price, 1994, p. 226).

It was agreed that national governments "must be responsible for the production, processing, and distribution of food for its own people" (Finley & Price, 1994, p. 226). Because national governments are the only entities that can evaluate their own agricultural potential and needs, "only the government can set the policies, establish the priorities, allocate the resources, and involve the farmers" (Finley & Price, 1994, p. 226).

University Roles in Rural Areas

According to Finley and Price (1994), the work of agricultural extension services and ministries of agriculture could be improved with increased participation by universities. "American universities represent a large pool of skilled professionals who can assist the universities abroad" (Finley & Price, 1994, p. 226) who should, in turn, assume the role of leaders in their countries' efforts to increase agricultural production and income.

American universities in the 20th century have academic

departments generating high levels of excellence. Through the departmental structure, salary increases and promotions have served as motivators for intense and energetic research. Although the departmental structure has been successful in achieving great research productivity, "the specialization and fragmentation emerging from academic disciplines pose serious problems for effective communication across disciplines and for confronting society's most serious problems" (Hollingsworth, 1988, p. 63).

Hollingsworth suggested the interdisciplinary institute as a bridge between and among academic disciplines. Within the university structure, interdisciplinary institutes or centers could serve to integrate narrow bodies of knowledge across a broader spectrum of knowledge. "Good science should be judged not only by its ability to seek out truth, but also by the contribution it can make to neighboring disciplines" (Hollingsworth, 1988, p. 64). Strong academic departments and an interdisciplinary institute that truly unifies the resultant research would exemplify good science: "the creation of unity from diversity" (Hollingsworth, 1988, p. 64) in a way that helps people see relationships among ideas.

Linkage Problems Between Research and Extension

The importance of agricultural research in developing

countries is widely acknowledged, as is that of an extension system. Because each is organized separately around separate missions and processes, each functions very differently even when they are administered within the same ministry. "The predominant model for the generation and transfer of agricultural technology is based at least implicitly on systems for breeding, testing, and distributing improved crop varieties" (Ewell, 1990, p. 151). At least ideally, research develops the high-quality genetic raw materials and techniques that are then passed to extension for instruction and dispersal to the producers.

Such a process may appear straightforward, even simple, but establishing an effective relationship between research and extension is problematic on several levels. "The degree to which these two activities should be integrated and the nature of that integration have been examined from many perspectives and within many contexts" (Nogueira, 1990, p. 75).

Fundamentally, research and extension have different objectives, different knowledge bases, different resources available to them, and different relationships with the public sector. The linkage problems between research and extension are not minor, nor are they easily resolved. Whereas research is charged with "increasing scientific knowledge and generating new technologies," extension is faced with "the delivery and adoption of new technologies"

(Nogueira, 1990, p. 76). Research, then, increases knowledge; extension changes behavior. Researchers and extension workers are professionals who do not, and perhaps should not, have the same perspective, the same experiences, the same accountability, or the same measures of success. They are institutionally distinct and recognized as such.

With specialization, however valuable, comes integration problems. "The key to understanding the specific linkage problems that now exist between the two activities lies in an analysis of their institutional development" (Nogueira, 1990, pp. 76-77). Such an analysis must include historical, organizational, political, economic, and socio-psychological development, and the relationships among them.

As Bennell (1990) noted, too little attention has been paid to the human behaviors necessary to develop linkage between research and extension. Although extension existed in many developing countries in many forms, "public sector technology transfer activities were not formally institutionalized until after the establishment of agricultural research organizations" (Bennell, 1990, p. 143). A major problem was evident soon after extension systems were formed because extension workers did not have the same level of credibility as agricultural researchers.

"A key characteristic of agricultural technology transfer organizations during this early period,

particularly in Africa and Asia, was that they were staffed mainly by subprofessionals" (Bennell, 1990, p. 143). When compared with agricultural research, extension as a function of the public sector was new, underdeveloped, and narrow, particularly in colonial countries. Extension workers were few in relation to the number of uneducated farmers. Extension workers were also expected to live near the farmers they served; many of these areas did not have even basic amenities. "Only relatively low-status, non-professional employees could be expected to work in these rural environments" (Bennell, 1990, p. 143).

The perception of researchers, as professionals whose work was viewed as largely intellectual, can be contrasted with extension personnel, as subprofessionals whose work was viewed as largely manual. Over time, this distinction relegated extension workers into subordinate roles and low-level activities.

The relationship between research and extension has been exacerbated by many years of competing for limited resources--funds, labor force, and physical facilities. To make matters worse, each group was and often still is critical of the other's performance. As so frequently happens in adversarial relationships, communication and cooperation are discarded in favor of domination and control. Without contact, collaboration, and respect, research and extension cannot forge the linkages so

necessary for improving the entire agricultural sector (Bennell, 1990).

From the viewpoint of researchers and extension staff, however, what appears to others as a lack of linkage is of little concern. Sigman and Swanson (1982) surveyed extension directors in 59 countries and found that only 17% perceived linkage between research and extension as a serious problem. Balaguru and Rajagopalan (1986) surveyed Indian research scientists and found that, of the 12 factors that determine research output, the researchers ranked an efficient extension service lowest.

Even if researchers and extension workers do not themselves perceive a lack of linkage to be a serious problem, there are ample objective reasons for concern. Researchers have difficulty setting realistic and appropriate priorities for their research if they have inadequate information about local farm conditions and resources. If extension agents are to diffuse new knowledge and technology, they must first understand in order to adapt and instruct farmers. A lack of communication between research and extension limits the degree to which new concepts can be applied. Research may be able to produce improvements in tangible materials, and extension may be able to distribute them to farmers without any significant cooperation. To affect behavior changes by farmers, however, concepts generated at the research level must be

understood, interpreted, adapted, and diffused on a person-to-person basis (Horton, 1986; Rhoades, 1987).

Extension workers face difficulties from many sources, not just from agricultural researchers. "They are often responsible for a broad range of government services in rural areas, of which technology transfer is only one" (Ewell, 1990, p. 152). Their field work and travel often must be performed despite inadequate resources, and they are expected to diffuse the procedures and technology that researchers give them even when they are not well-suited for local conditions. They perform their work at lower levels of education, status, salaries, and social class than researchers, yet they bear the burden for failure if experimental innovations do not yield anticipated results (Collinson, 1985).

Several types of feedback facilitate the setting of research priorities--some generated by researchers themselves, some of which can be provided by extension workers, and some produced through private institutions. Strong links between researchers and extension workers can build an effective research agenda through the use of "informal and formal surveys, on-farm trials, meetings, field days, and other special events" (Ewell, 1990, p. 154). Whatever mechanisms are used to diagnose the needs of farmers, experiment stations serve as the places where information is collected, organized, and used in the

creation of farm innovations (Merril-Sands & McAllister, 1988).

Although reliable data is not widely available, private sector participation in development and diffusion of agricultural technology by developing countries is estimated at roughly 10% of the total national expenditure on research. The percentage may appear small when compared to the 66% (representing $1.7-2.6 billion) expended on agricultural research by private companies in the United States (Crosby, 1986). When one considers that many developing nations gained their independence during the last 50 years, the 10% represents much-needed growth in the private sector.

According to Pray and Echeverria (1990), six types of private institutions conduct research: "input production and supply companies, large farms and plantations, processing companies, consulting firms and agricultural publishing companies, cooperatives and commodity groups, and research foundations" (p. 199). Even though some products and technologies are diffused by way of extension systems, private institutions more often market such items privately, particularly when the new technology will increase sales for that company.

More private sector research typically takes place in Asia and in Latin America than in Africa (Eicher, 1984; Hobbs & Taylor, 1987). Private sector-sponsored research on

"oil palm, rubber, and tea plantations" (Pray & Echeverria, 1990, p. 206) occurs in some of the developing countries. Egypt, the Ivory Coast, Kenya, Nigeria, the Sudan, and Zimbabwe all conduct private sector-sponsored research "on maize and sorghum plant breeding and, to a limited extent, on pesticides" (Pray & Echeverria, 1990, p. 206). Such efforts in developing countries signify progress in private sector support for the whole of agriculture. Much can still be done, however, to strengthen privately sponsored research.

A model for increasing the role of large companies in agricultural research can be found at Pioneer Hi-Bred in the United States. Seed producers/distributors at Pioneer are themselves farmers who give "information directly to marketing or production personnel who, in turn, pass this information on to researchers at regular meetings held between marketing and research personnel" (Pray & Echeverria, 1990, p. 212). Plant breeders, at stations in significant maize-producing regions of the United States, have close contact with local farmers and collaborate with scientists at headquarters in determining research priorities. Many of Pioneer's Latin American plant breeders are also farmers.

Northrup King, as another example, uses internal as well as external feedback in setting its research agenda. "Seedstock. . . is produced on the company's farms; the farm

managers inform researchers whether an experimental variety is commercially producible; and commercial seed is produced externally by contract farmers" (Pray & Echeverria, 1990, p. 212). Agricultural chemical companies typically work with both private sector plant breeders and marketing personnel within their companies as new products are tried on farmers' fields. Local farmers are then invited to field days sponsored by the companies so that farmers and plant breeders can discuss what improvements should be made, after which subsequent trials are conducted.

The role of the government should be that of adopting policies aimed at integrating all elements in the agricultural sector: public sector research, extension, input-supply, and the private sector. Such policies and regulations will affect private research, development, and marketing in terms of their quantity undertaken in a country as well as the linkage within and among the various sectors.

Extension, for example, "could play a role in the training of dealers in basic agriculture, the potential of various inputs and management practices, and the safe handling of agricultural chemicals" (Pray & Echeverria, 1990, p. 223). In addition, extension is in a valuable position for fostering improved communication within industrial associations, within private companies, and between companies and their clients. Research entities could improve their effectiveness by "investing more in

social science research to assist in research planning and by improving the links between extension, government social scientists and private sector marketing personnel during the early stages of the research process" (Pray & Echeverria, 1990, p. 224).

Several improvements could be made in the way new technology flows through the public sector. By involving extension agents in the evaluation stages of research projects, they would be better informed about new technology and its characteristics as it reaches the screening and field testing stages before it is passed on to other extension agents. "Another measure would be to include researchers in extension teams engaged in popularizing major new technologies, such as a high-yielding hybrid seed or a new fertilizer" (Pray & Echeverria, 1990, p. 225). Such cooperation could be assisted by government leadership that promotes personal contact between researchers and extension agents. In fact, personnel could be rotated between research and extension at some large agricultural research institutions. Information exchange would be improved with the removal of status and institutional barriers.

"Extension's close association with small farmers has further served to undermine its status during a period when governments have been generally preoccupied with industrialization" (Bennell, 1990, p. 143). Although

developing countries are concerned with building their private sectors, those who engage in technology transfer for private companies are still few in number. The bulk of technology transfer activities continues to occur through the extension system, where salaries and status are lower than for the private sector workers.

Characteristics of Small Farm System

Farmers with small amounts of arable land are referred to as smallholders. The small farm system is comprised of such smallholders, and it tends to be both a complex and diverse endeavor. Because the land areas are so small and the farmers understandably averse to risk, the production process by necessity includes mixed farming and multiple cropping. Incomes are annually nominal and seasonally variable. With few resources available, both land and family labor are used intensively. In addition, use of external inputs for small farm production are usually avoided. A system that exists at subsistence level, is subject to multiple stress factors, and continues over time without stability will eventually disintegrate (Kesseba, 1989).

"Small farmers often represent the largest group in the agricultural sector" (Kesseba, 1989, p. 200). Because the smallholders routinely use technology systems developed over centuries of adaptation, their traditional methods are well-suited to cultural and environmental conditions, are

inexpensive to implement, and appropriate. Additional factors contribute to the eventual breakdown of traditional small farm systems: increasing polarization "toward marginal agro-ecosystems in many marginal areas; demographic pressures and increased land fragmentation are causing smallholders to intensify resource use, which progressively depletes their resource base" (Kesseba, 1989, p. 200).

It would seem obvious that both research and extension could be vitally important to the survival of the small-farm sector, but both have failed to address smallholder issues successfully. Because research and extension are geared toward improvements both in products and in processes, they have neglected to consider the traditional system still in place and practiced by this significant portion of the agricultural sector. Smallholders, to realize their full production potential, must understand the relevance of new developments. Research and extension activities should address the "close association of widespread hunger and malnutrition with small subsistence farming systems" (Kesseba, 1989, p. 200).

Professionalization in Extension Service

The most common response by extension staff, however, has been to try improving their positions through professionalization. On the one hand, this has been justified in strictly functional and technical terms:

1. the increasing sophistication of farmers, the agricultural sector in general, and the corresponding need to upgrade extension workers' skills;

2. recent recognition of the importance of certain functions and activities (in particular, information integration and adaptive research) that to date have not been adequately performed by research or extension; and

3. the greater availability of skilled personnel.

On the other hand, professionalization is also a social process that enables extensionists to attempt increasing their market capacities and thus their status and incomes. If the attempt is successful it should, according to both Realistic Conflict Theory and Social Identity Theory, create the necessary socio-psychological conditions for more effective intergroup relationships.

The professionalization of extension has taken different forms according to local conditions. In many countries, the introduction of the Training and Visit (T&V) system marked the beginning of the process. The characteristics of the new professional group must be formalized, and the necessary government bodies must be convinced of the need for change. The impact on government funding, particularly where the technology transfer subsystem is large as in many Asian and some African countries, is a critical issue. Professionalizing extension will increase salary costs; hence, the pace of

professionalization in most countries will be slow (Bennell, 1990).

Agricultural Issues in Egypt

According to the World Bank (1982), several factors have constrained the productivity and development of the agricultural sector in Egypt: drainage and soil salinity problems that result from overuse of Aswan High Dam irrigation water, flaws in certain crop varieties, lack of high-quality seed, lack of adequately trained extension staff, and inefficient extension services. In addition, constraints include government-regulated cropping patterns and government marketing of important crops at low fixed prices, a lack of effective and coordinated use of organizations and institutions that were intended to serve the agricultural sector, and a lack of development in the use of technology needed to expanding agricultural production.

The government of Egypt has extracted from the agricultural sector an economic surplus and guaranteed an inexpensive food supply for the urban population. By controlling both the cropping and marketing patterns, certain important crops have yielded prices between 20% to 50% below free market prices. Because the government subsidized key farm inputs directly and the agricultural sector indirectly through unrecovered public sector costs,

the result has been diversion of subsidized fertilizers and a reduction in mandated plantings of controlled crops such as cotton, wheat, rice, onions, sesame, ground-nuts, broad-beans, and lentils. Livestock production is high by world standards because it is uncontrolled and provides high returns. Forages such as berseem, maize, and wheat straw are profitable and contribute to livestock density. According to the World Bank (1982), these practices over time are not in the country's long-term economic interest.

Egypt's agricultural sector generated a major share of government revenue and was a major source of foreign exchange until the early 1970s. Even though the agricultural sector was comparatively productive, it has been overwhelmed by increasing demands of agricultural products due to continuous population growth, rising incomes and living standards, and a population shift from rural to urban areas. Government subsidies and various types of rationing have created distorted demands for agricultural commodities. Subsidized wheat in unlimited quantities and rationing of other subsidized foods such as tea, sugar, cooking oil, rice, and meat have contributed to a leveling off in agricultural output (World Bank, 1983).

Egypt imports approximately 48% of food staples such as wheat, flour, cooking oil, sugar, beans, lentils, red meat, poultry meat, and dairy products and approximately 40% of its maize for animal feed. Between 1970 and 1981 exports of

agricultural commodities fluctuated from $512 million to $700 million, and imports have risen from $200 million to $4 billion (World Bank, 1983).

Fixed prices for some agricultural commodities and production regulation in Egypt have also produced market distortions. Production of regulated crops such as cotton, rice, and wheat has been adversely affected; production of unregulated crops such as vegetables, fruits, and berseem have been encouraged. According to the World Bank (1983), this imbalance has led farmers to continue growing low-yielding varieties of wheat that provide more straw than the newer, high-yielding varieties because straw is more valuable than the grain.

Subsidies, production regulations, and price imbalances resulted in two parallel markets: the free village market, subject to supply and demand, and the cooperative marketing system, wherein the state bank purchases crops on the government's behalf. Until recently, all cotton produced as well as the bulk of other regulated crops had to be sold by farmers only through the cooperative marketing system. Amounts that were over the quota and other crops could be sold in either market. Compulsory prices in the cooperative system were well below the average of those on the free market--20% to 50% lower (World Bank, 1982).

Ceiling prices were set by the government and applied without consideration for quality or condition of the

product (World Bank, 1982). For example, grading occurs only when supply is high and then only at the retail level. Price controls, therefore, combined with high import tariffs are the major limitations to more effective marketing in Egypt.

Direct involvement in various aspects of food production is the responsibility of the Ministries of Agriculture, Irrigation, Land Reclamation, and Supply. Other ministries and organizations also have indirect involvement in the agricultural sector. Because duties are often overlapping and uncoordinated, conflicting policies often result. Multiple organizations with multiple objectives compound the problem of ineffective planning for the sector. Even functions performed by existing organizations are often filled with problems. "Agricultural extension and research within the Ministry of Agriculture are highly centralized and inflexible and linkages between them are extremely limited" (World Bank, 1982, p. 3). Although extension agents are formally used in Egypt, they lack practical training, have inadequate transportation and housing in rural areas, and are poorly motivated due to low salaries and a low professional image.

After the land reform in 1952, agricultural cooperatives were created to facilitate the introduction of farm machinery into Egyptian agriculture. Instead of promoting mechanization, these cooperatives were fortunate

to afford one or two tractors. Further, many tractors and other machinery remained idle for months due to inadequate repair facilities and because experienced mechanics could earn 400% or 500% more in Arab oil states. The World Bank (1982) suggested that machinery may have been "monopolized by the relatively few well-to-do members such as cooperative directors and farmers with large holdings" (World Bank, 1982, p. 14).

Cooperatives functioned as governmental agencies by enforcing both cropping and marketing patterns instead of serving farmers' interests. Although cooperatives were established to provide farm machinery, credit, and consolidated block cultivation to new farmers resulting from the land reform, they were used by the Ministry of Agriculture as a major tool for implementing government agricultural policy and for performing many marketing functions (World Bank, 1982).

Currently, the only institutional source of credit available to small farmers in Egypt is the government-owned Principal Bank for Development and Agricultural Credit (PBDAC) (World Bank, 1982). Prior to formation of the PBDAC within the Ministry of Agriculture, farm lending was performed, very badly, by the cooperatives. Generally, the agricultural credit system under the PBDAC functions well in the areas of lending, marketing, and input provisions because it has established strict collateral conditions.

The PBDAC is now the major source of credit for farm machinery, livestock, and poultry production and maintains contact with nearly every farmer in Egypt through its extensive branch network.

One criticism of the agricultural credit system, however, is that services are not accessible to small farmers. Some important shortcomings are being remedied through the USAID Small Farmer Production Project on a limited basis as a pilot project (World Bank, 1982):

1. a shortage of funds (particularly foreign exchange) for the purchase of tractors, pumps and motors, farm equipment, planting orchards, land leveling and development, new farm enterprises, and agribusiness and industries;

2. a shortage of funds to meet expenses incurred in the production of non-controlled crops;

3. inadequate transportation, storage, and handling facilities that cause significant quantity and quality losses in the crop production inputs, a problem that prevents the supply of these inputs when and where needed;

4. unreliable and incomplete baseline data about costs of production, yields, farmgate prices, farm incomes, farm practices, and other related data needed for planning, budgeting, and qualitative attention to farmer needs; and

5. poor linkage between research, extension, PBDAC, and the farmer to ensure that cooperating farmers can benefit without undue delay from the use of adapted farm

management technology (World Bank, 1982, pp. 11-12).

Although several research organizations exist within the country, their activities have been largely isolated from and unadapted to actual farming conditions (World Bank, 1982). Because extension and agricultural research have not established any meaningful linkages, neither one is as effective as it could be. Joint field experiments would be beneficial to both researchers and extension service workers; both groups would better understand the problems farmers confront. "Without a close link with extension and feedback from the field, research becomes excessively academic and does not relate to farmers' real problems" (Benor et al., 1984, p. 20).

Agricultural Research Centers in Egypt

The Agricultural Research Center (ARC) in El Giza currently establishes research priorities nearly autonomously by developing the proposals and assigning them to the regional stations. Once results are achieved, the ARC completes whatever analysis is appropriate. In order to serve the specific needs of farmers, such procedures need revising. Effective research needs to identify priorities and design programs that will achieve them in a way that farmers will find usable. "At present, local research is under no pressure to produce readily usable advice to farmers because there is no effective extension delivery

system" (World Bank, 1982, p. 9). Until the linkage between research and extension becomes interactive, research will continue to lack "purpose and direction, and concerned scientists [will be] frustrated from lack of use of the research generated by them" (World Bank, 1982, p. 9).

New Strategies in Extension Service

According to Maalouf, Contado, and Adhikarya (1991), established and publicly supported agricultural extension organizations all over the world are attempting to reach greater numbers of farmers through the use of new strategies and methodologies: "increasing use of mass media and support communication techniques" as well as "distance education," "farmer leaders, model farmers, or contact farmers" (p. 61) even before the Training and Visit (T&V) system came into being. Some countries have even tried multiple channels and media, group instead of individual contact, and utilization of related services reaching out to learning groups.

Ratios of agents to farmers worldwide are still inadequate despite such innovative efforts: "1:325 for North America and 1:431 for Europe, but 1:1809 in Africa, 1:2661 in Asia, 1:2940 in Latin America, and 1:3499 in the Near East" (Maalouf, Contado, & Adhikarya, 1991, p. 61), according to a 1990 Food and Agricultural Organization (FAO) study. To make matters worse, extension workers spent only

74% of their time engaged in actual educational activities. Further, approximately 40% of the extension workers had a secondary education level or lower. The number of farmers who are not reached by extension workers remains large even though serious, and often creative efforts have been made. Unfortunately, most of those not yet reached are living at or near the subsistence level and are resource poor, small-scale farmers.

During the last decade several developing countries have tried increasing their overall budget allocations as a way of coping with inadequate resources for national extension services, with mixed results. Extension budgets, like most other budgets, are influenced by several factors: "the priority given to the agricultural sector, the percentage of the labor force employed in agriculture, and national policy on farmers' participation and contribution to food and agricultural production in the economy" (Maalouf, Contado, & Adhikarya, 1991, p. 61). In the 10 years between 1975 and 1985, the Food and Agriculture Organization (FAO) reported a worldwide decrease in the amount of investment made by central governments in the agricultural sector, particularly in Africa and the Near East.

Extension systems that are well managed and that have adequate and stable funding levels can generate high rates of return--a situation that is too often not descriptive of

extension services in developing countries. Generally, the effectiveness of an extension system declines quickly once allocations for operating costs fall below 30% of the total budget (Maalouf, Contado, & Adhikarya, 1991, p. 62). As a source of agricultural extension support, FAO data (1990) indicate that central government investment in the agricultural sector declined worldwide between 1975 and 1985. The drop in support was most dramatic in Africa and the Near East.

In addition to a decrease in central government investment in extension, extension expenditures in relation to national Agricultural Gross Domestic Product (AGDP) give further indications of support or non-support. In 1988 the worldwide proportion of extension expenditures in relation to national AGDP had decreased to 0.90% from 0.96% in 1980; in Africa, this decrease was higher than the worldwide average--1.17% in 1980 to 1.04% in 1988 (Maalouf, Contado, & Adhikarya, 1991).

The Global Consultation on Agricultural Extension sponsored by the Food and Agriculture Organization (FAO) asserted that developing countries were not allocating sufficient funds for extension workers to reach all groups of farmers. In particular, farmers who are resource poor and at the subsistence level did not receive adequate contact with the extension system. "Inadequate investment in public agricultural extension limits agricultural

development to the higher resource or commercial farmers who are more aggressive in accessing extension services" (Maalouf, Contado, & Adhikarya, 1991, pp. 61-62). When such conditions are present, the differential between rich and poor serves to emphasize poverty among farm households and, ultimately, leads to rapid urban migration.

Of the many initiatives that have been attempted in an effort to improve resource management (personnel, funding, facilities) and to promote both efficiency and coverage, one targeted the removal of non-extension functions from the workloads of extension agents. "In some countries doing so could increase extension coverage by at least 25 percent; about 26 percent of public extension time and resources are devoted to non-extension activities worldwide" (Maalouf, Contado, & Adhikarya, 1991, p. 62). The Training and Visit (T&V) approach, among others, advocates implementation of this initiative.

Another common and obvious initiative is establishing a working relationship between agricultural research and extension. This linkage between vital elements of the agricultural sector increases the rate of technology transfer and helps to "reduce extension expenditures on subject matter specialists and production of extension communications (Maalouf, Contado, & Adhikarya, 1991, p. 62).

The Crisis in Agricultural Extension Institutions

Crises within extension institutions also affected the nature of the relationship between agricultural extension and research. Over a period of several years that culminated in the mid-1970s, agricultural extension institutions in developing countries were declining rapidly (Kaimowitz, 1991). The withdrawal of American assistance in the early 1960s left several Latin American countries with extension systems that have not yet fully recovered from the loss of technology, financial support, and other resources.

Developing countries worldwide used extension institutions as a means for providing public employment for agricultural graduates. As employers, however, they did not have adequate resources to give these new employees transportation or sufficient operating funds. Also, as staffing levels grew, extension agencies became centralized and bureaucratized (Kaimowitz, 1991). As a further complication, financial support for extension tended to be cyclical. Healthy budgets generated additional staff, but reduced budgets often meant layoffs and smaller operating capabilities.

Extension, therefore, lost sight of its mission. "Low salaries, limited operating expenses, and an unclear mandate led to a general decline of morale within extension" (Kaimowitz, 1991, p. 104). Due to extension's comprehensive contact with rural areas, extension workers were asked to

perform increasingly political, administrative, and development roles that were often beyond or outside their original mandates.

Lack of morale and lack of motivation reduced the quality of extension work and contributed to very high turnover among the workers. Those workers who continued in extension typically had few employment opportunities elsewhere and reinforced the perception held by others that extension was subprofessional. "A downward cycle developed in which lack of resources led to low performance which, in turn, lowered extension's credibility, making it more difficult to obtain resources" (Kaimowitz, 1991, pp. 104-105).

With extension caught in a downward spiral, its relationship with research was negatively affected. Understandably, researchers viewed extension workers as ineffective and unsure of their mission. Researchers preferred not to work with extension workers under such circumstances. When cooperation was unavoidable, researchers generally treated extension workers as common laborers, and extension workers resented such treatment by researchers (Kaimowitz, 1991).

The Training and Visit Approach

With the crisis in extension needing positive resolution, several notable attempts were made that had

implications for linkage between extension and research. The Training and Visit (T&V) system promoted by the World Bank was one of the most important of these initiatives. Other initiatives included "the expansion of technology transfer activities within research institutions, the spread of non-governmental organizations involved in extension activities" (Kaimowitz, 1991, p. 105), and the trend toward donors financing extension-type projects outside the traditional framework of the extension system.

"Of all the attempts to rehabilitate extension, the T&V approach has undoubtedly been the most ambitious" (Kaimowitz, 1991, p. 105). From 1974 to 1984 the World Bank expended $2.3 billion on agricultural extension, most of which funded T&V system projects. By refocusing extension workers with few but specific responsibilities along with enhanced training, supervision, and resources, the T&V approach has attempted to strengthen extension productivity. "Extension agents are expected to follow a strict monthly calendar of visits and training sessions, with clear quantitative goals to be achieved" (Kaimowitz, 1991, p. 105).

Management according to the T&V system focuses on creating appropriate opportunities for collaboration between research and extension. The T&V approach also strives to adapt research to specific location-oriented needs. "The most important formal mechanisms are the regional joint

extension/research committees and workshops" (Kaimowitz, 1991, p. 105) in addition to emphasis on subject matter specialists acting as liaisons between extension and research and on subject matter specialists training field-level extension workers bi-weekly.

Regular interaction in the form of collaborative activities between researchers and extension workers offer positive opportunities for informal communication. "Joint field trials and joint diagnostic exercises are the two most important collaborative activities" (Kaimowitz, 1991, p. 109). In terms of collaboration on joint field trials, extension workers contribute by identifying participant farmers, monitoring the implementation processes of the trials, and collecting trial data. Although extension workers are not typically involved in the design of research projects or in actual data analysis, participation in the trials helps extension workers understand more comprehensively those technologies they will transfer to farmers.

If extension workers are merely used to perform menial labor, however, they will develop resentment toward researchers and the research. Professional extension workers prefer to be "fully briefed on the experiments, have their opinions listened to, have their participation acknowledged, be informed about the outcomes, and be relieved of other activities" (Kaimowitz, 1991, p. 109).

Researchers, on the other hand, question whether extension workers have sufficient training to assist in a meaningful way with the trials.

"Joint trials are likely to be more productive when a small group of extension workers are provided with training, work on a small number of sites, and are supported by research" (Kaimowitz, 1991, p. 109). Because researchers sometimes have concerns about the level of dedication extension workers have toward the trials, extension workers must be both ideologically and physically committed if they are to be permitted full participation.

Because extension workers have such widespread contact with local farmers, they can facilitate formal diagnostic exercises by "simply providing logistic support to full involvement at all stages of the process" (Kaimowitz, 1991, p. 110). Diagnostic exercises not only provide reliable information about farmers' needs and systems, but also serve as catalysts for forging "a strong team spirit between researchers and extension agents" (Kaimowitz, 1991, p. 110). For all the potential of diagnostic exercises for positive interaction, however, they "can take a long time and use many resources, with few results" (Kaimowitz, 1991, p. 110) if they are not managed well. "Training of extension workers can involve anything from a one-time discussion to a several-month course" (Kaimowitz, 1991, p. 110). To be valuable, however, it must be relevant to the

needs of extension workers. Training that focuses too much on theory without practical application, repeats information known by extension workers, or is presented without credibility has little educative worth. If researchers are to play a significant role in training extension workers, they should do so in a way that fosters communication and promotes mutual respect.

"The Training and Visit (T&V) approach has been promoted as a means by which the underperforming agricultural services of developing countries. . . could be revitalized" (Hulme, 1991, p. 219). Objectives of the T&V system are ambitious, indeed: to supervise previously ill-supervised workers, to motivate office-based "field" agents, to increase technical knowledge, and to standardize information dispersal according to a pre-set schedule. Although this system has had enormous impact on the agricultural sectors of developing countries for more than two decades, no consensus has yet been reached regarding either its appropriateness or effectiveness.

The full impact of the Training and Visit (T&V) approach on agricultural productivity remains to be seen, but T&V has certainly affected extension services in two important ways. First, the re-organizing of 60 government-operated extension services is based on the classical management design. "The concepts that have informed extension in earlier times--theories of social change,

communication, adult education--have become subordinate to principles emanating from 'scientific management'" (Hulme, 1991, p. 219).

The other, less obvious, impact of the T&V system is its role in support of the public sector as a significant element in agricultural development. Agricultural information, as a "public good," is basic to the T&V system. Such a premise, however, means meaningful public expenditures--no easy task in developing economies. In fact, the trend toward privatization during the 1980s, supported and promoted by the World Bank and the International Monetary Fund, ran counter to the principles of the T&V system. The T&V approach "opposed the trend and argued that the transmission of agricultural knowledge should focus on improving the effectiveness of public service rather than on transfer to the private sector or scaling down" (Hulme, 1991, p. 220).

Prior to the T&V approach, extension workers focused on strategies for adult learning and communication. Since implementation of the T&V system, extension workers focus on delivering services more efficiently. Through its emphasis on organization design and management processes, the T&V approach has provided many advantages for extension services. It cannot, however, resolve all of the problems that exist in extension. For example, the T&V approach is based to some degree on a machine model that does not

adequately respond to socio-economic or physical changes that affect the environment. It also does not address "situations where the tasks that workers undertake are complex or require individual analysis" (Hulme, 1991, p. 224). An additional concern is morale, particularly among lower-level workers, and the resultant levels of unrest experienced by the workers. Some of these weaknesses in the T&V approach have appeared in developing countries that implemented the approach. As practiced in India, the T&V approach produced some evidence of weaknesses, but the environment there was not entirely incompatible with the T&V approach. In some African countries, however, weaknesses in the premises on which the T&V system is based have received more exposure. One of the widespread criticisms of the T&V approach is what is perceived as a "big farmer" bias. The T&V system, the critics say, consolidates too much control toward large-scale operators. Such a tendency, according to the critics, results from accepting whatever socio-economic structures are in place when the T&V approach is implemented. Because these structures often include land ownership and control over markets, implementation of the T&V approach appears to reinforce the interests of large operators rather than promote broad-based rural development.

A study by Feder and Slade (1986) in North India provided quantitative evidence that "no shows" by village-level extension workers to small- and large-scale farmers

did not suggest a large-scale farmer bias great enough to merit significant concern. On the other hand, those who support the T&V approach have not shown quantitative evidence illustrating that contact farmers represent the general farming population as they should. In Thailand, for example, village headmen serve as contact farmers under a modification to the T&V approach.

A weakness common to numerous extension service approaches is the relatively low number of women participants. Little research has been completed to date that studied transfer of information between contact farmers (almost all male) and follower farmers (only a few of whom are female). Although the T&V system has not increased the number of female contact farmers, the system is undergoing substantial modification to serve women farmers more effectively (Weidemann, 1987).

A final structural issue relating to the T&V approach is that its emphasis on the strengthening of government services leads to a total neglect of the promotion and development of farmer organizations (Uphoff, 1986). Although it propounds a two-way flow of information between researchers, village extension workers, and farmers, it is based on the assumption that this can be achieved in meetings with loosely structured groups of farmers selected by village extension workers. The detailed study of Rogers, Eveland, and Bean (1976) found that user control over an

information service correlates positively with performance. From this perspective, the T&V system reinforces a one-way "transfer of technology" communication system and fails to promote farmer organizations that could tackle problems with other parts of the yield-improving package (viz. credit, input supply, marketing, need for a farmer price lobby).

Despite the reassuring assertions that "the cost of training and visit service is relatively small" (McNamara, 1977) and that "it takes no sophisticated analysis to see that professional extension is a very good buy indeed" (Benor, Harrison, & Baxter, 1984) there is little indication of how the additional recurrent costs of operating T&V extension services are to be met in the 1990s. Although the theory of T&V argued that the use of existing resources, and synergetic cost-savings through the merger of specialist services with the national or state extension service, would mean that the additional costs of reform would be low, this has clearly not been the case. Information about the scale of increase of recurrent costs cannot be identified from World Bank documents (Moore, 1984), but Howeel (1983) quotes John Russell, formerly of the Bank's Agricultural and Rural Development, as writing that "the costs of the training and visit extension system are significant, but in many cases are only 25 to 40 percent higher than the previous system."

Given the T&V premises that reformed systems are designed on the basis of a carefully estimated and

manageable extension worker-to-farm family ratio (village extension worker:farm family) and that the pre-existing ratios were often very low, then escalating costs were inevitable. The T&V reform of the extension service in Bauchi State, Nigeria (China & Langmead, 1984) led to the village extension worker-to-farm family ratio (VEW:farm family) increasing from 1:1,959 in 1982 to 1:1,153 in 1984 (and targeted for 1:1,000 in 1988). That represents an increase in village extension workers by 44% in two years. Roberts (1989) reported that in Thailand the number of village extension workers increased from 6,673 in 1977 (when the T&V approach was introduced) to 10,865 in 1982.

CHAPTER 3

METHODS OF RESEARCH

Population and Sample

The population for this study consisted of all agricultural extension workers in the nine extension districts of El Minia Governorate who worked with the Training and Visit (T&V) system through El Minia Agricultural Development Project in Egypt. El Minia Governorate has 350 villages along with a number of subsidiary villages and hamlets that are grouped into 66 local units. Each village has a cooperative/agricultural unit that has a director, an extension agent, and several, in some cases more than 10, supporting village technicians. Their work is supervised by an agricultural unit at the local unit level. Village technicians are each assigned a specific function (i.e., pest control, horticulture, animal production, mechanization, and seeds, etc.) in line with the divisions at the district level. These village technicians work, in effect, as general extension agents covering varied functions for groups of farmers in the village. Village technicians are agricultural secondary school graduates, whereas the supervisory officers at the village and local unit levels hold Bachelor of Science degree(s) in agriculture (World Bank, 1983).

Lists of all extension workers were collected from all nine districts (El Edwa, Maghagha, Beni Mazar, Matai,

Samalut, El Minia, Abu Qurqas, Mallawi, & Der Mouas). Six of the nine districts were selected by the simple random sampling technique. Those districts randomly selected were El Edwa, Maghagha, Matai, El Minia, Abu Qurqas, and Mallawi. The sample were all the extension workers who worked with the T&V system in these six districts. The total sample included 818 extension workers.

Questionnaire Design

A questionnaire (see Appendix A) was developed using existing literature and references during the visit of Dr. Michael K. Swan to Egypt in May, 1992. The questionnaire was developed to meet the objectives of the study. It was constructed in parts, with each part directly relating to an objective of the study. A number of meetings were held at Cairo University, at El Minia University, and at El Mansora University about the construction and content of the questionnaire. Those present included Dr. Michael K. Swan, Assistant Professor of Agricultural Education and Extension at North Dakota State University in the United States; Dr. Khiry H. Abu El Seoud, Professor of Agricultural Extension at Cairo University in Egypt; Dr. Yehia Aly Zaharan, Professor of Agricultural Extension at El Mansora University in Egypt; and Dr. Ahmed D. Zaitoun, Professor of Agricultural Economics at El Minia University in Egypt.

A group of extension workers who were not part of the selected sample population were interviewed by the investigator with a draft copy of the instrument. They served as a panel of experts to test the validity of the survey questionnaire. All valid inputs were incorporated into the final design of the questionnaire.

The final questionnaire included 30 questions to ask respondents to rate their perceptions of the Training and Visit (T&V) system on a Likert scale according to the current situation and an ideal situation. The perceived current situation related to what was currently happening through the application of the T&V system in El Minia Governorate. The perceived ideal situation related to what extension workers would like to see happen through the T&V system to better fit the local conditions in their jurisdiction areas.

The questionnaire was divided into four main sections. Section one consisted of items related to pertinent demographic information, training circulations before and through the I. F. A. D. project and the usage of audio-visual aids and extension methods. In this section, a four-point Likert-type scale with numerical values assigned for all possible responses as follows: never used, seldom used, average used, and always used responses. These responding levels were given numerical values of 1, 2, 3, and 4 respectively. Using these values, mean scores of 4 always

indicate the highest level of usage, while 1 always indicates the lowest level of usage.

The second section dealt with the concept of the Training and Visit (T&V) system. In this section, to determine the perceived current status and the perceived ideal status of the extension service T&V system by extension workers in El Minia Governorate in order to determine the perceived weak components in the application or in the system itself, a five-point Likert scale assigned the numerical values of 1, 2, 3, 4, and 5 for all responses as follows: strongly agree, moderately agree, neutral, moderately disagree, and strongly disagree. Using these values, mean scores of 1 always indicated the highest level of agreement, whereas 5 always indicated the lowest level of agreement. The essential job tasks of extension worker groups during field visits and training are summarized in this section.

The third section dealt with personal evaluations of the visits and training that were done by the respondents. Modified four- and five-point Likert scales were used in this section to measure respondents' degrees of satisfaction. To evaluate the field visits by the responding agricultural extension workers respondents selected their responses from a four-point Likert-type scale with numerical values assigned for all possible responses as follows: excellent, very good, good, and acceptable in

their responses. These responding levels were given numerical values of 1, 2, 3, and 4 respectively. To evaluate the length of field visits by the extension workers of each group in their working areas respondents selected their responses from a five-point Likert-type scale with numerical values assigned for all possible responses as follows: too long, long, just right, short, and too short in their responses. These responding levels were given numerical values of 1, 2, 3, 4, and 5 respectively. To evaluate the practical or theoretical training that they received to make successful field visits respondents selected their responses from a five-point Likert-type scale with numerical values assigned for all possible responses as follows: too much, much, some, little, and none. These responding levels were given numerical values of 1, 2, 3, 4, and 5 respectively. To evaluate the usefulness of their own field visits in increasing self-awareness of their professional tasks in the extension system respondents selected their responses from a five-point Likert-type scale with numerical values assigned for all possible responses as follows: very useful, useful, normal, limited use, and useless. These responding levels were given numerical values of 1, 2, 3, 4, and 5 respectively.

To evaluate the training time respondents selected their responses from a five-point Likert-type scale with numerical values assigned for all possible responses as

follows: too long, long, appropriate, short, and too short. These responding levels were given numerical values of 1, 2, 3, 4, and 5 respectively. To evaluate the usefulness of the training program regarding their own jobs by the extension workers of each group in their working areas respondents selected their responses from a four-point Likert-type scale with numerical values assigned for all possible responses as follows: very useful, quite useful, limited use, and useless in their responses. These responding levels were given numerical values of 1, 2, 3, and, 4 respectively. To evaluate the training program facilities respondents selected their responses from a five-point Likert-type scale with numerical values assigned for all possible responses as follows: excellent, very good, good, satisfied, and dissatisfied in their responses. These responding levels were given numerical values of 1, 2, 3, 4, and 5 respectively.

To measure attitudes and feelings of the extension workers toward their T&V training program respondents selected their responses from a five-point Likert-type scale with numerical values assigned for all possible responses as follows: strongly agree, moderately agree, neutral, moderately disagree, and strongly disagree in their responses. These responding levels were given numerical values of 1, 2, 3, 4, and 5 respectively. Using these values, mean scores of 1 always indicate the highest level

of consent, while 5 always indicates the lowest level of consent.

The fourth section dealt with evaluation of the fortnightly training sessions using a five-point Likert scale. Respondents selected their responses from a five-point Likert-type scale with numerical values assigned for all possible responses as follows: strongly agree, moderately agree, neutral, moderately disagree, and strongly disagree in their responses. These responding levels were given numerical values of 1, 2, 3, 4, and 5 respectively. Using these values, mean scores of 1 always indicate the highest level of consent, while 5 always indicates the lowest level of consent.

An appendix was created for those who participated in the monthly workshops: Subdivisional Extension officers (SDEOs) and Subject Matter Specialists (SMSs). A similar five-point Likert scale was used.

The main job tasks of Village Extension Workers (VEWs), Agricultural Extension Officers (AEOs), Subject Matter Specialists (SMSs) and Subdivisional Extension Officers (SDEOs) were collected by the investigator, who then divided these tasks into two main groups. The first group included the main job tasks related to field visits for each worker group. The second group included the main job tasks related to the training sessions, and monthly workshops.

Because there were two main tools for training (the fortnightly training sessions and the monthly workshops) and because of the differences between participants in both, the investigator included data from the monthly workshops separately in Appendix B.

For each rating scale mentioned, specific instructions and explanations were given on the questionnaire to aid the participants in better understanding the scales and procedures. The final questionnaire was printed on white bond paper in an effort to improve readability and increase the percentage of returned questionnaires.

Data Collection

The questionnaire was designed to meet the objectives of the study. It was constructed in parts, each part directly relating to an objective of the study. The questionnaire was reviewed and approved by the researcher's supervisory committee.

An introductory cover letter and one copy of the survey questionnaire were sent by the researcher's committee to the Ministry of Agriculture to obtain permission for collecting data from El Minia Governorate Extension System. Some meetings were held in the Office of the District Extension Officer in El Minia to arrange meetings with extension staff in the six subdivisions that were chosen. Telephone calls were made to Subdivisional Extension Officers (SDEOs) to

inform them of the meeting schedule in their subdivisions. Every SDEO informed his extension workers of the dates on which the researcher was to be in their subdivision.

In every subdivisional meeting the researcher explained the purpose of the study and the different parts of the questionnaire to the extension staff. The researcher supplied each participant an identified copy of the questionnaire. Within each subdivision there was a specific date for returning the questionnaire to the SDEO. This was initially done in July, 1993. In August, 1993, the percentage of returned surveys was different among the subdivisions. Some of them, like Mallawi, returned 100% of the surveys. In El Edwa, 55% were returned. Follow-up visits to each of the subdivisions were arranged by the researcher in order to complete the data collection. By the end of September, 1993, 570 of the 818 surveys had been returned. Of these 570 returned questionnaires, 70 were found to be incomplete and unusable for this study. The total returned and usable questionnaires for the study was 500 or 61.12%. Of the 500 total surveys returned and usable, 340 were from Village Extension Workers (VEWs), 121 were from Agricultural Extension Officers (AEOs), 33 were from Subject Matter Specialists (SMSs), and 6 were from Subdivisional Extension Officers (SDEOs). Tables (2-9) Appendix (C) contained characteristics of the respondents.

Treatment of Data

Responses for each questionnaire were compiled and tabulated using the mainframe computer at North Dakota State University and the SAS statistical analysis program. The data were presented in tables using frequency counts, percentages, mean scores, standard deviations, Chi-square test and F ratios. The independent variable chosen for this study was job classification, and the dependent variables were the responses to the perceptions of current and ideal program indicators. In order to apply Chi-square test in this study the numbers of SMSs and SDEOs were combined together and were treated as one group in some Tables in chapter 4 to meet the conditions of its application.

Null Hypothesis

There are no differences between extension groups and their perceptions toward the effectiveness of the Training and Visit (T&V) system.

CHAPTER 4

FINDINGS

This chapter presents identified aspects, such as job tasks of the respondents during field visits, fortnightly training sessions, and monthly workshops. This chapter also includes some measurements of attitudes and satisfaction. Throughout this chapter, agricultural extension worker groups are identified as follows: Village Extension Workers (VEWs), Agricultural Extension Officers (AEOs), Subject Matter Specialists (SMSs), and Subdivisional Extension Officers (SDEOs).

To answer research objectives identified in this study, we first identified what was being used within El Minia Governorate prior to the T&V system. The following findings were identified as bench-marks from which to begin this discussion concerning the usage of the present T&V system.

Table 10 summarizes the frequencies and percentages of Agricultural Extension Worker (AEW) participation in none, one or two training circulations (before and through the I.F.A.D. project). These data indicate that 74.6% of the sample did not participate in any training circulations before the project. Whereas these data indicate that 16.2% of the sample participated in only one training circulation, and 55.0% of the sample participated in two training circulations through the project.

Table 10

Frequencies and Percentages of AEW* Participation in Training Circulations**

Training circulation number	Before Frequency	Before %	Through Frequency	Through %
None	373	74.6	144	28.8
One training	60	12.0	81	16.2
Two training	67	13.4	275	55.0
Total	500	100.0	500	100.0

Source: Questionnaire.
* Agricultural Extension Worker.
** Before and Through the I.F.A.D. Project.

Table 11 summarizes the frequencies and percentages of agricultural extension worker groups (VEWs, AEOs, SMSs, and SDEOs) participation in none, one or two training circulations (before the I.F.A.D. project).

Table 11

Frequencies and Percentages of Individual EWG* Participation in Training Circulations**

Training circulation number	Extension worker groups: VEWs F.	VEWs %	AEOs F.	AEOs %	SMSs F.	SMSs %	SDEOs F.	SDEOs %
none	277	81.47	90	74.38	5	15.15	1	16.67
one	30	8.82	17	14.05	13	39.39	0	0.00
two	33	9.71	14	11.57	15	45.46	5	83.33
Total	340	100.00	121	100.0	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
** Before the I.F.A.D. Project.
CHI-SQUARE = 84.088, D.F. = 4, PROB. < 0.05

These data indicate that 8.82% of the VEWs, 14.05% of the AEOs, 39.39% of the SMSs, and 0.00% of the SDEOs participated in only one training circulation, whereas 9.71% of the VEWs, 11.57% of the AEOs, 45.46% of the SMSs, and 83.33% of the SDEOs participated in two training circulations. In order to examine the differences between different extension worker groups in their participation in the training circulations Chi-square test was applied . The results of this test showed significant differences between extension worker groups in their participation in training circulations.

Table 12 summarizes the frequencies and percentages of agricultural extension worker group (VEWs, AEOs, SMSs, and SDEOs) participation in none, one or two training circulations through the I.F.A.D. project.

Table 12

Frequencies and Percentages of Individual EWG* Participation in Training Circulations**

Training circulations number	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
none	106	31.18	35	28.93	2	6.06	1	16.67
one	61	17.94	19	15.70	1	3.03	0	0.00
two	173	50.88	67	55.37	30	90.91	5	83.33
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
** Through the I.F.A.D. Project.
CHI-SQUARE = 21.442, D.F. = 4, PROB. < 0.05

These data indicate that 17.94% of the VEWs, 15.70% of the AEOs, 3.03% of the SMSs, and 0.00% of the SDEOs participated in only one training circulation, whereas 50.88% of the VEWs, 55.37% of the AEOs, 90.91% of the SMSs, and 83.33% of the SDEOs participated in two training circulations. The results of Chi-square test showed significant differences between extension worker groups in their participation in training circulations.

Table 13 reports the frequencies and percentages of training circulations offered to agricultural extension workers by the extension service (before and through the I.F.A.D. project).

These training circulations are rank ordered before the project by frequency of offering as identified by respondents: plant production, plant protection, animal production, horticulture, agricultural extension, agricultural engineering, agricultural economics, food industry, and soil science. Whereas these training circulations are rank ordered through the project by frequency of offering identified by respondents in the following agricultural specialty areas: plant production, animal production, horticulture, agricultural extension, plant protection, food industry, agricultural economics, agricultural engineering, and soil science.

Table 14 summarizes responses of agricultural extension workers who participated in one or two training circulations

(before and through the I.F.A.D. project) regarding their perception of the training style. This table indicates that 59.28% of the sample who participated the training circulations before the project determined that the training style was theoretical and practical. Whereas this table indicates that 70.21% of the sample who participated in the training circulations through the project declared that the training style was theoretical and practical.

Table 13

Frequency of Specific Training Circulations Offered to AEWs* by the Extension Service**

Training circulation	Before		Through	
	Frequency	%	Frequency	%
Plant production	58	29.90	273	43.27
Plant protection	28	14.41	56	8.88
Animal production	26	13.40	86	13.63
Horticulture	19	9.79	84	13.30
Agricultural extension	19	9.79	80	12.68
Agricultural engineering	15	7.73	13	2.05
Agricultural economics	12	6.19	15	2.38
Food industry	9	4.64	16	2.54
Soil science	8	4.13	8	1.27

Source: Questionnaire.
* Agricultural Extension Workers.
** Before and Through the I.F.A.D. Project.

Table 15 summarizes the frequencies and percentages of the training circulation style as identified by individual extension worker groups (VEWs, AEOs, SMSs, and SDEOs) who

participated in one or two training circulations (before the I.F.A.D. project). This table indicates that 51.02% of the VEWs, 62.22% of the AEOs, 70.73% of the SMSs, and 80.00% of the SDEOs who participated in the training circulations determined that the training style was theoretical and practical. The results of Chi-square test showed no significant differences between extension worker groups in their perception of the training circulations style.

Table 14

Training Circulation Style Identified by Participants*

Training style	Before Frequency	Before %	Through Frequency	Through %
Theoretical & practical	115	59.28	443	70.21
Theoretical	66	34.02	171	27.10
Practical	13	6.70	17	2.69

Source: Questionnaire.
* Before and Through the I.F.A.D. Project.

Table 15

Training Circulation Style Identified by Individual EWGs* **

Training circulation style	Extension worker groups: VEWs F.	VEWs %	AEOs F.	AEOs %	SMSs F.	SMSs %	SDEOs F.	SDEOs %
Theoretical & practical	50	51.02	28	62.22	29	70.73	8	80.00
Theoretical	39	39.80	14	31.11	12	29.27	1	10.00
Practical	9	9.18	3	6.67	0	0.00	1	10.00

Source: Questionnaire.
* Extension Worker Groups.
** Before the I.F.A.D. Project.
CHI-SQUARE = 7.484, D.F. = 4, PROB. > 0.05

Table 16 summarizes the frequencies and percentages of the training circulation style as identified by individual extension worker groups (VEWs, AEOs, SMSs, and SDEOs) who participated in one or more training circulations through the I.F.A.D. project. This table indicates that 69.04% of the VEWs, 68.63% of the AEOs, 78.69% of the SMSs, and 90.00% of the SDEOs determined that the training style was theoretical and practical. The results of Chi-square test showed no significant differences between extension worker groups in their perception of the training circulations style.

Table 16

Training Circulation Style Identified by Individual EWGs* **

Training circulation style	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Theoretical & practical	281	69.04	105	68.63	48	78.69	9	90.00
Theoretical	114	28.01	44	28.76	13	21.31	0	0.00
Practical	12	2.95	4	2.61	0	0.00	1	10.00

Source: Questionnaire.
* Extension Worker Groups.
** Through the I.F.A.D. Project.
CHI-SQUARE = 4.000, D.F. = 4, PROB. > 0.05

Table 17 reports the frequencies, percentages, and usage of audio-visual aids by the extension workers throughout the T&V system. According to the table, audio-visual aids are specified as the following: blackboard, poster, loud-speaker, and cinema. The majority of

respondents reported that they "always or average used" blackboard and posters, whereas most respondents reported that they "never or seldom used" loud-speakers and cinema.

Table 17

Frequency, Percentages, and Usage of Audio-Visual Aids*

Audio-visual aids	Usage	Frequency	%
Blackboard	never	49	9.8
	seldom	54	10.8
	average	145	29.0
	always	252	50.4
Poster	never	61	12.2
	seldom	90	18.0
	average	170	34.0
	always	179	35.8
Loud-speaker	never	144	28.8
	seldom	131	26.2
	average	135	27.0
	always	90	18.0
Cinema	never	329	65.8
	seldom	95	19.0
	average	57	11.4
	always	19	3.8

Source: Questionnaire.
* by Extension Workers in Delivering Extension Messages to Village Farmers.

Table 18 summarizes frequencies, percentages, and usage of audio-visual aids by extension worker groups during the delivery of the extension messages to village farmers. Of the four categories relating to usage of the aids, 45.59% of the VEWs, 52.89% of the AEOs, 84.85% of the SMSs, and 66.67% of the SDEOs always used the blackboard. The second highest percentage was in the usage of posters. The results of Chi-square test showed non significant differences between

extension worker groups in their usage of posters, whereas the results showed significant differences between extension worker groups in their usage of the other aids.

Table 18

Frequencies, Percentages, and Usage of Audio-Visual Aids*

Audio-visual aids	Usage	Extension worker groups: VEWs F.	VEWs %	AEOs F.	AEOs %	SMSs F.	SMSs %	SDEOs F.	SDEOs %
Blackboard	never	39	11.47	10	8.26	0	0.00	1	16.67
	seldom	34	10.00	18	14.88	2	6.06	0	0.00
	average	112	32.94	29	23.97	3	9.09	1	16.67
	always	155	45.59	64	52.89	28	84.85	4	66.67
CHI-SQUARE = 23,580		D.F. = 6,				PROB. < 0.05			
Posters	never	50	14.71	9	7.44	2	6.06	0	0.00
	seldom	60	17.65	27	22.31	2	6.06	1	16.67
	average	115	33.82	38	31.40	14	42.42	3	50.00
	always	115	33.82	47	38.84	15	45.45	2	33.33
CHI-SQUARE = 11.817,		D.F. = 6,				PROB. > 0.05			
Loud-speaker	never	111	32.65	30	24.79	1	3.03	1	16.67
	seldom	93	27.35	33	27.27	5	15.15	0	0.00
	average	85	25.00	38	31.40	12	36.36	0	0.00
	always	51	15.00	20	16.53	15	45.45	5	83.33
CHI SQUARE = 40.092		D.F. = 6,				PROB. < 0.05			
Cinema	never	241	70.88	76	62.81	10	30.30	3	50.00
	seldom	60	17.65	26	21.49	8	24.24	1	16.67
	average	28	8.24	16	13.22	11	33.33	2	33.33
	always	11	3.24	3	2.48	4	12.12	0	0.00
CHI-SQUARE = 33.928,		D.F. = 6,				PROB. < 0.05			

Source: Questionnaire.
* by Extension Worker Groups in Delivering Extension Messages to Village Farmers.

Table 19 summarizes the frequencies, percentages, and usage of extension methods by extension workers through the T&V system. According to the table, extension methods are

identified as follows: extension assemblies, general extension meetings, extension fields, extension pamphlet, extension lectures, field days, and demonstrated field trials. The majority of respondents reported that they "always used" each of the identified extension methods except for field days and demonstrated field trials where the majority reported that they "always or average used"

Table 20 summarizes frequencies, percentages, and usage of the extension methods that were used by the extension worker groups. Of the four categories relating to the usage of the extension methods, 62.06% of the VEWs, 64.46% of the AEOs, 84.85% of the SMSs, and 100.00% of the SDEOs always used the extension assemblies. The second highest percentage was in the usage of the general extension meetings. The results of Chi-square test showed no significant differences between extension worker groups in their usage of extension assemblies, general extension meetings and extension fields, whereas the results showed significant differences between extension worker groups in their usage of the other extension methods.

Table 21 summarizes the average number of the extension worker visits to farmers per week. According to the table, 12% of the respondents made an average of five visits per week to the farmers, and 29.2% of the respondents made an average of three visits per week.

Table 19

Frequency, Percentages, and Usage of Extension Methods*

Extension methods	Usage	Frequency	%
Extension assemblies	never	11	2.2
	seldom	32	6.4
	average	134	26.8
	always	323	64.6
General extension meetings	never	20	4.0
	seldom	24	4.8
	average	145	29.0
	always	311	62.2
Extension fields	never	13	2.6
	seldom	40	8.0
	average	148	29.6
	always	299	59.8
Extension pamphlet	never	24	4.8
	seldom	51	10.2
	average	149	29.8
	always	276	55.2
Extension lectures	never	33	6.6
	seldom	50	10.0
	average	147	29.4
	always	270	54.0
Field days	never	27	5.4
	seldom	89	17.8
	average	145	29.0
	always	239	47.8
Demonstrated field trials	never	133	26.6
	seldom	98	19.6
	average	133	26.6
	always	136	27.2

Source: Questionnaire.
* by Extension Workers in Diffusing Extension Messages to Village Farmers.

Table 22 summarizes the average number of visits to farmers per week by extension worker groups. According to the table, 30.00% of the VEWs, 28.10% of the AEOs, 24.24% of

the SMSs, and 33.33% of the SDEOs made an average of three visits per week to village farmers. The results of Chi-square test showed no significant differences between extension worker groups in their average number of visits to farmers per week.

Table 20

Frequencies, Percentages, and Usage of Extension Methods*

Extension methods	Usage	Extension worker groups: VEWs F.	VEWs %	AEOs F.	AEOs %	SMSs F.	SMSs %	SDEOs F.	SDEOs %
Extension assemblies	never	9	2.65	2	1.65	0	0.00	0	0.00
	seldom	26	7.65	6	4.96	0	0.00	0	0.00
	average	94	27.65	35	28.93	5	15.15	0	0.00
	always	211	62.06	78	64.46	28	84.85	6	100.00
CHI-SQUARE =	11.604,	D.F. = 6,				PROB. > 0.05			
General extension meetings	never	15	4.41	3	2.48	1	3.03	1	16.67
	seldom	18	5.29	5	4.13	1	3.03	0	0.00
	average	104	30.59	35	28.93	6	18.18	0	0.00
	always	203	59.71	78	64.46	25	75.76	5	83.33
CHI-SQUARE =	6.247,	D.F. = 6,				PROB. > 0.05			
Extension fields	never	10	2.94	3	2.48	0	0.00	0	0.00
	seldom	25	7.35	13	10.75	2	6.06	0	0.00
	average	104	30.59	38	31.40	6	18.18	0	0.00
	always	201	59.12	67	55.37	25	75.76	6	100.00
CHI-SQUARE =	8.750,	D.F. = 6,				PROB. > 0.05			
Extension pamphlet	never	21	6.18	3	2.48	0	0.00	0	0.00
	seldom	39	11.47	11	9.09	1	3.03	0	0.00
	average	103	30.29	38	31.41	8	24.24	0	0.00
	always	177	52.06	69	57.02	24	72.73	6	100.00
CHI-SQUARE =	12.761,	D.F. = 6,				PROB. < 0.05			
Extension lectures	never	27	7.94	6	4.96	0	0.00	0	0.00
	seldom	35	10.29	14	11.57	1	3.03	0	0.00
	average	99	29.12	41	33.88	7	21.21	0	0.00
	always	179	52.65	60	49.59	25	75.76	6	100.00
CHI=SQUARE =	14.298,	D.F. = 6,				PROB. < 0.05			

Extension methods	Usage	Extension worker groups: VEWs F.	VEWs %	AEOs F.	AEOs %	SMSs F.	SMSs %	SDEOs F.	SDEOs %
Field days	never	21	6.18	6	4.96	0	0.00	0	0.00
	seldom	66	19.41	19	15.70	3	9.09	0	0.00
	average	99	29.12	40	33.06	6	18.18	0	0.00
	always	154	45.29	56	46.28	24	72.73	6	100.00
CHI-SQUARE =	16.158,	D.F. =6,				PROB. < 0.05			
Demonstrated field trials	never	95	27.94	36	29.75	2	6.06	0	0.00
	seldom	66	19.41	29	23.97	3	9.09	1	16.67
	average	92	27.06	25	20.66	13	39.39	2	33.33
	always	87	25.59	31	25.62	15	45.45	3	50.00
CHI-SQUARE =	19.624,	D.F. = 6,				PROB. < 0.05			

Source: Questionnaire.
* by Extension Worker Groups in Diffusing Extension Messages to Village Farmers.

Table 21

Average Number of Extension Worker Visits per Week

Visits per week	Frequency	%
1	18	3.6
2	119	23.8
3	146	29.2
4	104	20.8
5	60	12.0
6	53	10.6
Total	500	100.0

Source: Questionnaire.

Table 23 summarizes the average number of hours spent during each visit by extension workers. It was reported that 43.4% of responding extension workers spent approximately two hours per visit.

Table 22

Average Number of Extension Worker Visits per Week in Each Group

Visits per week	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
1	14	4.12	1	0.83	3	9.09	0	0.00
2	84	24.71	30	24.79	5	15.15	0	0.00
3	102	30.00	34	28.10	8	24.24	2	33.33
4	64	18.82	28	23.14	10	30.30	2	33.33
5	43	12.65	15	12.40	2	6.06	0	0.00
6	33	9.71	13	10.74	5	15.15	2	33.33
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
CHI-SQUARE = 13.825, D.F. = 10, PROB. > 0.05

Table 23

Average Number of Hours Spent per Visit by Sample Members

Hours per visit	Frequency	%
1	159	31.8
2	217	43.4
3	77	15.4
4	28	5.6
5	12	2.4
6	7	1.4
Total	500	100.0

Source: Questionnaire.

Table 24 summarizes the average number of hours spent during each visit by extension worker groups. It was

reported that 42.94% of the VEWs, 45.45% of the AEOs, 39.39% of the SMSs, and 50.00% of the SDEOs spent an average of two hours per visit. The results of Chi-square test showed no significant differences between extension worker groups in their average number of hours spent during each visit.

Table 24

Average Number of Hours Spent per Visit by EWGs* in the Sample.

Hours per visit	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
1	114	33.53	33	27.27	11	33.33	1	16.67
2	146	42.94	55	45.45	13	39.39	3	50.00
3	53	15.59	18	14.88	5	15.15	1	16.67
4	16	4.71	9	7.44	3	9.09	0	0.00
5	6	1.76	5	4.13	1	3.03	0	0.00
6	5	1.18	1	0.83	0	0.00	1	16.67
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Groups.
CHI-SQUARE = 5.610, D.F. = 10, PROB. > 0.05

Table 25 summarizes the frequencies and percentages of the responding EWGs regarding whether their scheduled visits were announced and known by the farmers in their areas of jurisdiction. According to the table, 83.24% of the VEWs, 81.24% of the AEOs, 81.82% of the SMSs, and 66.67% of the SDEOs scheduled visits were announced and known by the farmers in their areas of jurisdiction. The results of Chi-square test showed no significant differences between

extension worker groups with the announcement and knowing of their scheduled visits by the farmers in their areas of jurisdiction.

Table 25

Frequencies and Percentages of EWGs* Whose Scheduled Visits Were Announced and Known**

Scheduled visits	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Announced	283	83.24	99	81.24	27	81.82	4	66.67
Unannounced	57	16.76	22	18.18	6	18.18	2	33.33
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Groups.
** to the Farmers in Their Areas of Jurisdiction.
CHI-SQUARE = 0.410, D.F. = 2, PROB. > 0.05

Table 26 summarizes the frequencies and percentages of the responding EWGs regarding whether they were devoted to their educational extension work through the T&V system. According to the table, 41.47% of the VEWs, 42.15% of the AEOs, 66.67% of the SMSs, and 83.33% of the SDEOs reported that they were devoted to their educational extension work through the T&V system. The results of Chi-square test showed significant differences between extension worker groups with the devotion of their educational extension work through the T&V system.

Table 26
Frequencies and Percentages of EWG* Devotion to Their Educational Extension Work

Self-reported level of devotion	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Devoted	141	41.47	51	42.15	22	66.67	5	83.33
Not devoted	199	58.53	70	57.85	11	33.33	1	16.67
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 11.130, D.F. = 2, PROB. < 0.05

The first and second objectives sought to determine the perceived current status and the perceived ideal status of the extension service T&V system by extension workers in El Minia Governorate in order to determine the perceived weak components in the application or in the system itself. The attitudes of the extension workers in each group toward their job tasks during field visits are summarized in this part of Chapter 4. The tables are organized to reflect the increasing rank order of responses.

Field Visits

Data pertaining to the first two objectives during field visits are summarized in Tables 27-30. Mean scores, standard deviations, and F ratios were used in the presentation of these data. Table 27 summarizes the responses of the VEWs toward perceived job tasks during field visits in both current and ideal situations. As shown

in the table, there were significant differences between perceptions of current job tasks and those perceived to be ideal for all but one of the 25 identified job tasks.

Table 27

VEW* Perceptions Toward Job Tasks During Field Visits, Current and Ideal

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
VEW teaches and explains production recommendations to his farmers.	1.21	0.51	1.11	0.37	8.83#
VEW encourages his farmers to try and adopt production recommendations.	1.23	0.61	1.14	0.48	4.96#
VEW circles are contiguous, compact, and well-known.	1.25	0.55	1.08	0.35	19.1#
Farmer groups inside VEW's circles are well-known and fixed.	1.26	0.52	1.12	0.43	17.7#
Extension workers evaluate the influence of field visits upon farmer receptiveness toward extension recommendations.	1.26	0.57	1.15	0.45	7.65#
VEW doesn't ignore the ordinary farmers.	1.27	0.64	1.12	0.40	13.0#
VEW advises farmers in order to solve simple field problems.	1.28	0.60	1.11	0.38	18.6#
VEW & AEO record farmers' reactions toward production recommendations.	1.28	0.63	1.12	0.42	17.9#
Extension workers assist farmers in solving farmer problems connected with application of production recommendations.	1.29	0.54	1.15	0.40	17.2#

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
VEW provides farmers with the necessary skills to carry out production recommendations.	1.29	0.59	1.13	0.41	20.9#
VEW & AEO are concerned recording field problems.	1.30	0.58	1.12	0.42	21.6#
VEW can cover his circle completely during 2 weeks.	1.32	0.67	1.18	0.52	9.08#
VEW resides within or near his circle.	1.34	0.71	1.15	0.51	15.2#
Afternoon or evening meetings with all farmers support the influence of field visits.	1.34	0.73	1.21	0.61	6.36#
Complicated field problems are passed to researchers and suggestions relayed to farmers.	1.36	0.68	1.14	0.46	24.1#
VEW & AEO participate in conducting and holding field days in their circles.	1.36	0.69	1.14	0.37	26.3#
Extension workers know the reasons for farmer rejection of production recommendations.	1.36	0.75	1.22	0.58	7.41#
VEW & AEO conduct farm trials on farmers' fields.	1.37	0.71	1.16	0.50	19.3#
VEW focuses on contact farmers.	1.43	0.87	1.31	0.83	3.22#
AEO & VEW present suggestions for adjusting production recommendations to fit environmental conditions (land, labor, financial resources).	1.46	0.85	1.17	0.44	28.1#

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
Visits by extension workers to farmers were regular and scheduled.	1.55	0.76	1.27	0.56	33.8#
Extension system ensures that production requirements are adequate for applying production recommendations.	1.68	1.00	1.33	0.81	25.7#
All farmers (contact and other) knew the appointed times of the extension workers visits.	1.73	0.99	1.29	0.56	52.1#
Contact farmers are selected based on their acquaintance with VEW.	2.04	1.47	2.01	1.59	0.05
Contact farmers within farmer groups are changed continuously.	2.07	1.29	1.78	1.29	7.57#

Source: Questionnaire.
significant difference.
* Village Extension Worker.

Table 28 summarizes the responses of the AEOs toward perceived job tasks during field visits in both current and ideal situations. As shown in the table, there were significant differences between perceptions of current job tasks and those perceived to be ideal for all 18 of the identified job tasks.

Table 28

AEO* Perceptions Toward Job Tasks During Field Visits, Current and Ideal

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
AEO ensures that recommendations are well understood by VEWs.	1.22	0.59	1.02	0.18	12.6#
Extension workers evaluate the influence of field visits on farmer receptiveness toward extension recommendations.	1.31	0.61	1.11	0.36	9.28#
VEWs & AEOs participate in conducting and holding field days in their circle.	1.34	0.70	1.10	0.44	9.94#
Extension workers assist farmers in solving problems connected with application of production recommendations.	1.35	0.56	1.15	0.38	10.3#
Extension workers know the reasons for farmer rejection of production recommendations.	1.36	0.71	1.11	0.32	11.8#
VEWs & AEOs record farmers' reactions toward production recommendations.	1.36	0:75	1.07	0.25	15.6#
AEO field visits aimed at increasing effectiveness of VEWs wherever possible.	1.39	0.77	1.16	0.53	6.43#
AEOs ascertain that VEW field visits were regular during their field visits.	1.40	0.63	1.16	0.46	11.2#
VEWs & AEOs are concerned with recording field problems.	1.40	0.74	1.11	0.34	15.5#
AEOs record the farm activities during their field visits.	1.44	0.76	1.13	0.38	14.1#
Afternoon or evening meetings with all farmers support the influence of field visits.	1.45	0.72	1.20	0.48	9.99#

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
Complicated field problems are passed to researchers and the suggestions are relayed to farmers.	1.45	0.83	1.16	0.52	10.5#
VEWs & AEOs conduct farm trials on farmers' fields.	1.46	0.79	1.21	0.58	7.83#
AEOs & VEWs present suggestions for adjusting production recommendations to fit environmental circumstances (land, labor, financial resources).	1.53	0.79	1.21	0.51	12.7#
AEOs determine reasons for adoption or rejection of production recommendations by farmers.	1.54	0.81	1.25	0.57	10.3#
AEOs organize field visits for SMSs and researchers in case of urgent problems or decrease the adoption rates of farmers to recommendations.	1.60	0.93	1.20	0.50	18.4#
Visits by extension workers to farmers were regular and scheduled.	1.65	0.72	1.31	0.66	12.9#
Extension system ensures that production requirements are adequate for applying production recommendation.	1.84	1.04	1.46	0.92	9.63#

Source: Questionnaire.
significant difference.
* Agricultural Extension Officer.

Table 29 summarizes the responses of the SMSs toward perceived job tasks during field visits in both current and ideal situations. As shown in the table, there were significant differences between perceptions of current job

tasks and those perceived to be ideal for 12 of the 15 identified job tasks.

Table 29

SMS* Perceptions Toward Job Tasks During Field Visits, Current and Ideal

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
SMSs follow local farm conditions that require discussion with research staff.	1.23	0.49	1.00	0.00	7.70#
SMSs ascertain farmer adoption rates of production recommendations.	1.23	0.55	1.05	0.23	2.91
SMSs are continuously looking for practices and recommendations effects.	1.23	0.55	1.08	0.37	1.62
Extension workers assist farmers in solving problems connected with application of production recommendations.	1.26	0.52	1.11	0.32	2.01
SMSs check VEW recommendations to farmers for appropriateness.	1.26	0.56	1.00	0.00	7.45#
SMSs ensure that extension messages reach farmers in a timely, profitable, and suitable way.	1.26	0.63	1.02	0.16	4.58#
Extension workers know the reasons for farmer rejection of production recommendations.	1.26	0.66	1.00	0.00	5.40#
SMSs follow up on field problems reported to them by the extension staff, by farmers or that they themselves discover.	1.29	0.77	1.00	0.00	5.10#

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
Complicated field problems are passed to researchers, and the suggestions are relayed to farmers.	1.41	0.78	1.02	0.16	7.78#
Extension workers evaluate the influence of field visits on farmer receptiveness toward extension recommendations.	1.43	0.87	1.02	0.16	6.55#
SMSs know farmer reactions and responses toward production recommendations.	1.47	0.94	1.00	0.00	8.79#
Afternoon or evening meetings with all farmers support the influence of field visits.	1.67	0.99	1.26	0.75	3.29#
Visits by extension workers to farmers were regular and scheduled.	1.76	0.89	1.29	0.64	5.59#
Training officer identifies training needs of the VEWs & AEOs.	1.97	1.29	1.26	0.75	7.16#
Extension system ensures that production requirements are adequate for applying production recommendations.	2.23	1.31	1.38	0.69	10.6#

Source: Questionnaire.
significant difference.
* Subject Matter Specialist.

Table 30 summarizes the responses of the SDEOs toward perceived job tasks during field visits in both current and ideal situations. As shown in the table, there were no significant differences between any perceptions of current job tasks and those perceived to be ideal for the 15 identified job tasks.

Table 30

SDEO* Perceptions Toward Job Tasks During Field Visits, Current and Ideal

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
SDEOs ensure that their VEWs visit farmer groups regularly.	1.00	0.00	1.00	0.00	9999
Extension workers know the reasons for farmer rejection of production recommendations.	1.00	0.00	1.00	0.00	9999
During field visits, SDEOs ensure that the extension recommendations are known, understood, and being adopted by farmers.	1.00	0.00	1.00	0.00	9999
SDEOs review/examine VEW & AEO diaries and reports during their field visits.	1.00	0.00	1.00	0.00	9999
Complicated field problems are passed to researchers, and suggestions are relayed to farmers.	1.00	0.00	1.33	0.82	1.00
SDEOs concentrate on farmer adoption rates as an indicator of training efficiency by extension workers.	1.17	0.41	1.00	0.00	1.00
SDEOs prepare exhaustive reports about the field problems and the local situations during their field visits in order to develop production recommendations.	1.17	0.41	1.17	0.41	0.00
SDEOs review whether AEO ranges and VEW circles have been appropriately formed.	1.17	0.41	1.17	0.41	0.00
Extension workers assist farmers in solving problems connected with application of production recommendations.	1.17	0.41	1.33	0.52	0.38

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
Extension workers evaluate the influence of field visits on farmer receptiveness toward extension recommendations.	1.33	0.52	1.17	0.41	0.38
SDEOs ensure that farmers farmers know their VEWs and their scheduled visits.	1.33	0.82	1.33	0.82	0.00
SDEOs ensure that contact farmers have been properly selected.	1.33	0.82	1.33	0.82	0.00
Visits by extension workers to farmers were regular and scheduled.	1.50	0.55	1.50	0.84	0.00
Extension system ensures that production requirements are adequate for applying production recommendations.	1.50	0.55	1.33	0.52	0.29
Afternoon or evening meetings with all farmers support the influence of field visits.	1.50	0.84	1.33	0.82	0.12

Source: Questionnaire.
Significant differences.
* Subdivisional Extension Officer.

Training

The attitudes of the extension workers in each group toward their job tasks during the training in both current and ideal situations are summarized in this part of Chapter 4. Data pertaining to the first two objectives during training are summarized in Tables 31-34. Mean scores, standard deviations, and F ratios were used in the

presentation of these data. The tables are organized to reflect the increasing rank order of responses.

Table 31 summarizes the responses of the VEWs toward perceived job tasks during training in both current and ideal situations. As shown in the table, there were significant differences between perceptions of current job tasks and those perceived to be ideal for all five identified job tasks.

Table 31

VEW* Perceptions Toward Job Tasks During Training, Current and Ideal

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
Fortnightly training sessions upgrade and update professional skills of AEOs & VEWs and give them new knowledge.	1.25	0.58	1.06	0.33	24.6#
Special short courses which received by VEWs & AEOs upgrade their skills and increase their knowledge.	1.26	0.54	1.11	0.40	14.2#
Reports of VEWs & AEOs must deal with field situations, unseasonable problems, and adoption rates.	1.27	0.56	1.11	0.43	18.1#
AEO & VEW review of field problems in their circles serve to develop and modify production recommendations during the training sessions.	1.28	0.58	1.11	0.36	25.3#

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
VEWs & AEOs participate regularly in the fortnightly training sessions to be familiar with production recommendations and impact points.	1.33	0.70	1.11	0.40	24.3#

Source: Questionnaire.
significant difference.
* Village Extension Worker.

Table 32 summarizes the responses of the AEOs toward perceived job tasks during training in both current and ideal situations. As shown in the table, there were significant differences between perceptions of current job tasks and those perceived to be ideal for all eight identified job tasks.

Table 32

AEO* Perceptions Toward Job Tasks During Training, Current and Ideal

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
AEOs assist in increasing the efficiency and competence of their VEWs in transferring recommendations to farmers.	1.29	0.70	1.07	0.27	10.3#
AEO & VEW review of field problems in their circles serve to develop and modify production recommendations during training sessions.	1.30	0.64	1.08	0.33	9.48#
Fortnightly training sessions upgrade and update professional skills of AEOs & VEWs and give them new knowledge.	1.30	0.73	1.10	0.45	6.47#

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
Special short courses which received by VEWs & AEOs upgrade their skills and increase their knowledge.	1.31	0.66	1.15	0.48	5.35#
Reports of VEWs & AEOs must deal with field situations, unseasonable problems and adoption rates.	1.35	0.62	1.11	0.30	16.5#
AEOs ensure that their VEWs participate in training sessions regularly and actively.	1.35	0.79	1.10	0.44	8.91#
AEOs relay production recommendations to their VEWs who missed a training session.	1.39	0.80	1.08	0.33	14.2#
VEWs & AEOs participate regularly in the fortnightly training sessions to be familiar with production recommendations and impact points.	1.49	0.88	1.17	0.54	11.9#

Source: Questionnaire.
significant difference.
* Agricultural Extension Officer.

Table 33 summarizes the responses of the SMSs toward perceived job tasks during training in both current and ideal situations. As shown in the table, there were significant differences between perceptions of current job tasks and those perceived to be ideal for 11 of 17 identified job tasks.

Table 33

SMS* Perceptions Toward Job Tasks During Training, Current and Ideal

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
SMSs give extension staff short courses in their own fields of specialization.	1.14	0.57	1.05	0.35	0.618
SMSs attend monthly workshops regularly.	1.17	0.57	1.02	0.16	2.041
Contact between SMSs and researchers through visits to agricultural research stations or research institute serve to strengthen the link between the extension system and research.	1.20	0.55	1.02	0.16	3.329
During fortnightly training sessions SMSs discuss local conditions with VEWs & AEOs.	1.23	0.55	1.00	0.00	6.17#
Through monthly workshops SMSs understand production recommendations they will give participants in the coming two fortnights.	1.23	0.60	1.02	0.16	3.646
SMSs acquire necessary skills for diffusing production recommendations to all the participants in training sessions.	1.32	0.53	1.02	0.16	9.41#
SMSs review progress and results of farm trails in monthly workshops for orientation research to recommendations and impact points relevant to farmers.	1.32	0.65	1.11	0.32	2.820
Researchers give SMSs special short courses to raise their professional competence.	1.32	0.78	1.05	0.23	3.702
SMSs identify impressions of VEWs & AEOs toward the production recommendations.	1.32	0.82	1.02	0.16	4.35#

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
SMSs ensure that necessary teaching aids are prepared before training sessions.	1.35	0.64	1.08	0.28	4.80#
Through monthly workshops, SMSs discuss farm conditions and field problems with researchers in formulating recommendations.	1.35	0.77	1.05	0.23	4.50#
Training officer cooperates with SDEO & SMSs in planning and preparing special short courses for the VEWs & AEOs.	1.45	0.87	1.10	0.37	4.83#
Training officer develops effective training for VEWs & AEOs in the field of communications, extension methods, and audio-visual aids.	1.58	9.67	1.14	0.51	4.96#
Training officer plays a basic role promoting understanding of the T&V system by extension staff.	1.64	8.94	1.11	0.32	9.61#
Training officer is active in preparing and organizing contacts between SMSs and researchers.	1.67	1.07	1.09	0.37	8.32#
SMSs adapt recommendations to fit farm resources and local conditions.	1.67	1.01	1.14	0.43	7.08#
Production recommendations presented at fortnightly training sessions are printed and distributed to all participants.	1.73	0.98	1.17	0.53	7.96#

Source: Questionnaire.
significant differences.
* Subject Matter Specialist.

Table 34 summarizes the responses of the SDEOs toward perceived job tasks during training in both current and ideal situations. As shown in the table, there were no significant differences between perceptions of current job tasks and those perceived to be ideal for any of the 14 identified job tasks.

Table 34

SDEO* Perceptions Toward Job Tasks During Training, Current and Ideal

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
SDEO is responsible for effective organization and operation of all fortnightly training sessions.	1.00	0.00	1.00	0.00	9999
SDEO transmits farmer reactions toward recommendations to researchers through monthly workshops.	1.00	0.00	1.00	0.00	9999
SDEO attends monthly, seasonal workshops, and research meetings.	1.17	0.41	1.17	0.41	0.00
Prior to each fortnightly training session the SDEO prepares teaching aids/ material.	1.17	0.41	1.17	0.41	0.00
SDEO ensures that recommendations presented in training sessions are correct.	1.17	0.41	1.17	0.41	0.00
SDEO ensures that all trainees acquired necessary skills to diffuse recommendations.	1.17	0.41	1.17	0.41	0.00
SDEO leads the fortnightly training sessions.	1.17	0.41	1.17	0.41	0.00

Job tasks	Current mean	Current SD	Ideal mean	Ideal SD	F. values
SDEO attends monthly workshops to ensure recommendations are suited to farmers conditions and resources.	1.17	0.41	1.17	0.41	0.00
SDEO discusses results of field trials through monthly workshops when formulating recommendations.	1.17	0.41	1.17	0.41	0.00
SDEO suggests adjusting recommendations to suit the local conditions through monthly workshops.	1.17	0.41	1.17	0.41	0.00
SDEO appoints and organizes special short courses for extension staff.	1.17	0.41	1.17	0.41	0.00
SDEO ensures written summaries of recommendations are given to participants in the training sessions.	1.32	0.82	1.32	0.82	0.00
SDEO exhibits reports about field problems and local conditions researchers through monthly workshops.	1.32	0.82	1.32	0.82	0.00
SDEO determines training needs of extension staff.	1.32	0.82	1.32	0.82	0.00

Source: Questionnaire.
significant differences.
* Subdivisional Extension Officer.

Evaluation of Field Visits

This part of Chapter 4 presents the evaluation of the field visits by the responding agricultural extension workers. Data pertaining to the first two objectives as they relate to evaluation of field visits are summarized in Tables 35-38. Frequencies, percentages and Chi-square test

were used in the presentation of these data.

Table 35 summarizes the self-evaluation of the field visits by the extension workers of each group in their working areas. As shown in the table, the highest percentage of the VEWs and AEOs evaluated their field visits as "very good," whereas the highest percentage of the SMSs and SDEOs evaluated their field visits as "excellent." The results of Chi-square test showed no significant differences between extension worker groups in their self-evaluation of the field visits in their working areas.

Table 35

EWG* Self-Evaluation of the Field Visits

	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
Ratings	F.	%	F.	%	F.	%	F.	%
Excellent	130	38.24	47	38.84	13	39.39	5	83.33
Very good	161	47.35	57	47.11	11	33.33	1	16.67
Good	45	13.24	14	11.57	9	27.27	0	0.00
Acceptable	4	1.18	3	2.48	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE =7.347, D.F. = 6, PROB. > 0.05

Table 36 summarizes the self-evaluation of the length of field visits by the extension workers of each group in their working areas. As shown in the table, the highest percentage of VEWs, AEOs, SMSs, and SDEOs evaluated the length of their visits as "just right." The results of Chi-

square test showed no significant differences between extension worker groups in their self-evaluation of the length of field visits.

Table 36

EWG* Self-Evaluation of Length of Field Visits

Length of field visits	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Too long	11	3.24	6	4.96	0	0.00	0	0.00
Long	41	12.06	21	17.36	8	24.24	1	16.67
Just right	275	80.88	91	75.21	24	72.73	5	83.33
Short	12	3.53	3	2.48	1	3.03	0	0.00
Too short	1	0.29	0	0.00	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 7.639, D.F. = 8, PROB. > 0.05

Table 37 summarizes the evaluation by extension workers in each group toward the practical or theoretical training that they received to make successful field visits. As shown in the table, the highest percentage of the VEWs, SMSs, and SDEOs evaluated the amount of practical or theoretical training received to promote successful field visit as "some," whereas the highest percentage of the AEOs evaluated it as "much." The results of Chi-square test showed no significant differences between extension worker groups in their self-evaluation of the practical or theoretical training that they received to make successful

field visits.

Table 37

EWG* Evaluation of the Amount of Practical or Theoretical Training Received to Promote Successful Field Visit

Amount of training	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Too much	50	14.71	15	12.40	3	9.09	0	0.00
Much	108	31.76	45	37.19	11	33.33	2	33.33
Some	113	33.24	40	33.06	13	39.39	3	50.00
Little	42	12.35	14	11.57	6	18.18	0	0.00
No training	27	7.94	7	5.79	0	0.00	1	16.67
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 5.011, D.F. = 8, PROB. > 0.05

Table 38 summarizes the self-evaluation by extension workers in each group toward the usefulness of their own field visits in increasing self-awareness of their professional tasks in the extension system. As shown in the table, the highest percentage of VEWs, AEOs, and SMSs evaluated the usefulness of their own field visits as "useful." The SDEOs were evenly divided among "very useful," "useful," and "normal." The results of Chi-square test showed no significant differences between extension worker groups in their self-evaluation of the usefulness of their own field visits in increasing self-awareness of their professional tasks in the extension system.

Table 38

EWG* Self-Evaluation of the Usefulness of Field Visits for Increasing Self-Awareness of Their Professional Roles

Level of usefulness	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Very useful	112	32.94	32	26.45	7	21.21	2	33.33
Useful	161	47.35	65	53.72	21	63.64	2	33.33
Normal	62	18.24	20	16.53	5	15.15	2	33.33
Limited use	4	1.18	4	3.31	0	0.00	0	0.00
Useless	1	0.29	0	0.00	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 7.276, D.F. = 8, PROB. > 0.05

Evaluation of the Training Activities

This part of Chapter 4 presents evaluations by agricultural extension workers of the training activities (fortnightly training sessions and monthly workshops) through the T&V system, the training program facilities, and their attitudes toward the T&V system training program.

Table 39 summarizes the evaluation of the length of training activities by the extension workers of each group in their working areas. As shown in the table, the highest percentage of VEWs, AEOs, SMSs, and SDEOs evaluated the length of their training activities as "appropriate." The results of Chi-square test showed no significant differences between extension worker groups in their self-evaluation of the length of training activities in their working areas.

Table 39

EWG* Evaluation of the Length of T&V Training Activities**

Length of training activities	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Too long	17	5.00	6	4.96	0	0.00	0	0.00
Long	34	10.00	17	14.05	4	12.12	1	16.67
Appropriate	251	73.82	92	76.03	25	75.76	5	83.33
Short	36	10.59	6	4.96	4	12.12	0	0.00
Too short	2	0.59	0	0.00	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
**Fortnightly Training Sessions/Monthly Workshops/Special Short Courses.
CHI-SQUARE = 7.508, D.F. = 8, PROB. > 0.05

Table 40 summarizes the evaluation of the length of lectures in the training program by the extension workers of each group in their working areas. As shown in the table, the highest percentage of VEWs, AEOs, SMSs, and SDEOs evaluated the length of lectures as "appropriate." The results of Chi-square test showed no significant differences between extension worker groups in their self-evaluation of the length of lectures in the training program.

Table 41 summarizes the evaluation of the length of practical training in the training program by the extension workers of each group in their working areas. As shown in the table, the highest percentage of VEWs, AEOs, SMSs, and SDEOs evaluated the length of practical training as

"appropriate." The results of Chi-square test showed no significant differences between extension worker groups in their self-evaluation of the length of lectures in the training program.

Table 40

EWG* Evaluation of the Length of Lectures in the Training Program

Length of lectures	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Too long	23	6.76	8	6.61	0	0.00	0	0.00
Long	43	12.65	20	16.53	5	15.15	0	0.00
Appropriate	264	77.65	88	72.73	27	81.82	6	100.00
Short	10	2.94	5	4.13	1	3.03	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 4.682, D.F. = 6, PROB. > 0.05

Table 42 summarizes the evaluation of the length of discussions in the training program by the extension workers of each group in their working areas. As shown in the table, the highest percentage of VEWs, AEOs, SMSs, and SDEOs evaluated the length of discussions as "appropriate." The results of Chi-square test showed no significant differences between extension worker groups in their self-evaluation of the length of discussions in the training program.

Table 43 summarizes the evaluation of the length of field trial visits in the training program by the extension workers of each group in their working areas.

Table 41

EWG* Evaluation of the Length of Practical Training in the Training Program

Length of practical training	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Too long	16	4.71	3	2.48	0	0.00	0	0.00
Long	42	12.35	16	13.22	3	9.09	1	16.67
Appropriate	182	53.53	72	59.50	16	48.48	4	66.67
Short	68	20.00	22	18.18	11	33.33	1	16.67
Too short	32	9.41	8	6.61	3	9.09	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 6.888, D.F. = 8, PROB. > 0.05

Table 42

EWG* Evaluation of the Length of Discussions in the Training Program

Length of discussions	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Too long	11	3.24	2	1.65	1	3.03	0	0.00
Long	39	11.47	16	13.22	1	3.03	1	16.67
Appropriate	199	58.53	76	62.81	22	66.67	3	50.00
Short	64	18.82	21	17.36	8	24.24	2	33.33
Too short	27	7.94	6	4.96	1	3.03	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 6.264, D.F. = 8, PROB. > 0.05

As shown in the table, the highest percentage of VEWs,

AEOs, SMSs, and SDEOs evaluated the length of field trial visits as "appropriate." The results of Chi-square test showed no significant differences between extension worker groups in their self-evaluation of the length of field trial visits in the training program.

Table 43

EWG* Evaluation of the Length of Field Trial Visits in the Training Program

Length of field trial visits	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Too long	21	6.18	5	4.13	1	3.03	0	0.00
Long	29	8.53	15	12.40	4	12.12	1	16.67
Appropriate	187	55.00	66	54.55	20	60.61	3	50.00
Short	45	13.24	22	18.18	5	15.15	1	16.67
Too short	58	17.06	13	10.74	3	9.09	1	16.67
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 7.709, D.F. = 8, PROB. > 0.05

Table 44 summarizes the evaluation of the usefulness of the training program regarding their own jobs by the extension workers of each group in their working areas. As shown in the table, the highest percentage of VEWs, AEOs, SMSs, and SDEOs evaluated the usefulness of the training program as "very useful." The results of Chi-square test showed no significant differences between extension worker groups in their self-evaluation of the usefulness of the training program regarding their own jobs in their working

areas.

Table 44

EWG* Evaluation of the Usefulness of the Training Program Regarding Their Own Jobs

Degree of usefulness	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Very useful	176	51.76	74	61.16	16	48.48	3	50.00
Quite useful	153	45.00	45	37.19	16	48.48	2	33.33
Of limited use	10	2.94	2	1.65	1	3.03	1	16.67
Useless	1	0.29	0	0.00	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 4.830, D.F. = 6, PROB. > 0.05

Training Facilities

Table 45 summarizes the degree of satisfaction by responding extension workers in each group toward the length of training sessions. As illustrated in the table, the highest percentage of VEWs, AEOs, and SDEOs reported their satisfaction as "very good," whereas the highest percentage of SMSs reported their satisfaction as "good." The results of Chi-square test showed no significant differences between extension worker groups in their satisfaction toward the length of training sessions.

Table 46 summarizes the degree of satisfaction by responding extension workers in each group toward the classrooms. As illustrated in the table, the highest percentage of the VEWs and AEOs reported their satisfaction

as "excellent," whereas the highest percentage of SMSs reported their satisfaction as "good." The SDEOs were evenly divided among "excellent," "very good," and "good." The results of Chi-square test showed no significant differences between extension worker groups in their satisfaction toward the classrooms.

Table 45

EWG* Satisfaction with the Length of Training Sessions

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	85	25.00	25	20.66	5	15.15	2	33.33
Very Good	117	34.41	41	33.88	10	30.30	4	66.67
Good	111	32.65	40	33.06	11	33.33	0	0.00
Satisfied	26	7.65	13	10.74	7	21.21	0	0.00
Dissatisfied	1	0.29	2	1.65	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 8.973, D.F. = 8, PROB. > 0.05

Table 47 summarizes the degree of satisfaction by responding extension workers in each group toward the teaching methods. As illustrated in the table, the highest percentage of VEWs and SMSs reported their satisfaction as "good," whereas the highest percentage of AEOs and SDEOs reported their satisfaction as "very good." The results of Chi-square test showed no significant differences between extension worker groups in their satisfaction toward the

teaching methods.

Table 46

EWG* Satisfaction with the Training Classrooms

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	109	32.06	37	30.58	8	24.24	2	33.33
Very Good	87	25.59	34	28.10	9	27.27	2	33.33
Good	103	30.29	34	28.10	11	33.33	2	33.33
Satisfied	37	10.88	15	12.40	5	15.15	0	0.00
Dissatisfied	4	1.18	1	0.83	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 1.834, D.F. = 8, PROB. > 0.05

Table 47

EWG* Satisfaction with the Training Teaching Methods

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	77	22.65	27	22.31	6	18.18	1	16.67
Very Good	105	30.88	42	34.71	5	15.15	3	50.00
Good	112	32.94	37	30.58	13	39.39	2	33.33
Satisfied	43	12.65	14	11.57	9	27.27	0	0.00
Dissatisfied	3	0.88	1	0.83	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 6.383, D.F. = 8, PROB. >0.05

Table 48 summarizes the degree of satisfaction by

responding extension workers in each group toward the library facilities. As illustrated in the table, the highest percentage of the VEWs reported their satisfaction as "satisfied," whereas the highest percentage of AEOs reported their satisfaction as "dissatisfied." SMSs and SDEOs reported their satisfaction as "good." The results of Chi-square test showed significant differences between extension worker groups in their satisfaction toward the library facilities.

Table 48

EWG* Satisfaction with the Training Library Facilities

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	40	11.76	15	12.40	2	6.06	1	16.67
Very Good	37	10.88	14	11.57	3	9.09	0	0.00
Good	46	13.53	26	21.49	13	39.39	3	50.00
Satisfied	113	33.24	30	24.79	5	15.15	2	33.33
Dissatisfied	104	30.59	36	29.75	10	30.30	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE 21.861, D.F. = 8, PROB. < 0.05

Table 49 summarizes the degree of satisfaction by responding extension workers in each group toward the audio-visual aids. As illustrated in the table, the highest percentage of VEWs reported their satisfaction as "dissatisfied," whereas the highest percentage of AEOs and

SMSs reported their satisfaction as "satisfied." The highest percentage of SDEOs reported their satisfaction as "good." The results of Chi-square test showed no significant differences between extension worker groups in their satisfaction toward the audio-visual aids.

Table 49

EWG* Satisfaction with the Training Audio-Visual Aids

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	47	13.82	15	12.40	2	6.06	0	0.00
Very Good	36	10.59	14	11.57	4	12.12	1	16.67
Good	60	17.65	18	14.88	9	27.27	3	50.00
Satisfied	92	27.06	45	37.19	11	33.33	1	16.67
Dissatisfied	105	30.88	29	23.97	7	21.21	1	16.67
Total	340	100.00	121	100.0	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 12.021, D.F. = 8, PROB. > 0.05

Table 50 summarizes the degree of satisfaction by responding extension workers in each group toward the knowledge gained. As illustrated, the highest percentage of VEWs, AEOs, and SMSs reported their satisfaction as "good." The highest percentage of SDEOs were evenly divided among "very good," "good," and "satisfied." The results of Chi-square test showed no significant differences between extension worker groups in their satisfaction toward the knowledge gained.

Table 50

EWG* Satisfaction with the Knowledge Resulting from the Training

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	74	21.76	26	21.49	6	18.18	0	0.00
Very Good	107	31.47	34	28.10	8	24.24	2	33.33
Good	124	36.47	48	39.67	14	42.42	2	33.33
Satisfied	30	8.82	13	10.74	5	15.15	2	33.33
Dissatisfied	5	1.47	0	0.00	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 7.034, D.F. = 8, PROB. > 0.05

Table 51 summarizes the degree of satisfaction by responding extension workers in each group toward the skills acquired. As illustrated in the table, the highest percentage of VEWs and SMSs reported their satisfaction as "good," whereas the highest percentage of AEOs reported their satisfaction as "very good." The highest percentage of SDEOs reported their satisfaction as "excellent." The results of Chi-square test showed no significant differences between extension worker groups in their satisfaction toward the skills acquired during the training.

Table 52 summarizes the degree of satisfaction by responding extension workers in each group toward the SMSs' competence. As illustrated in the table the highest percentage of VEWs, AEOs, SMSs, and SDEOs reported their

satisfaction as "very good."

Table 51

EWG* Satisfaction with Skills Acquired during the Training

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	88	25.88	28	23.14	4	12.12	3	50.00
Very Good	98	28.82	46	38.02	12	36.36	2	33.33
Good	119	35.00	40	33.06	13	39.39	1	16.67
Satisfied	31	9.12	6	4.96	4	12.12	0	0.00
Dissatisfied	4	1.18	1	0.83	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 6.418, D.F. = 8, PROB. > 0.05

Table 52

EWG* Satisfaction with Subject Matter Specialist Competence

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	103	30.29	29	23.97	8	24.24	2	33.33
Very Good	119	35.00	51	42.15	16	48.48	3	50.00
Good	86	25.29	34	28.10	6	18.18	0	0.00
Satisfied	30	8.82	7	5.79	3	9.09	1	16.67
Dissatisfied	2	0.59	0	0.00	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 7.972, D.F. = 8, PROB. > 0.05

The results of Chi-square test showed no significant

differences between extension worker groups in their satisfaction toward the SMSs' competence.

Table 53 summarizes the degree of satisfaction by responding extension workers in each group toward the supervision of SDEOs. As illustrated in the table, the highest percentage of VEWs, SMSs, and SDEOs reported their satisfaction as "excellent," whereas the highest percentage of AEOs reported their satisfaction as "very good." The results of Chi-square test showed no significant differences between extension worker groups in their satisfaction toward the supervision of SDEOs.

Table 53

EWG* Satisfaction with Supervision of Subdivisional Extension Officers

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	138	40.00	46	38.02	11	33.33	5	83.33
Very Good	96	28.24	48	39.67	10	30.30	1	16.67
Good	77	22.65	18	14.88	10	14.88	0	0.00
Satisfied	26	7.65	9	7.44	2	6.06	0	0.00
Dissatisfied	3	0.88	0	0.00	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 8.741, D.F. = 8, PROB. > 0.05

Table 54 summarizes the degree of satisfaction by responding extension workers in each group toward the schedule program activities. As illustrated in the table,

the highest percentage of VEWs, AEOs, and SMSs reported their satisfaction as "good," whereas the highest percentage of SDEOs reported their satisfaction as "excellent." The results of Chi-square test showed no significant differences between extension worker groups in their satisfaction toward the schedule program activities.

Table 54

EWG* Satisfaction with Scheduling of Training Program Activities

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	84	24.71	30	24.79	5	15.15	3	50.00
Very Good	82	24.12	34	28.10	9	27.27	2	33.33
Good	98	28.82	41	33.88	12	36.36	1	16.67
Satisfied	69	20.29	13	10.74	6	18.18	0	0.00
Dissatisfied	7	2.06	3	2.48	1	3.03	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 6.662, D.F. = 8, PROB. > 0.05

Table 55 summarizes the degree of satisfaction by responding extension workers in each group toward the interactions within and among working groups. As illustrated in the table, the highest percentage of VEWs, AEOs, and SDEOs reported their satisfaction as "excellent," whereas the highest percentage of SMSs reported their satisfaction as "very good." The results of Chi-square

test showed no significant differences between extension worker groups in their satisfaction toward the interactions within and among working groups.

Table 55

EWG* Satisfaction with Interactions Within and Among Working Groups

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	134	39.41	46	39.02	10	30.30	4	66.67
Very Good	98	28.82	45	37.19	13	39.39	2	33.33
Good	78	22.94	23	19.01	6	18.18	0	0.00
Satisfied	28	8.24	6	4.96	4	12.12	0	0.00
Dissatisfied	2	0.59	1	0.83	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 6.096, D.F. = 8, PROB. > 0.05

Table 56 summarizes the degree of satisfaction by responding extension workers in each group toward the theoretical lectures. As illustrated in the table, the highest percentage of VEWs, AEOs, SMSs, and SDEOs reported their satisfaction as "excellent." The results of Chi-square test showed no significant differences between extension worker groups in their satisfaction toward the theoretical lectures.

Table 57 summarizes the degree of satisfaction by responding extension workers in each group toward the practical parts of the program. As illustrated in the

table, the highest percentage of SMSs and SDEOs reported their satisfaction as "excellent," whereas the highest percentage of VEWs reported their satisfaction as "good." The highest percentage of AEOs were evenly divided among "very good," "good," and "satisfied." The results of Chi-square test showed no significant differences between extension worker groups in their satisfaction toward the practical parts of the program.

Table 56

EWG* Satisfaction with Theoretical Lectures during the Training

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	114	33.53	42	34.71	13	39.39	5	83.33
Very Good	113	33.24	38	31.40	8	24.24	0	0.00
Good	70	20.59	29	23.97	9	27.27	1	16.67
Satisfied	36	10.59	11	9.09	2	6.06	0	0.00
Dissatisfied	7	2.06	1	0.83	1	3.03	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 6.181, D.F. = 8, PROB. > 0.05

Table 58 summarizes the degree of satisfaction by responding extension workers in each group toward the necessary teaching aids. As illustrated in the table, the highest percentage of VEWs reported their satisfaction as "satisfied," whereas the highest percentage of AEOs reported their satisfaction as "very good." The highest percentage

of SDEOs were evenly divided among "excellent," and "very good," whereas the highest percentage of SMSs reported their satisfaction as "good." The results of Chi-square test showed no significant differences between extension worker groups in their satisfaction toward the necessary teaching aids.

Table 57

EWG* Satisfaction with the Practical Portions of the Training Program

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	72	21.18	25	20.66	9	27.27	3	50.00
Very Good	58	17.06	29	23.97	4	12.12	1	16.67
Good	92	27.06	29	23.97	6	18.18	1	16.67
Satisfied	75	22.06	29	23.97	8	24.24	1	16.67
Dissatisfied	43	12.65	9	7.44	6	18.18	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 8.660, D.F. = 8, PROB. > 0.05

Table 59 summarizes the degree of satisfaction by responding extension workers in each group toward the amount of contact with training staff. As illustrated in the table, the highest percentage of VEWs reported their satisfaction as "very good," whereas the highest percentages of AEOs were evenly divided among "very good" and "good." The highest percentage of SMSs reported their satisfaction as "good," whereas the highest percentage of the SDEOs

reported their satisfaction as "excellent." The results of Chi-square test showed no significant differences between extension worker groups in their satisfaction toward the amount of contact with training staff.

Table 58

EWG* Satisfaction with the Necessary Teaching Aids

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	69	20.29	21	17.36	5	15.15	2	33.33
Very Good	61	17.94	32	26.45	5	15.15	2	33.33
Good	75	22.06	28	23.14	12	36.36	1	16.67
Satisfied	91	26.76	31	25.62	7	21.21	1	16.67
Dissatisfied	44	12.94	9	7.44	4	12.12	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 8.631, D.F. = 8, PROB. > 0.05

Table 60 summarizes the degree of satisfaction by responding extension workers in each group toward the number of trainees in the training sessions. As illustrated in the table, the highest percentage of VEWs reported their satisfaction as "good," whereas the highest percentage of AEOs reported their satisfaction as "very good." The highest percentage of SDEOs were evenly divided among "excellent," and "very good," whereas the highest percentage of SMSs reported their satisfaction as "very good." The results of Chi-square test showed no significant differences

between extension worker groups in their satisfaction toward the number of trainees in the training sessions.

Table 59

EWG* Satisfaction with Amount of Contact with Training Staff

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	79	23.24	31	25.62	7	21.21	4	66.67
Very Good	83	24.41	34	28.10	9	27.27	1	16.67
Good	82	24.12	34	28.10	11	33.33	0	0.00
Satisfied	79	23.24	19	15.70	4	12.12	1	16.67
Dissatisfied	17	5.00	3	2.48	2	6.06	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 6.697, D.F. = 8, PROB. > 0.05

Table 60

EWG* Satisfaction with the Number of Trainees in the Training Sessions

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	88	25.88	28	23.14	6	18.18	3	50.00
Very Good	87	25.59	46	38.02	12	36.36	3	50.00
Good	105	30.88	28	23.14	8	24.24	0	0.00
Satisfied	50	14.71	18	14.88	7	21.21	0	0.00
Dissatisfied	10	2.94	1	0.83	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 11.885, D.F. = 8, PROB. > 0.05

Table 61 summarizes the degree of satisfaction by responding extension workers in each group toward the trainee discussions. As illustrated in the table, the highest percentage of VEWs, AEOs, and SMSs reported their satisfaction as "very good," whereas the highest percentage of SDEOs reported their satisfaction as "excellent." The results of Chi-square test showed no significant differences between extension worker groups in their satisfaction toward the trainee discussions.

Table 61

EWG* Satisfaction with Trainee Discussions

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	96	28.24	39	32.23	6	18.18	4	66.67
Very Good	122	35.88	47	38.84	13	39.39	1	16.67
Good	88	25.88	25	20.66	11	33.33	1	16.67
Satisfied	27	7.94	9	7.44	3	9.09	0	0.00
Dissatisfied	7	2.06	1	0.83	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 3.965, D.F. = 8, PROB. > 0.05

Table 62 summarizes the degree of satisfaction by responding extension workers in each group toward the practical application of the training program. As illustrated in the table, the highest percentage of VEWs, AEOs, and SMSs reported their satisfaction as "very good,"

whereas the highest percentage of SDEOs reported their satisfaction as "excellent." The results of Chi-square test showed no significant differences between extension worker groups in their satisfaction toward the practical application of the training program.

Table 62

EWG* Satisfaction with the Practical Application of the Training Program

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Excellent	85	25.00	36	29.75	6	18.18	4	66.67
Very Good	115	33.82	46	38.02	14	42.42	2	33.33
Good	96	28.24	30	24.79	9	27.27	0	0.00
Satisfied	36	10.59	9	7.44	4	12.12	0	0.00
Dissatisfied	8	2.35	0	0.00	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 6.906, D.F. = 8, PROB. > 0.05

Table 63 summarizes the degree of satisfaction by responding extension workers in each group toward the compensation related to training and field visits. As illustrated in the table, the highest percentage of VEWs and AEOs reported their satisfaction as "dissatisfied," whereas the highest percentage of SMSs and SDEOs reported their satisfaction as "satisfied." The results of Chi-square test showed significant differences between extension worker groups in their satisfaction toward the compensation related

to training and field visits.

Table 63

EWG* Satisfaction with Compensation Related to Training and Field Visits

Satisfaction levels	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Satisfied	128	37.65	47	38.84	18	54.55	5	83.33
Dissatisfied	212	62.35	74	61.16	15	45.45	1	16.67
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 6.692, D.F. = 2, PROB: < 0.05

Table 64 summarizes the degree of willingness by responding extension workers in each group toward attending future training programs as a result to their participation in the T&V system. As illustrated in the table the higher percentage of VEWs, AEOs, SMSs, and SDEOs reported they were willing to attend future training programs.

Table 64

EWG* Willingness to Attend Future Training Programs

Willingness	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Willing	292	85.88	111	91.74	30	90.91	5	83.33
Unwilling	48	14.12	10	8.26	3	9.09	1	16.67
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.
* Extension Worker Group.
CHI-SQUARE = 2.994, D.F. = 2, PROB. > 0.05

The results of Chi-square test showed no significant differences between extension worker groups in their willingness toward attending future training programs as a result to their participation in the T&V system.

Extension Worker Attitudes Toward Their T&V Training Program

This part of Chapter 4 includes some measurements of attitudes and feelings of the extension workers toward their T&V training program. Data pertaining to attitudes toward the T&V training program are summarized in Tables 65-68. Mean scores and standard deviations were used in the presentation of these data. The tables are organized to reflect the increasing rank order of responses.

Table 65 summarizes the attitudes of the VEWs toward their training program. The first two responses in the table produced the same mean score of 1.34, indicating that they strongly agreed with the statements. In fact, all 30 statements generated mean scores under 2.00, which indicates high degree of agreement by respondents.

Table 65

VEW* Responses Indicating Their Attitudes Toward Their T&V Training Program

Phrases	Mean	SD
At the end of the T&v training program, I could evaluate my work because I can apply what I learned.	1.34	0.52
Following my attendance at the fortnightly training sessions, my work with farmers became more enjoyable and useful than before.	1.34	0.62

Phrases	Mean	SD
I now have a better understanding of my work than before attending the training program.	1.38	0.58
It is my responsibility to share with other extension staff what I learned in the T&V training sessions when the need arises.	1.38	0.58
My thoughts are more acceptable now than before attending training sessions.	1.40	0.52
As a result to my training, it is easier for me to work with other extension staff than before.	1.40	0.57
My confidence in my work has increased after attending the training sessions.	1.40	0.60
Appropriate selection of contact farmers makes the work of extension staff easier and raised recommendations adoption rates.	1.40	0.56
The fortnight training sessions presented new knowledge, and I have gained technical skills from it.	1.43	0.61
I am more secure now in my job than before attending training sessions.	1.45	0.59
Productivity of farmers who adopted production recommendations diffused by the T&V system was higher than that of other farmers.	1.45	0.60
Fortnightly training sessions created new opportunities for cooperation among extension staff in every subdivision.	1.45	0.62
My professional responsibilities increased after attending the fortnightly training sessions.	1.45	0.68
Participation of extension and research through T&V system created useful recommendations for farmers.	1.46	0.61
Through T&V system, the extension system had an important role in conducting research toward solving farmers' local problems.	1.46	0.65
The T&V system created good opportunities for linkage between extension and research.	1.47	0.63

Phrases	Mean	SD
The T&V system organized the extension staff's time; therefore, their professional competence increased.	1.48	0.61
Production recommendations formulated through the fortnightly training sessions were relevant to local farmers' conditions.	1.49	0.63
Conducting of field trials impacted positively the formulation of production recommendations appropriate for local conditions.	1.49	0.64
Scheduled field visits offered good opportunities for extension staff to diffuse their knowledge, practices, and recommendations to a large number of farmers.	1.49	0.65
In general, the T&V system offered good opportunities for raising farmers' confidence in the extension system.	1.51	0.72
SMSs offered worthwhile experience to the trainees.	1.52	0.64
Time of discussion in the training sessions was appropriate, and we reached many points of consensus.	1.53	0.66
Reports presented by VEWs & AEOs had adequate interest during the fortnightly training sessions.	1.53	0.62
I can do much of what is expected from me because I receive appropriate support from my administrators.	1.57	0.73
Raising complicated field problems to researchers did not require strenuous efforts.	1.61	0.75
The T&V system offered a good opportunities for extension staff to become more devoted to their extension work.	1.66	0.83
The usage of audio-visual aids raised recommendation adoption rates by farmers.	1.68	0.91
Obtaining solutions for complicated field problems did not require too much time.	1.77	0.82

Phrases	Mean	SD
Opportunities for input toward production recommendations and practices were available and adequate for all farmers.	1.85	1.00
I have a better chance of being promoted in rank after attending the fortnightly training sessions.	1.93	1.12

Source: Questionnaire.
* Village Extension Worker.

Table 66 summarizes the attitudes of the AEOs toward their training program. The first two responses in the table produced mean scores of 1.34 and 1.35, strong agreement. Further, 29 of 30 statements generated mean scores under 2.00, nearly high degree of agreement by respondents. AEOs also responded to 30 statements designed to measure attitudes toward the T&V training program (Table 66). For 29 of the 30 statements, AEOs generated mean scores under 2.00, which indicates virtually high degree of agreement.

Table 66

AEO* Responses Indicating Their Attitudes Toward Their T&V Training Program

Phrases	Mean	SD
Following my attendance at the fortnightly training sessions, my work with farmers became more enjoyable and useful than before.	1.34	0.53
At the end of the T&V training program, I could evaluate my work because I can apply what I learned.	1.35	0.52
Participation of extension and research through the T&V system created useful recommendations for farmers.	1.39	0.51

Phrases	Mean	SD
The fortnightly training sessions presented new knowledge, and I have gained technical skills from it.	1.41	0.53
My thoughts are more acceptable now than before attending training sessions.	1.43	0.62
As a result of my training, it is easier for me to work with other extension staff than before.	1.43	0.62
The T&V system organized the extension staff's time; therefore, their professional competence increased.	1.44	0.58
I now have a better understanding of my work than before attending the training program.	1.44	0.62
The T&V system created good opportunities for linkage between extension and research.	1.46	0.58
Through T&V system, the extension system had an important role in conducting research toward solving farmers' local problems.	1.46	0.61
It is my responsibility to share with other extension staff what I learned in the T&V training sessions when the need arises.	1.48	0.52
Productivity of farmers who adopted production recommendations diffused by the T&V system was higher than other farmers.	1.49	0.62
Scheduled field visits offered a good opportunity for extension staff to diffuse their knowledge, practices, and recommendations to a large number of farmers.	1.50	0.58
SMSs offered worthwhile experiences to the trainees.	1.50	0.58
In general, the T&V system offered a good opportunities for raising farmers' confidence in the extension system.	1.50	0.61
My professional responsibilities increased after attending the fortnightly training sessions.	1.50	0.74
I am more secure now in my job than before attending training sessions.	1.51	0.67

Phrases	Mean	SD
Fortnightly training sessions created new opportunities for cooperation among extension staff in every subdivision.	1.53	0.62
Appropriate selection of contact farmers makes the work of extension staff easier and raised recommendations adoption rates.	1.53	0.66
Conducting of field trials impacted positively the formulation of production recommendations appropriate for local conditions.	1.53	0.67
My confidence in my work has increased after attending the training sessions.	1.53	0.72
Time of discussion in the training sessions was appropriate, and we reached many points of consensus.	1.60	0.60
Reports presented by VEWs & AEOs had adequate interest during the fortnightly training sessions.	1.60	0.68
Production recommendations formulated through the fortnightly training sessions were relevant to local farmers' conditions.	1.63	0.61
I can do much of what is expected from me because I receive appropriate support from my administrators.	1.68	0.81
Raising complicated field problems to researchers did not require strenuous effort.	1.73	0.87
The T&V system offered good opportunities for extension staff to become more devoted to their extension work.	1.77	0.93
Obtaining solutions for complicated field problems did not require too much time.	1.78	0.85
Opportunities for input toward production recommendations and practices were available and adequate for all farmers.	1.89	0.89
The usage of audio-visual aids raised the recommendation adoption rates by farmers.	1.92	1.05

Phrases	Mean	SD
I have a better chances of being promoted in rank after attending the fortnightly training sessions.	2.07	1.25

Source: Questionnaire.
* Agricultural Extension Officer.

Table 67 summarizes the attitudes of the SMSs toward their training program. The first three responses in the table produced the same mean score of 1.38, strong agreement. In addition, 26 of 30 statements generated mean scores under 2.00, nearly complete agreement by respondents. SMSs also responded to 30 statements designed to measure attitudes toward the T&V training program (Table 67). For 26 of the 30 statements, SMSs generated mean scores under 2.00, which indicates nearly high degree of agreement.

Table 67

SMS* Responses Indicating Their Attitudes Toward Their T&V Training Program

Phrases	Mean	SD
Through T&V system, the extension system had an important role in conducting research toward solving farmers' local problems.	1.38	0.50
As a result to my training, it is easier for me to work with other extension staff than before.	1.38	0.56
Following my attendance at the fortnightly training sessions, my work with farmers became more enjoyable and useful than before.	1.38	0.56
It is my responsibility to share with other extension staff what I learned in the T&V training sessions when the need arises.	1.46	0.55

Phrases	Mean	SD
The T&V system created good opportunities for linkage between extension and research.	1.49	0.57
The fortnightly training sessions presented new knowledge, and I have gained technical skills from it.	1.55	0.51
Scheduled field visits offered good opportunities for extension staff to diffuse their knowledge, practices, and recommendations to a large number of farmers.	1.55	0.62
Participation of extension and research through T&V system created useful recommendations for farmers.	1.55	0.67
My thoughts are more acceptable now than before attending training sessions.	1.55	0.78
In general, the T&V system offered good opportunities for raising farmers' confidence in the extension system.	1.58	0.55
Fortnightly training sessions created new opportunities for cooperation among extension staff in every subdivision.	1.58	0.71
Productivity of farmers who adopted production recommendations diffused by the T&V system was higher than that of other farmers.	1.58	0.78
The T&V system organized the extension staff's time; therefore, their professional competence increased.	1.61	0.66
SMSs offered worthwhile experience to the trainees.	1.61	0.69
My confidence in my work has increased after attending the training sessions.	1.61	0.83
At the end of the T&V training program, I could evaluate my work because I can apply what I learned.	1.64	0.64
I am more secure now in my job than before attending training sessions.	1.64	0.70

Phrases	Mean	SD
Appropriate selection of contact farmers makes the work of extension staff easier and raised recommendation adoption rates.	1.64	0.90
The T&V system offered good opportunities for extension staff to become more devoted to their extension work.	1.67	0.65
I now have a better understanding of my work than before attending the training program.	1.67	0.89
My professional responsibilities increased after attending the fortnightly training sessions.	1.67	0.96
Time of discussion in the training sessions was appropriate, and we reached many points of consensus.	1.73	0.84
Conducting of field trials impacted positively the formulation of production recommendations appropriate for local conditions.	1.76	0.74
Reports presented by VEWs & AEOs had adequate interest during the fortnightly training sessions.	1.85	0.62
Production recommendations formulated through the fortnightly training sessions were relevant to local farmers' conditions.	1.85	0.76
The use of audio-visual aids raised recommendations adoption rates by farmers.	1.88	0.93
I can do much of what is expected from me because I receive appropriate support from my administrators.	1.94	1.00
Raising complicated field problems to researchers did not require strenuous effort.	2.11	1.01
I have a better chance of being promoted in rank after attending the fortnightly training sessions.	2.29	1.12
Obtaining solutions for complicated field problems did not require too much time.	2.38	1.09

Phrases	Mean	SD
Opportunities for input toward production recommendations and practices were available and adequate for all farmers.	2.46	1.28

Source: Questionnaire.
* Subject Matter Specialist.

Table 68 summarizes the attitudes of the SDEOs toward their training program. The first response in the table produced a mean score of 1.00 indicating strong agreement with the statement. Even though the group had only six members, all 30 statements generated mean scores under 1.67, which indicates the strong level of agreement by respondents. SDEOs responded to 30 statements designed to measure attitudes toward the T&V training program (Table 68). For all 30 statements, SDEOs generated mean scores under 2.00, which indicates high degree of agreement.

Table 68

SDEO* Responses Indicating Their Attitudes Toward Their T&V Training Program

Phrases	Mean	SD
My professional responsibilities increased after attending the fortnightly training sessions.	1.00	0.00
Following my attendance at the fortnightly training sessions, my work with farmers became more enjoyable and useful than before.	1.17	0.41
My thoughts are more acceptable now than before attending training sessions.	1.17	0.41
As a result to my training, it is easier for me to work with other extension staff than before.	1.17	0.41
Raising complicated field problems to researchers did not require strenuous effort.	1.17	0.41

Phrases	Mean	SD
SMSs offered worthwhile experience to the trainees.	1.17	0.41
Through T&V system, the extension system had an had an important role in conducting research toward solving farmers' local problems.	1.17	0.41
The use of audio-visual aids raised recommendation adoption rates by farmers.	1.32	0.52
Appropriate selection of contact farmers makes the work of extension staff easier and raised recommendation adoption rates.	1.32	0.52
I have a better chance of being promoted in rank after attending the fortnightly training sessions.	1.32	0.52
At the end of the T&V training program, I could evaluate my work because I can apply what I learned.	1.32	0.52
My confidence in my work has increased after attending the training sessions.	1.32	0.52
I am more secure now in my job than before attending training sessions.	1.32	0.52
I now have a better understanding of my work after attending in the training program.	1.32	0.52
It is my responsibility to share with other extension staff what I learned in the T&V training sessions when the need arises.	1.32	0.52
The T&V system organized the extension staff's time; therefore, their professional competence increased.	1.32	0.52
The fortnightly training sessions presented new knowledge, and I have gained technical skills from it.	1.32	0.52
Time of discussion in the training sessions was appropriate; we reached many points of consensus.	1.32	0.52
Fortnightly training sessions created new opportunities for cooperation among extension staff in every subdivision.	1.32	0.52

Phrases	Mean	SD
Scheduled field visits offered good opportunities for extension staff to diffuse their knowledge, practices, and recommendations to a large number of farmers.	1.32	0.52
In general, the T&V system offered good opportunities for raising farmers' confidence in the extension system.	1.32	0.52
The T&V system created good opportunities for linkage between extension and research.	1.32	0.52
Participation of extension and research through the T&V system created useful recommendations for farmers.	1.32	0.52
Productivity of farmers who adopted production recommendations diffused by the T&V system was higher than other farmers.	1.32	0.52
The T&V system offered good opportunities for extension staff to become more devoted to their extension work.	1.50	1.23
Conducting of field trials impacted positively the formulation of production recommendations appropriate for local conditions.	1.50	0.84
Production recommendations formulated through the fortnightly training sessions were relevant to local farmers' conditions.	1.67	1.20
I can do much of what is expected from me because I receive appropriate support from my administrators.	1.67	1.20
Reports presented by VEWs & AEOs had adequate interest during fortnightly training sessions.	1.67	1.20
Obtaining solutions for complicated field problems did not require too much time.	1.67	1.20
Opportunities for input toward production recommendations and practices were available and adequate for all farmers.	1.67	1.20

Source: Questionnaire.
* Subdivisional Extension Officer.

Training Activities

This part of Chapter 4 presents evaluations by agricultural extension workers of the training activities (fortnightly training sessions and monthly workshops) through the T&V system.

Data pertaining to the first two research objectives concerning the training activities are summarized in Tables 69-72 (fortnightly training sessions) and in Tables 73-74 (monthly workshops). Mean scores and standard deviations were used in the presentation of these data. The tables are organized to reflect the increasing rank order of responses.

Fortnightly Training Sessions

The next four tables, 69-72, present evaluations by each agricultural extension group regarding the fortnightly training sessions. Table 69 summarizes the evaluation by VEWs of the fortnightly training sessions in both current and ideal situations. As shown in the table, there were significant differences between perceptions of activities currently occurring as part of their training and what they would perceive to be ideal for 51 of the 53 identified aspects of the fortnightly training sessions.

Table 69

VEW* Evaluation of Fortnightly Training Sessions, Current and Ideal

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Through the training sessions, I was trained well on extension methods.	1.44	0.63	1.16	0.39	43.4#
VEWs wrote the recommendations and new practices presented through training sessions.	1.46	0.60	1.21	0.43	43.2#
The training officer did his work efficiently during sessions.	1.46	0.63	1.18	0.41	45.5#
Training sessions increased the ability of extension staff to convince farmers to try recommendations.	1.48	0.61	1.21	0.44	39.6
Fortnightly training sessions increased the confidence of trainees in themselves and in their agricultural work.	1.51	0.60	1.29	0.53	29.6#
Production recommendations for each crop were seasonally appropriate.	1.51	0.65	1.25	0.48	40.3#
AEOs who participated in training sessions were concerned that VEWs gain necessary skills for diffusing recommendations.	1.51	0.69	1.24	0.51	32.5#
AEOs ensure that their VEWs understand production recommendations during training sessions.	1.51	0.69	1.24	0.49	34.8#
SDEO ensures that the trainees attend training sessions.	1.51	0.71	1.23	0.49	39.3#
Agricultural topics discussed during sessions were related to farming seasons.	1.52	0.64	1.25	0.46	39.2#

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Training session classrooms were comfortable and well-accommodated.	1.52	0.74	1.21	0.43	45.2#
Discussions by participants focused on field problems, local conditions, and farmer reactions toward recommendations.	1.53	0.66	1.22	0.45	55.4#
During sessions AEOs observed effective participation of their VEWs.	1.53	0.72	1.23	0.52	35.1#
Training session locations were appropriate and easy to reach by all trainees.	1.53	0.73	1.24	0.47	42.8#
AEOs helped SMSs during sessions by identifying and focusing on the weaker VEWs when recommendations were presented.	1.56	0.70	1.25	0.53	37.7#
Complaints raised by VEWs about application of recommendations in their circles were discussed at once.	1.56	0.75	1.23	0.45	52.1#
Farmer reactions toward recommendations were reviewed by extension workers throughout the sessions.	1.57	0.71	1.24	0.42	59.9#
Production recommendations presented in the training sessions were appropriate for local farmers' conditions.	1.58	0.66	1.26	0.46	48.6#
Trainees were trained on using audio-visual aids in sessions.	1.59	0.74	1.27	0.51	48.6#
Questions and answers were presented as a basic part of training sessions after presentation of recommendations.	1.60	0.74	1.28	0.53	40.6#

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Participants in the fortnightly training sessions wrote their own personal notes about session topics.	1.60	0.82	1.25	0.48	45.9#
Sometimes posters were used to present production recommendations and their impact.	1.61	0.72	1.24	0.44	66.3#
Recommendations presented through the sessions were easy to understand and to apply.	1.61	0.72	1.30	0.52	40.2#
Remarks and reports of AEOs & VEWs were discussed seriously in the training sessions.	1.61	0.76	1.23	0.47	65.4#
Production recommendations were seasonally appropriate and related to the working areas of trainees.	1.62	0.76	1.25	0.48	55.6#
Practical demonstrations of recommendations were focused on throughout training sessions.	1.63	0.76	1.30	0.60	42.4#
Trainees numbered about 30 per session.	1.63	0.78	1.31	0.59	35.9#
Farmers were sometimes invited to share in the fortnightly training sessions.	1.64	0.82	1.28	0.52	49.6#
Sometimes researchers and experts shared in training sessions.	1.65	0.85	1.24	0.44	63.3#
Discussions introduced some modifications to recommendation diffusion among farmers.	1.66	0.75	1.28	0.51	57.3#
During sessions the AEOs & VEWs were trained on how they can make successful field visits.	1.66	0.77	1.25	0.51	65.8#

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
SMSs conducted and supervised practical recommendations through the training sessions.	1.68	0.86	1.23	0.52	65.4#
SDEO conducted the training sessions by himself.	1.69	0.84	1.38	0.78	24.9#
Field problems discussed during sessions were passed quickly to the research system to find realistic solutions.	1.71	0.84	1.24	0.49	72.4#
There was balance between theoretical presentation and practical work in the training sessions.	1.71	0.90	1.22	0.47	71.6#
Participants in the training sessions were divided into discussion groups to share opinions and recommendations.	1.72	0.85	1.26	0.48	75.0#
Half of the training session time was spent on teaching and the rest on practical work.	1.73	0.85	1.33	0.65	46.5#
Fortnightly training sessions conducted by the training officer gave trainees needed skills.	1.75	0.87	1.34	0.62	53.7#
Printed copies of production recommendations were distributed among trainees during sessions.	1.77	0.92	1.28	0.53	67.8#
Sometimes slides were used during training sessions to explain the impact of recommendations.	1.78	0.91	1.26	0.52	87.2#
Participants in the training sessions actually visited research stations and field farm trials.	1.80	1.01	1.25	0.53	77.9#

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Trainees shared in determining the training curriculum according to their training needs.	1.81	0.97	1.26	0.52	82.2#
Adequate land was available at the training location for practical field work.	1.81	1.04	1.27	0.55	71.7#
Few recommendations were developed in a session.	1.83	1.00	1.48	0.90	25.2#
Sometimes films were used during training sessions to explain the impact of recommendations.	1.83	1.04	1.23	0.50	90.5#
Training requirements were available during sessions to give trainees the necessary skills for diffusing recommendations.	1.86	1.08	1.24	0.54	89.9#
Production recommendations presented through the training sessions are demonstrated by theoretical lectures only.	1.98	1.13	2.01	1.31	0.024
Discussions were collective and consumed entire sessions.	2.11	1.19	1.85	1.24	8.66#
SMSs who shared in the training sessions had a high degree of experience and efficiency.	2.12	1.19	1.33	0.65	111#
Sometimes videotapes were used during sessions to explain or demonstrate parts of the training curriculum.	2.15	1.31	1.24	0.55	140#
Sometimes televisions were used in the sessions to present examples.	2.21	1.30	1.33	0.66	122#
Needed resources for successful sessions were adequate and available for all trainees.	2.24	1.38	1.42	0.81	87.8#

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Sometimes topics presented through the training sessions were not needed by trainees.	2.30	1.29	2.03	1.41	6.68#

Source: Questionnaire.
significant differences.
* Village Extension Worker.

Table 70 summarizes the evaluation by AEOs of the fortnightly training sessions in both current and ideal situations. As shown in the table, there were significant differences between perceptions of activities currently occurring as part of their training and what they would perceive to be ideal for 51 of the 53 identified aspects of the fortnightly training sessions.

Table 70

AEO* Evaluation of Fortnightly Training Sessions, Current and Ideal

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Through the training sessions, I was trained well on extension methods.	1.41	0.53	1.17	0.36	18.3#
Training officer did his work efficiently during sessions.	1.49	0.58	1.16	0.37	26.5#
Training sessions increased the ability of extension staff to convince farmers to try recommendations.	1.50	0.72	1.22	0.42	14.7#
VEWs wrote the recommendations and new practices presented through training sessions.	1.54	0.70	1.21	0.43	19.9#

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
AEOs who participated in training sessions were concerned that VEWs gain necessary skills for defusing recommendations.	1.54	0.74	1.21	0.42	17.9#
Discussions by participants focused on field problems, local conditions, and farmers reactions toward recommendations.	1.54	0.79	1.17	0.41	21.4#
During sessions AEOs observed effective participation of their VEWs.	1.55	0.67	1.21	0.44	21.6#
Fortnightly training sessions increased the confidence of trainees in themselves and in their agricultural work.	1.55	0.73	1.23	0.40	20.8#
Agricultural topics discussed during sessions were related to farming seasons.	1.55	0.79	1.18	0.38	19.8#
Remarks and reports of AEOs & VEWs were discussed seriously in the training sessions.	1.56	0.67	1.30	0.55	10.4#
Farmers reaction toward recommendations were reviewed by extension workers throughout the sessions.	1.58	0.68	1.25	0.49	18.0#
Sometimes posters were used to present production recommendations and their impact.	1.58	0.69	1.24	0.43	20.3#
AEOs ensure that their VEWs understand production recommendations during training sessions.	1.59	0.78	1.21	0.48	20.2#
SDEO ensures that the trainees attend the training sessions.	1.60	0.76	1.20	0.44	24.6#

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Complaints raised by VEWs about application of recommendations in their circles were discussed at once.	1.62	0.82	1.21	0.45	23.2#
Training session classrooms were comfortable and well-accommodated.	1.63	0.80	1.22	0.41	23.4#
Trainees numbered about 30 per session.	1.63	0.89	1.21	0.41	22.5#
AEO helped SMSs during sessions by identifying and focusing on the weaker VEW when recommendations were presented.	1.64	0.85	1.25	0.51	18.8#
Trainees were trained on using audio-visual aids during the sessions.	1.65	0.70	1.24	0.49	28.3#
During sessions the AEOs & VEWs were trained on how they can make successful field visits.	1.65	0.78	1.25	0.44	24.9#
Production recommendations for each crop were seasonally appropriate.	1.65	0.80	1.21	0.41	30.2#
Production recommendations presented in the training sessions were appropriate for local farmers' conditions.	1.65	0.81	1.21	0.44	25.5#
Questions and answers were presented as a basic part of training sessions after presentation of recommendations.	1.65	0.83	1.21	0.45	26.4#

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Participants in the fortnightly training sessions wrote their own personal notes about session topics.	1.70	0.81	1.21	0.46	32.5#
Discussions introduced some modifications to recommendations diffusion among farmers.	1.73	0.76	1.26	0.47	33.9#
Field problems discussed during sessions were passed quickly to research system to find realistic solutions.	1.73	0.87	1.26	0.53	25.8#
SMSs conducted and supervised practical recommendations through the training sessions.	1.73	0.87	1.26	0.58	23.1#
Training session locations were appropriate and easy to reach by all trainees.	1.73	0.94	1.16	0.37	38.7#
Production recommendations were seasonally appropriate and related to the working areas of trainees.	1.74	0.77	1.30	0.63	22.7#
Practical demonstrations of recommendations were focused on through training sessions.	1.74	0.80	1.32	0.57	19.8#
Recommendations presented through the sessions were easy to understand and to apply.	1.75	0.92	1.25	0.43	27.9#
Farmers were sometimes invited to share in the fortnightly training sessions.	1.75	1.01	1.27	0.64	19.6#
Adequate land was available at the training location for practical field work.	1.77	1.00	1.21	0.51	28.6#

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Printed copies of production recommendations were distributed among trainees during sessions.	1.80	0.91	1.26	0.47	33.8#
Few recommendations were developed in a session.	1.83	0.95	1.40	0.75	13.6#
Trainees shared in determining the training curriculum according to their training needs.	1.83	0.98	1.31	0.61	24.1#
Participants in the training sessions were divided into discussion groups to share opinions in recommendations.	1.87	0.92	1.40	0.57	23.8#
Fortnightly training sessions conducted by the training officer gave trainees needed skills.	1.87	0.96	1.39	0.69	21.4#
Half of the training session time was spent on teaching and the rest in practical work.	1.87	0.98	1.29	0.54	34.3#
Training requirements were available during sessions to give trainees the necessary skills for diffusing recommendations.	1.87	1.02	1.27	0.66	27.3#
Sometimes researchers and experts shared in training sessions.	1.87	1.09	1.21	0.43	38.8#
SDEO conducted the training sessions by himself.	1.88	1.08	1.41	0.83	13.4#
There was balance between theoretical presentation and practical work in the training sessions.	1.90	1.04	1.21	0.44	43.8#

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Participants in the training sessions actually visited research stations and field farm trials.	1.91	1.09	1.31	0.62	28.2#
Sometimes films were used during training sessions to explain the impact of the recommendations.	1.92	1.11	1.30	0.62	27.1#
Sometimes slides were used during training sessions to explain the impact of recommendations.	1.94	1.01	1.30	0.59	36.5#
Discussions were collective and consumed all entire sessions.	2.01	1.07	1.69	1.09	5.32#
Production recommendations presented through the training sessions are demonstrated by theoretical lectures only.	2.02	1.09	2.15	1.46	0.639
Sometimes televisions were used in the sessions to present examples.	2.11	1.23	1.31	0.69	36.9#
SMSs who shared in the training sessions had a high degree of experience and efficiency.	2.11	1.15	1.35	0.73	37.2#
Sometimes videotapes were used during sessions to explain or demonstrate parts of the training curriculum.	2.21	1.28	1.32	0.75	43.1#
Sometimes topics presented through the training sessions were not needed by trainees.	2.24	1.25	1.97	1.43	2.216
Needed resources for successful sessions were adequate and available for all trainees.	2.37	1.40	1.36	0.86	45.6#

Source: Questionnaire.
significant differences.
* Agricultural Extension Officer.

Table 71 summarizes the evaluation by SMSs of the fortnightly training sessions in both current and ideal situations. As shown in the table, there were significant differences between perceptions of activities currently occurring as part of their training and what they would perceive to be ideal for 42 of the 53 identified aspects of the fortnightly training sessions.

Table 71

SMS* Evaluation of Fortnightly Training Sessions, Current and Ideal

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
VEWs wrote the recommendations and the new practices presented through training sessions.	1.35	0.49	1.11	0.32	5.57#
SDEO ensures that the trainees attend the training sessions.	1.38	0.50	1.23	0.44	1.739
Training session classrooms were comfortable and well-accommodated.	1.38	0.56	1.14	0.35	4.39#
Questions and answers were presented as a basic part of training sessions after presentation of recommendations.	1.49	0.70	1.20	0.49	3.306
During sessions AEOs observed effective participation of their VEWs.	1.52	0.62	1.23	0.49	3.868
AEOs helped SMSs during sessions by identifying and focusing on the weaker VEW when recommendations were presented.	1.52	0.67	1.17	0.38	6.13#

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
AEOs ensure that their VEWs understand production recommendations during training sessions.	1.52	0.70	1.17	0.38	5.55#
Training sessions increased the ability of extension staff to convince farmers to try recommendations.	1.52	0.76	1.11	0.32	7.52#
Fortnightly training sessions increased the confidence of trainees in themselves and in their agricultural work.	1.52	0.76	1.17	0.38	5.07#
Through the training sessions, I was trained well on extension methods.	1.55	0.51	1.20	0.42	8.57#
Trainees were trained on using audio-visual aids during sessions.	1.55	0.55	1.32	0.78	1.609
Discussions by participants focused on field problems, local conditions, and farmer reactions toward recommendations.	1.55	0.70	1.17	0.38	6.61#
Field problems discussed during sessions were passed quickly to the research system to find realistic solutions.	1.55	0.82	1.17	0.38	5.14#
Trainees numbered about 30 per session.	1.58	0.60	1.26	0.63	3.941
AEOs who participated in training sessions were concerned that VEWs gain necessary skills for diffusing recommendations.	1.58	0.65	1.23	0.44	5.83#
Production recommendations for each crop were seasonally appropriate.	1.58	0.71	1.20	0.42	6.47#

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
The training officer did his work efficiently during sessions.	1.61	0.56	1.23	0.44	8.76#
Production recommendations were seasonally appropriate and related to the working areas of trainees.	1.61	0.66	1.26	0.44	5.75#
During sessions the AEOs & VEWs were trained on how they can make successful field visits.	1.61	0.75	1.47	0.94	0.336
Recommendations presented through the sessions were easy to understand and to apply.	1.64	0.64	1.29	0.53	5.19#
Training session locations were appropriate and easy to reach by all trainees.	1.64	0.77	1.23	0.44	6.38#
Farmer reactions toward recommendations were reviewed by extension workers throughout the sessions.	1.67	0.68	1.26	0.44	7.49#
Agricultural topics discussed during sessions were related to farming seasons.	1.67	0.91	1.17	0.38	7.69#
SMSs conducted and supervised practical recommendations through the training sessions.	1.70	0.81	1.17	0.38	10.8#
Complaints raised by VEWs about application of recommendations in their circles were discussed at once.	1.76	0.78	1.23	0.49	9.97#
Participants in the training sessions actually visited research stations and field farm trials.	1.76	0.78	1.23	0.44	10.6#

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Trainees shared in determining the training curriculum according to their training needs.	1.79	0.82	1.26	0.44	9.98#
Sometimes slides were used during training sessions to explain the impact of recommendations.	1.79	0.86	1.17	0.38	13.5#
Discussions introduced some modifications to recommendation diffusion among farmers.	1.79	0.93	1.29	0.53	6.80#
Remarks and reports of AEOs & VEWs were discussed seriously in the training sessions.	1.82	0.73	1.26	0.44	13.4#
Production recommendations presented in the training sessions were appropriate for local farmers' conditions.	1.82	0.97	1.20	0.42	10.6#
Participants in the fortnightly training sessions wrote their own personal notes about session topics.	1.82	1.05	1.20	0.49	9.13#
Sometimes posters were used to present production recommendations and their impact.	1.85	0.82	1.29	0.53	10.1#
Participants in the training sessions were divided into discussion groups to share opinions and recommendations.	1.88	0.95	1.29	0.47	9.59#
Printed copies of production recommendations were distributed among trainees during sessions.	1.91	1.06	1.17	0.38	13.3#
Adequate land was available at the training location for practical field work.	2.00	1.00	1.29	0.47	13.2#

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Few recommendations were developed in a session.	2.00	1.20	1.64	1.03	1.753
Practical demonstration of recommendations were focused on through training sessions.	2.08	0.98	1.23	0.44	20.7#
Training requirements were available during sessions to give trainees the necessary skills for diffusing recommendations.	2.08	1.03	1.23	0.44	18.5#
There was balance between theoretical presentation and practical work in the training sessions.	2.08	1.21	1.20	0.42	15.5#
SMSs who shared in the training sessions had a high degree of experience and efficiency.	2.11	1.27	1.35	0.70	9.03#
Fortnightly training sessions conducted by the training officer gave trainees needed skills.	2.17	1.25	1.49	0.86	6.83#
Sometimes films were used during training sessions to explain the impact of recommendations.	2.20	1.28	1.17	0.38	19.2#
SDEO conducted the training sessions by himself.	2.26	1.01	1.85	1.23	2.352
Sometimes televisions were used in the sessions to present examples.	2.26	1.14	1.26	0.44	21.4#
Sometimes researchers and experts shared in training sessions.	2.26	1.22	1.38	0.69	12.7#
Half of the training session time was spent in teaching and the rest on practical work.	2.29	1.24	1.49	0.80	10.2#

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Farmers were sometimes invited to share in the fortnightly training sessions.	2.29	1.29	1.55	0.78	8.29#
Production recommendations presented through the training sessions are demonstrated by theoretical lectures only.	2.52	1.18	2.32	1.46	0.306
Sometimes videotapes were used during sessions to explain or demonstrate parts of the training curriculum.	2.58	1.31	1.26	0.44	28.5#
Discussions were collective and consumed entire sessions.	2.64	1.40	2.38	1.60	0.426
Needed resources for successful sessions were adequate and available for all trainees.	2.76	1.42	1.32	0.54	29.2#
Sometimes topics presented through the training sessions were not needed by trainees.	3.49	1.35	2.88	1.73	2.523

Source: Questionnaire.
significant differences.
* Subject Matter Specialist.

Table 72 summarizes the evaluation by SDEOs of the fortnightly training sessions in both current and ideal situations. As shown in the table, there were no significant differences between all of perceptions of activities currently occurring as part of their training and what they would perceive to be ideal for the 53 identified aspects of the fortnightly training sessions.

Table 72

SDEO* Evaluation of Fortnightly Training Sessions, Current and Ideal

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Sometimes posters were used to present production recommendations and their impact.	1.17	0.41	1.00	0.00	1.000
Through the training sessions, I was trained well on extension methods.	1.17	0.41	1.00	0.00	1.000
SDEO ensures that the trainees attend the training sessions.	1.17	0.41	1.17	0.41	0.000
Fortnightly training sessions increased the confidence of trainees in themselves and in their agricultural work.	1.17	0.41	1.17	0.41	0.000
Trainees were trained on using audio-visual aids during sessions.	1.17	0.41	1.17	0.41	0.000
Training requirements were available during sessions to give trainees the necessary skills for diffusing recommendations.	1.32	0.52	1.00	0.00	2.500
Few recommendations were developed in a session.	1.32	0.52	1.17	0.41	0.384
Agricultural topics discussed during sessions were related to farming seasons.	1.32	0.52	1.17	0.41	0.385
Production recommendations for each crop were seasonally appropriate.	1.32	0.52	1.17	0.41	0.385
During sessions AEOs observed effective participation of their VEWs.	1.32	0.52	1.17	0.41	0.385

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Field problems discussed during sessions were passed quickly to the research system to find realistic solutions.	1.32	0.52	1.17	0.41	0.385
Trainees numbered about 30 per session.	1.32	0.52	1.17	0.41	0.385
AEOs who participated in training sessions were concerned that VEWs gain necessary skills for diffusing recommendations.	1.32	0.52	1.17	0.41	0.385
AEOs ensure that their VEWs understand production recommendations during sessions.	1.32	0.52	1.17	0.41	0.385
Participants in the training actually visited research stations and field farm trials.	1.32	0.52	1.17	0.41	0.384
AEOs helped SMSs during sessions by identifying and focusing on the weaker VEWs when recommendations were presented.	1.32	0.52	1.17	0.41	0.385
VEWs wrote the recommendations and new practices presented through training sessions.	1.32	0.52	1.17	0.41	0.385
Training session classrooms were comfortable and well-accommodated.	1.32	0.52	1.17	0.41	0.385
Complaints raised by VEWs about application of recommendations in their circles were discussed at once.	1.32	0.52	1.17	0.41	0.385
Training sessions increased the ability of extension staff to convince farmers to try recommendations.	1.32	0.52	1.17	0.41	0.385

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Production recommendations presented in the training sessions were appropriate for local farmers' conditions.	1.32	0.52	1.17	0.41	0.385
Half of the training session time was spent in teaching and the rest on practical work.	1.32	0.52	1.32	0.52	0.000
SDEO conducted the training sessions by himself.	1.32	0.52	1.50	1.23	0.094
During sessions the AEOs & VEWs were trained on how they can make successful field visits.	1.32	0.52	1.67	1.20	0.384
Trainees shared in determining the training curriculum according to their training needs.	1.50	0.84	1.17	0.41	0.769
SMSs conducted and supervised practical recommendations through the training sessions.	1.50	0.84	1.17	0.41	0.769
Sometimes researchers and experts shared in training sessions.	1.50	0.84	1.17	0.41	0.768
Adequate land was available at the training location for practical field work.	1.50	0.84	1.17	0.41	0.768
Participants in the fortnightly training sessions wrote their own personal notes about session topics.	1.50	0.84	1.17	0.41	0.768
There was balance between theoretical presentation and practical work in the training sessions.	1.50	0.84	1.17	0.41	0.768

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Discussions by participants focused on field problems, local conditions, and farmer reactions toward recommendations.	1.50	0.84	1.17	0.41	0.768
Needed resources for successful sessions were adequate and available for all trainees.	1.67	1.20	1.50	1.23	0.056
Training session locations were appropriate and easy to reach by all trainees.	1.67	1.20	1.17	0.41	0.917
The training officer did his work efficiently during sessions.	1.67	1.20	1.17	0.41	0.918
Remarks and reports of AEOs & VEWs were discussed seriously in the training sessions.	1.67	1.20	1.17	0.41	0.918
Discussions introduced some modifications to recommendations diffusion among farmers.	1.67	0.52	1.50	0.55	0.294
Sometimes slides were used during training sessions to explain the impact of recommendations.	1.67	0.52	1.17	0.41	3.461
Production recommendations were seasonally appropriate and related to the working areas of trainees.	1.82	1.17	1.67	1.20	0.058
Sometimes televisions were used in the sessions to present examples.	1.82	1.17	1.17	0.41	1.739
Participants in the training sessions were divided into discussion groups to share opinions and recommendations.	1.82	1.17	1.17	0.41	1.739

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Printed copies of production recommendations were distributed among trainees during sessions.	1.82	1.59	1.00	0.00	1.623
Recommendations presented through the sessions were easy to understand and to apply.	1.82	1.59	1.17	0.41	0.975
Farmers were sometimes invited to share in the fortnightly training sessions.	1.82	1.59	1.17	0.41	0.976
Sometimes films were used during training sessions to explain the impact of recommendations.	1.82	0.97	1.17	0.41	2.352
Sometimes videotapes were during sessions to explain or demonstrate parts of the training curriculum.	2.00	1.10	1.17	0.41	3.048
SMSs who shared in the training sessions had a high degree of experience and efficiency.	2.00	1.55	2.00	1.55	0.000
Questions and answers were presented as a basic part of training sessions after presentation of recommendations.	2.17	1.46	1.50	1.23	0.727
Sometimes topics presented through the training sessions were not needed by trainees.	2.17	1.46	2.50	1.63	0.136
Production recommendations presented through the training sessions were demonstrated by theoretical lectures only.	2.32	1.37	2.67	1.51	0.161

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Practical demonstrations of recommendations were focused on through training sessions.	2.32	1.37	1.67	1.20	0.800
Farmer reactions toward recommendations were reviewed by extension workers throughout the sessions.	2.32	1.74	1.67	1.20	0.588
Discussions were collective and consumed entire sessions.	2.50	1.38	2.82	1.71	0.136
Fortnightly training sessions conducted by the training officer gave trainees needed skills.	3.17	1.71	2.00	1.55	1.521

Source: Questionnaire.
significant differences.
* Subdivisional Extension Officer.

Monthly Workshops

Table 73 summarizes the evaluation by SMSs of the monthly workshops in current and ideal situations. As shown in the table, there were significant differences between perceptions of activities currently occurring as part of their training and what they would perceive to be ideal for 14 of the 28 identified aspects of the monthly workshops.

Table 74 summarizes the evaluation by SDEOs of the monthly workshops in both current and ideal situations. As shown in the table, there were no significant differences between the perceptions of activities currently occurring as part of their training and what they would perceive to be ideal for all 28 identified aspects of the monthly

workshops.

Table 73

SMS* Evaluation of Monthly Workshops, Current and Ideal

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Participants are encouraged to discuss topics in detail.	1.38	0.50	1.14	0.35	5.12#
Days that are chosen for workshops do not conflicted with the official tasks of participants.	1.41	0.60	1.26	0.44	1.30
Each main crop requires a lead trainer assisted by a fixed number of researchers.	1.41	0.71	1.17	0.38	2.96
Discussion among participants is very important.	1.46	0.62	1.20	0.49	3.15
Through feedback and discussion of farmer reactions toward recommendation, monthly workshops direct scientific researches in the right direction.	1.46	0.67	1.05	0.23	10.2#
Monthly workshops are the main venue of in-service training for SMSs.	1.46	0.70	1.26	0.75	1.01
Monthly workshops provide regular contact between extension workers and researchers.	1.49	0.62	1.26	0.66	1.77
Discussions and formulations of relevant production recommendations occur.	1.49	0.67	1.23	0.55	2.55
Monthly workshops improve technical skills of SMSs in fields of specialization.	1.52	0.67	1.20	0.49	4.46#
Monthly workshops are held at an appropriate area for all participants.	1.52	0.67	1.26	0.52	2.72

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
The maximum number of participants is 35.	1.55	0.78	1.35	0.64	1.03
Difficulties facing VEWs in diffusing production recommendations are discussed.	1.58	0.71	1.32	0.60	2.27
There are organized visits to farm trial fields and farmers' fields to observe the recommendation effects.	1.61	0.61	1.38	0.56	2.18
Primary trainers are scientific researchers as well as other suitably experienced persons.	1.61	0.79	1.29	0.53	3.36
Monthly workshops are planned, coordinated, and organized by the District Extension Officer (DEO).	1.61	0.83	1.35	0.70	1.65
Participants are responsible for the sequence of production recommendations presented by extension staff during season.	1.61	0.85	1.28	0.45	3.264
Farmers' local conditions are considered during formulation of production recommendations.	1.64	0.70	1.23	0.44	7.55#
Results of farm trials are discussed to modify production recommendations.	1.64	0.86	1.26	0.52	4.34#
General planning for all workshops in one season should be done ahead of time.	1.67	0.82	1.26	0.56	5.14#
The outline of the training and educational plan for the coming 2 fortnightly training sessions are discussed.	1.70	0.67	1.35	0.59	4.41#
Suitable fields for carrying out farm trials and production recommendations are necessary for successful workshops.	1.70	0.81	1.26	0.44	6.91#

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
A broad outline of the topics covered in the next workshop were planned before the end of the meeting.	1.73	0.93	1.32	0.53	4.33#
Reasons for farmer rejection of recommendations are reviewed.	1.76	0.74	1.35	0.55	5.92#
Basic teaching aids are available to make meetings successful.	1.76	0.94	1.35	0.70	3.75
Formulation and discussion of recommended practices for major crops for the coming two fortnightly training sessions are accomplished.	1.79	0.86	1.38	0.69	4.16#
About 2/3 of workshop time is spent in discussion, and the rest spent in scientific applications of production recommendations.	1.88	0.77	1.29	0.53	12.3#
Field problems for which no solutions are found are sent to agricultural universities or research stations.	1.88	0.93	1.38	0.56	6.64#
Adequate and available production input and equipment is necessary for successful workshops.	1.97	1.16	1.38	0.61	6.38#

Source: Questionnaire.
significant differences.
* Subject Matter Specialist.

Table 74

SDEO* Evaluation of Monthly Workshops, Current and Ideal

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Through feedback and discussion of farmer reactions toward recommendation, monthly workshops direct scientific researches in the right direction.	1.00	0.00	1.00	0.00	999.9
Monthly workshops improve technical skills of SMSs in their fields of specialization.	1.00	0.00	1.00	0.00	999.9
Discussion among participants is very important.	1.20	0.45	1.00	0.00	1.00
Monthly workshops are the main venue of in-service training for SMSs.	1.32	0.52	1.20	0.45	0.20
Monthly workshops are planned, coordinated, and organized by the District Extension Officer (DEO).	1.40	0.55	1.20	0.45	0.40
Suitable fields for carrying out farm trials and production recommendations are necessary for successful workshops.	1.40	0.55	1.20	0.45	0.40
Formulation and discussion of recommended practices for major crops for the coming two fortnightly training sessions are accomplished.	1.40	0.55	1.20	0.45	0.40
Difficulties facing VEWs in diffusing production recommendations are discussed.	1.40	0.55	1.20	0.45	0.40

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
There are organized visits to farm trial fields and farmers' fields to observe the recommendation effects.	1.40	0.55	1.20	0.45	0.40
The outline of the training and educational plan for the coming two fortnightly training sessions are discussed.	1.40	0.55	1.20	0.45	0.40
Adequate and available production input and equipment is necessary for successful workshops.	1.40	0.55	1.20	0.45	0.40
Field problems for which no solutions are found are sent to agricultural universities or research stations.	1.40	0.55	1.20	0.45	0.40
Monthly workshops are held at an appropriate area for all participants.	1.40	0.55	1.20	0.45	0.40
Farmers' local conditions are considered during the formulation of production recommendations.	1.60	0.55	1.20	0.45	1.60
Primary trainers are scientific researchers as well as other suitably experienced persons.	1.60	0.55	1.20	0.45	1.60
About 2/3 of workshop time is spent in discussion, and the rest spent in scientific applications of production recommendations.	1.60	0.55	1.20	0.45	1.60
Reasons for farmer rejection of recommendations are reviewed.	1.60	0.55	1.20	0.45	1.60
Participants are encouraged to discuss the topics in detail.	1.60	0.55	1.40	0.55	0.33

Responses	Current mean	Current SD	Ideal mean	Ideal SD	F. Values
Days that are chosen for workshops do not conflicted with the official tasks of participants.	1.60	0.88	1.20	0.45	0.80
Discussions and formulations of relevant production recommendations occur.	1.60	0.88	1.20	0.40	0.80
Monthly workshops provide regular contact between extension workers and researchers.	1.80	1.29	1.60	1.33	0.06
Basic teaching aids are available to make meetings successful.	1.80	0.84	1.20	0.45	2.00
A broad outline of the topics covered in the next workshop were planned before the end of the meeting.	1.80	0.84	1.20	0.45	2.00
Participants are responsible for the sequence of production recommendations presented by extension staff during the season.	1.80	0.84	1.20	0.45	2.00
Results of farm trials are discussed to modify production recommendations.	1.80	0.84	1.20	0.45	2.00
General planning for all workshops in one season should be done ahead of time.	1.80	0.84	1.40	0.55	0.80
The maximum number of participants is 35.	1.80	0.84	1.40	0.55	0.80
Each main crop requires a lead trainer assisted by fixed number of researchers.	2.20	1.10	1.80	1.29	0.28

Source: Questionnaire.
significant differences.
* Subdivisional Extension Officer.

CHAPTER 5

DISCUSSION

Prior to the T&V system the majority of extension workers (74.6% of the sample) did not participate in any training circulations. Whereas the data indicate that 16.2% of the sample participated in only one training circulation, and 55.0% of the sample participated in two training circulations through the I. F. A. D. project (Table 10). This mean that the importance of training circulations increased through the project.

Table 11 reports that 81.47% of VEWs, 74.38% of AEOs, 15.15% of SMSs and 16.67% of SDEOs did not participate in any training circulations before the project. Significant differences between extension worker groups were found in their participation in training circulations. This mean that the greater proportion of training circulations was designated to the leaders of extension service.

Although the majority of VEWs and AEOs (68.82% and 71.07% respectively) participated in training circulations through the project (Table 12), significant differences between extension worker groups were found in their participation in training circulations. We can ascribe this result to the big numbers of AEWs and AEOs in comparison with the numbers of SMSs and SDEOs.

Although agricultural extension training circulations did not descend at front of these circulations before or

through the project, agricultural extension training circulations increased by nearly 400% through the project (Table 13). This mean that there are enough rooms to increase the quality and quantity of agricultural extension training circulations in the future.

The majority of agricultural extension workers before and through the project (59.28% and 70.21% respectively) reported that the training style was theoretical & practical (Table 14). The other styles which separate between theoretical and practical training need a lot of facilities and consequently increase the training costs, so this style of training may be more convenient to the conditions of extension service in El Minia Governorate.

There was no significant differences between extension worker groups in their perception of the training circulations style before the project (Table 15).

There were no significant differences between extension worker groups in their perception of the training circulations style through the project (Table 16).

According to the data in Table 17 we can rank order the adio-visual aids by percentage of usage as: blackboard, posters, loud-speakers and cinema.

In Table 18 there were no significant differences between extension worker groups in their usage of posters. This is due to the simplicity of its usage. The results showed significant differences between extension worker

groups in their usage of the blackboards, loud-speakers and cinema. We can interpret these results by two different ways: a. the participants may be were not qualified enough to use these aids. b. may be these aids were not available for extension workers on field level.

According to the data in Table 19 we can rank order the extension methods by percentage of usage as: extension assemblies, general extension meetings, extension fields, extension pamphlet, extension lectures, field days, and demonstrated field trials.

In Table 20 there were no significant differences between extension worker groups in their usage of extension assemblies, general extension meetings and extension fields. The results showed significant differences between extension worker groups in their usage of extension pamphlet, extension lectures, field days and demonstrated field trials. The significant differences can be explained as follow: a. for extension pamphlets may be the quantities were not enough to meet the requirement of the extension workers, b. according to the data in (Table 4) 77% of the sample have only completed agricultural high school as their highest educational experience whereas extension lectures need high standard of professional extension workers, c. field days and demonstrated field trials need a lot of facilities which may be not available for extension workers at the field level.

Regarding the average number of visits to farmers per week and the average number of hours spent during each visit there were no significant differences between extension worker groups (Table 22-24).

Concerning the announcement of extension worker groups scheduled visits in their areas of jurisdiction (Table 25), there were no significant differences between extension worker groups.

Since the majority of VEWs & AEOs reported that they were not devoted while the majority of SMSs & SDEOs reported that they were devoted (Table 26), there were significant differences, regarding the devotion of extension worker groups to their educational extension work through the T&V system.

Summary of Findings by Objective

The four objectives each contained the elements of visits, training, fortnightly training sessions, and monthly workshops. In analyzing the findings for each objective, three of the four elements were examined by responding agricultural extension worker groups (VEWs, AEOs, SMSs, and SDEOs); because monthly workshops pertain only to SMSs and SDEOs, only those two worker groups were examined. Under Objective 1, the element of fortnightly training sessions was subdivided to assist in analyzing the findings. Subdivisions include activities, facilities, issues, and attitudes. Objectives 2 and 3 address perceptions of

appropriate methods and ideal quality indicators, and they were analyzed together. Each worker group identified specific techniques, activities, or job tasks they perceived as currently happening in the T&V system within El Minia Governorate and those they would perceive as ideal.

Objective 1: Visits

Village Extension Workers. VEWs identified 19 visit techniques or job tasks they most frequently applied during visits that generated mean scores of 1.50 or lower (Table 27) and included "VEW teaches and explains production recommendations to his farmers" and "VEW encourages his farmers to try and adopt production recommendations." These 19 visit techniques or job tasks are indicators of what VEWs perceive as currently happening. Five visit techniques or job tasks such as "Visits by extension workers to farmers were regular and scheduled" and "Extension system ensures that production requirements are adequate for applying production recommendations" generated mean scores above 1.50 and indicate where to make changes in current practices to enhance the adoption of visit recommendations.

Agricultural Extension Officers. AEOs identified 13 visit techniques or job tasks they most frequently applied during visits that generated mean scores of 1.50 or lower (Table 28) and included "AEO ensures that recommendations are well understood by VEWs" and "Extension workers evaluate the influence of field visits on farmer receptiveness toward

extension recommendations." These 13 visit techniques or job tasks are indicators of what AEOs perceive as currently happening. Five visit techniques or job tasks such as "Visits by extension workers to farmers were regular and scheduled" and "Extension system ensures that production requirements are adequate for applying production recommendations" generated mean scores above 1.50 and indicate where to make changes in current practices to enhance the adoption of visit recommendations.

Subject Matter Specialists. SMSs identified 11 visit techniques or job tasks they most frequently applied during visits that generated mean scores of 1.50 or lower (Table 29) and included "SMSs follow local farm conditions that require discussion with research staff" and "SMSs ascertain farmer adoption rates of production recommendations." These 11 visit techniques or job tasks are indicators of what SMSs perceive as currently happening. Four visit techniques or job tasks such as "Visits by extension workers to farmers were regular and scheduled" and "Extension system ensures that production requirements are adequate for applying production recommendations" generated mean scores above 1.50 and indicate where to make changes in current practices to enhance the adoption of visit recommendations.

Subdivisional Extension Officers. SDEOs identified 15 visit techniques or job tasks they most frequently applied during visits that generated mean scores of 1.50 or lower

(Table 30) and included "SDEOs ensure that their VEWs visit farmer groups regularly" and "Extension workers know the reasons for farmer rejection of production recommendations." These 15 visit techniques or job tasks are indicators of what SDEOs perceive as currently happening.

Summary of Objective 1: Visits. When all extension worker groups were combined, 85% evaluated their field visits as very good to excellent (Table 35), there were no significant differences between extension worker groups in their self-evaluation of the field visits in their working areas, 79% evaluated the length of their field visit as just right (Table 36), there were no significant differences between extension worker groups in their self-evaluation of the length of field visits, 67% evaluated the amount of practical or theoretical training received to promote successful field visit as much to some (Table 37), there were no significant differences between extension worker groups in their self-evaluation of the practical or theoretical training that they received to promote successful field visits, 80.4% evaluated the usefulness of field visits for increasing self-awareness of their professional roles as useful to very useful (Table 38), there were no significant differences between extension worker groups in their self-evaluation of the usefulness of their own field visits in increasing self-awareness of their professional tasks in the extension system. Although a

convincing majority responded positively on the issue of visits, the 19.4% of extension workers who reported little or no practical or theoretical training is too large a percentage for successful field visits under the T&V system.

Objective 1: Training

Village Extension Workers. VEWs identified five training techniques or job tasks they most frequently applied during training that generated mean scores of 1.50 or lower (Table 31) and included "Fortnightly training sessions upgrade and update professional skills of AEOs & VEWs and give them new knowledge" and "Special short courses received by VEWs & AEOs upgrade their skills and increase their knowledge." These five training techniques or job tasks are indicators of what VEWs perceive as currently happening.

Agricultural Extension Officers. AEOs identified eight training techniques or job tasks they most frequently applied during training that generated mean scores of 1.50 or lower (Table 32) and included "AEOs assist in increasing the efficiency and competence of their VEWs in transferring recommendations to farmers" and "AEO & VEW review of field problems in their circles serve to develop and modify production recommendations during training sessions." These eight training techniques or job tasks are indicators of what AEOs perceive as currently happening.

Subject Matter Specialists. SMSs identified 12 training techniques or job tasks they most frequently applied during training that generated mean scores of 1.50 or lower (Table 33) and included "SMSs give extension staff short courses in their own fields of specialization" and "SMSs attend monthly workshops regularly." These 12 training techniques or job tasks are indicators of what SMSs perceive as currently happening. Five training techniques or job tasks such as "Production recommendations presented at fortnightly training sessions are printed and distributed to all participants" and "Training officer develops effective training for VEWs & AEOs in the field of communications, extension methods, and audio-visual aids" generated mean scores above 1.50 and indicate where to make changes in current practices to enhance the adoption of training recommendations.

Subdivisional Extension Officers. SDEOs identified 14 training techniques or job tasks they most frequently applied during training that generated mean scores of 1.50 or lower (Table 34) and included "SDEO is responsible for effective organization and operation of all fortnightly training sessions" and "SDEO transmits farmer reactions toward recommendations to researchers through monthly workshops." These 14 training techniques or job tasks are indicators of what SDEOs perceive as currently happening.

Summary of Objective 1: Training. When all extension worker groups were combined, 74.6% evaluated the length of T&V training activities as appropriate (Table 39), there were no significant differences between extension worker groups in their self-evaluation of the length of training activities in their working areas, 77% evaluated the length of lectures in the training program as appropriate (Table 40), there were no significant differences between extension worker groups in their self-evaluation of the length of lectures in the training program, 75.2% evaluated the length of practical training in the training program as appropriate to short (Table 41), there were no significant differences between extension worker groups in their self-evaluation of the length of lectures in the training program, 79% evaluated the length of discussions in the training program as appropriate to short (Table 42), there were no significant differences between extension worker groups in their self-evaluation of the length of discussions in the training program, 69.8% evaluated the length of field trial visits in the training program as appropriate to short (Table 43), no significant differences between extension worker groups in their self-evaluation of the length of field trial visits in the training program. The general consensus by all extension workers on training issues does not suggest that a critical need for improvements exists in this area.

Objective 1: Fortnightly Training/Activities

Village Extension Workers. VEWs identified four activities they most frequently applied during fortnightly training sessions that generated mean scores of 1.50 or lower (Table 69) and included "Through the training sessions, I was trained well on extension methods" and "VEWs wrote the recommendations and new practices presented through training sessions." These four activities are indicators of what VEWs perceive as currently happening. Forty-nine activities such as "Production recommendations for each crop were seasonally appropriate" and "AEOs who participated in training sessions were concerned that VEWs gain necessary skills for diffusing recommendations" generated mean scores above 1.50 and indicate where to make changes in current practices to enhance the activities of fortnightly training sessions.

Agricultural Extension Officers. AEOs identified three activities they most frequently applied during fortnightly training sessions that generated mean scores of 1.50 or lower (Table 70) and included "Through the training sessions, I was trained well on extension methods" and "The training officer did his work efficiently during sessions." These three activities are indicators of what AEOs perceive as currently happening. Fifty activities such as "Discussions by participants focused on field problems, local conditions, and farmers reactions toward

recommendations" and "Remarks and reports of AEOs & VEWs were discussed seriously in the training sessions" generated mean scores above 1.50 and indicate where to make changes in current practices to enhance the activities of fortnightly training sessions.

Subject Matter Specialists. SMSs identified four activities they most frequently applied during fortnightly training sessions that generated mean scores of 1.50 or lower (Table 71) and included "VEWs wrote the recommendations and the new practices presented through training sessions" and "Questions and answers were presented as a basic part of training sessions after presentation of recommendations." These four activities are indicators of what SMSs perceive as currently happening. Forty-nine activities such as "During sessions AEOs observed effective participation of their VEWs" and "AEOs helped SMSs during sessions by identifying and focusing on the weaker VEW when recommendations were presented" generated mean scores above 1.50 and indicate where to make changes in current practices to enhance the activities of fortnightly training sessions.

Subdivisional Extension Officers. SDEOs identified 31 activities they most frequently applied during fortnightly training sessions that generated mean scores of 1.50 or lower (Table 72) and included "Sometimes posters were used to present production recommendations and their impact" and "Through the training sessions, I was trained well on

extension methods." These 31 activities are indicators of what SDEOs perceive as currently happening. Twenty-one activities such as "Needed resources for successful sessions were adequate and available for all trainees" and "Training session locations were appropriate and easy to reach by all trainees" generated mean scores above 1.50 and indicate where to make changes in current practices to enhance the activities of fortnightly training sessions.

Summary of Objective 1: Fortnightly Training Sessions/Activities. When all extension worker groups were combined, 0.6% evaluated the supervision of Subdivisional Extension Officers as dissatisfied (Table 53), there were no significant differences between extension worker groups in their satisfaction toward the supervision of SDEOs, 2.2% evaluated the scheduling of training program as dissatisfied (Table 54), no significant differences between extension worker groups in their satisfaction toward the schedule program activities, 0.6% evaluated the interactions within and among working groups as dissatisfied (Table 55), there were no significant differences between extension worker groups in their satisfaction toward the interactions within and among working groups, 11.6% evaluated the practical portions of the training program as dissatisfied (Table 57), there were no significant differences between extension worker groups in their satisfaction toward the practical parts of the program, 4.4% evaluated the amount of contact

with training staff as dissatisfied (Table 59), there were no significant differences between extension worker groups in their satisfaction toward the amount of contact with training staff, 1.6% evaluated the trainee discussions as dissatisfied (Table 61), there were no significant differences between extension worker groups in their satisfaction toward the trainee discussions, 1.6% evaluated the practical application of the training program as dissatisfied (Table 62), there were no significant differences between extension worker groups in their satisfaction toward the practical application of the training program.

Objective 1: Fortnightly Training/Facilities

Village Extension Workers. VEWs reported their level of satisfaction regarding training classrooms, 89.12% as satisfied to excellent (Table 46); teaching methods, 99.12% as satisfied to excellent (Table 47); library facilities, 69.41% as satisfied to excellent (Table 48); and audio-visual aids, 69.12% as satisfied to excellent (Table 49).

Agricultural Extension Officers. AEOs reported their level of satisfaction regarding training classrooms, 99.27% as satisfied to excellent (Table 46); teaching methods, 99.12% as satisfied to excellent (Table 47); library facilities, 70.25% as satisfied to excellent (Table 48); and audio-visual aids, 76.03% as satisfied to excellent (Table 49). , no significant differences between extension worker

groups in their satisfaction toward the audio-visual aids

Subject Matter Specialists. SMSs reported their level of satisfaction regarding training classrooms, 100% as satisfied to excellent (Table 46); teaching methods, 100% as satisfied to excellent (Table 47); library facilities, 69.70% as satisfied to excellent (Table 48); and audio-visual aids, 78.79% as satisfied to excellent (Table 49).

Subdivisional Extension Officers. SDEOs reported their level of satisfaction regarding training classrooms, 100% as satisfied to excellent (Table 46); teaching methods, 100% as satisfied to excellent (Table 47); library facilities, 100% as satisfied to excellent (Table 48); and audio-visual aids, 83.33% as satisfied to excellent (Table 49).

There were no significant differences between extension worker groups in their satisfaction toward the classrooms (Table 46), there were no significant differences between extension worker groups in their satisfaction toward the teaching methods (Table 47), there were no significant differences between extension worker groups in their satisfaction toward the audio-visual aids (Table 49), whereas there were significant differences between extension worker groups in their satisfaction toward the library facilities (Table 48). This is a reasonable result because of the differences between the four groups in their work conditions i. e. a lot of library facilities were available for SDEOs & SMSs whereas less of these facilities were

available for VEWs & AEOs.

Summary of Objective 1: Fortnightly Training Sessions/Facilities. When all extension worker groups were combined, the training classrooms, and training teaching methods all received at least satisfactory responses. Library facilities and audio-visual aids, however, were rated as unsatisfactory by nearly one-third of the population.

Objective 1: Fortnightly Training/Issues

Village Extension Workers. VEWs reported their level of satisfaction regarding knowledge gained, skills acquired, SMS competence, SDEO supervision, scheduling, group interactions, theoretical lectures, contact with training staff, number of trainees, trainee discussions, and practical application (Tables 50-56, 59-62) as satisfactory to excellent (at least 95%). On two issues, practical portions of the training (Table 57) and necessary teaching aids (Table 58), more than 10% expressed dissatisfaction. One issue, compensation, received a majority (62.35%) of dissatisfaction (Table 63).

Agricultural Extension Officers. AEOs reported their level of satisfaction regarding knowledge gained, skills acquired, SMS competence, SDEO supervision, scheduling, group interactions, theoretical lectures, contact with training staff, number of trainees, trainee discussions, and practical application (Tables 50-56, 59-62) as satisfactory

to excellent (at least 97.52%). On two issues, practical portions of the training (Table 57) and necessary teaching aids (Table 58), 7.44% expressed dissatisfaction. One issue, compensation, received a majority (61.61%) of dissatisfaction (Table 63).

Subject Matter Specialists. SMSs reported their level of satisfaction regarding knowledge gained, skills acquired, SMS competence, SDEO supervision, scheduling, group interactions, theoretical lectures, contact with training staff, number of trainees, trainee discussions, and practical application (Tables 50-56, 59-62) as satisfactory to excellent (at least 93.94%). On two issues, practical portions of the training (Table 57) and necessary teaching aids (Table 58), more than 10% expressed dissatisfaction. One issue, compensation, received a significant minority (45.45%) of dissatisfaction (Table 63).

Subdivisional Extension Officers. SDEOs reported their level of satisfaction regarding knowledge gained, skills acquired, SMS competence, SDEO supervision, scheduling, group interactions, theoretical lectures, contact with training staff, number of trainees, trainee discussions, and practical application (Tables 50-62) as satisfactory to excellent (at 100%). One issue, compensation, received a minority (16.67%) of dissatisfaction (Table 63).

Summary of Objective 1: Fortnightly Training Sessions/Issues. When all extension worker groups were combined, 1% reported dissatisfaction with knowledge resulting from the training (Table 50), there were no significant differences between extension worker groups in their satisfaction toward the knowledge gained, 1% reported dissatisfaction with skills acquired during the training (Table 51), there were no significant differences between extension worker groups in their satisfaction toward the skills acquired during the training, 0.4% reported dissatisfaction with Subject Matter Specialist competence (Table 52), no significant differences between extension worker groups in their satisfaction toward the SMSs' competence, 1.8% reported dissatisfaction with theoretical lectures during the training (Table 56), there were no significant differences between extension worker groups in their satisfaction toward the theoretical lectures, 11.4% reported dissatisfaction with necessary teaching aids (Table 58), there were no significant differences between extension worker groups in their satisfaction toward the necessary teaching aids, 2.2% reported dissatisfaction with the number of trainees in the training sessions (Table 60), there were no significant differences between extension worker groups in their satisfaction toward the number of trainees in the training sessions and 60.4% reported dissatisfaction with the compensation related to training and field visits (Table

63), there were significant differences between extension worker groups in their satisfaction toward the compensation related to training and field visits because the majority of VEWs & AEOs reported that they were dissatisfied while the majority of SMSs & SDEOs reported that they were satisfied.

Objective 1: Fortnightly Training/Attitudes

Village Extension Workers. VEWs responded to 30 statements designed to measure attitudes toward the T&V training program (Table 65). For all 30 statements, VEWs generated mean scores under 2.00, which indicates complete agreement.

Agricultural Extension Officers. AEOs also responded to 30 statements designed to measure attitudes toward the T&V training program (Table 66). For 29 of the 30 statements, AEOs generated mean scores under 2.00, which indicates virtually complete agreement.

Subject Matter Specialists. SMSs also responded to 30 statements designed to measure attitudes toward the T&V training program (Table 67). For 26 of the 30 statements, SMSs generated mean scores under 2.00, which indicates nearly complete agreement.

Subdivisional Extension Officers. SDEOs responded to 30 statements designed to measure attitudes toward the T&V training program (Table 68). For all 30 statements, SDEOs generated mean scores under 2.00, which indicates complete agreement.

Summary of Objective 1: Fortnightly Training/Attitudes. When all extension worker groups were combined, 0.2% evaluated the usefulness of the training program regarding their own jobs as useless (Table 44), there were no significant differences between extension worker groups in their self-evaluation of the usefulness of the training program regarding their own jobs in their working areas, 0.6% reported dissatisfaction with the length of training sessions (Table 45), there were no significant differences between extension worker groups in their satisfaction toward the length of training sessions and 87.6% reported a willingness to attend future training programs (Table 64), no significant differences between extension worker groups in their willingness toward attending future training programs as a result to their participation in the T&V system.

Objective 1: Monthly Workshops

Subject Matter Specialists. SMSs identified eight activities they most frequently applied during monthly workshops that generated mean scores of 1.50 or lower (Table 73) and included "Participants are encouraged to discuss topics in detail" and "Days that are chosen for workshops do not conflicted with the official tasks of participants." These eight activities are indicators of what SMSs perceive as currently happening. Twenty activities such as "There are organized visits to farm trial fields and farmers'

fields to observe the recommendation effects" and "Farmers' local conditions are considered during formulation of production recommendations" generated mean scores above 1.50 and indicate where to make changes in current practices to enhance the activities of fortnightly training sessions.

Subdivisional Extension Officers. SDEOs identified 13 activities they most frequently applied during monthly workshops that generated mean scores of 1.50 or lower (Table 74) and included "Through feedback and discussion of farmer reactions toward recommendation, monthly workshops direct scientific researches in the right direction" and "Monthly workshops improve technical skills of SMSs in their fields of specialization." These 13 activities are indicators of what SDEOs perceive as currently happening. Fifteen activities such as "Farmers' local conditions are considered during the formulation of production recommendations" and "About 2/3 of workshop time is spent in discussion, and the rest spent in scientific applications of production recommendations" generated mean scores above 1.50 and indicate where to make changes in current practices to enhance the activities of fortnightly training sessions.

Summary of Objective 1: Monthly Workshops. When combined, SMSs and SDEOs (Tables 73-74) reported they were using less than 50% of the identified monthly workshop activities. The absence of agricultural universities may explain this perceived under utilization of monthly

workshops activities. Cooperation among agricultural university staff, agricultural researchers from research centers, and extension workers would increase the effectiveness of monthly workshop activities.

Objectives 2 and 3: Visits

Village Extension Workers. VEWs rated which of 25 identified visit techniques or job tasks would be ideal; 23 of these generated mean scores of 1.50 or lower (Table 27). Two visit techniques or job tasks, "Contact farmers within farmer groups are changed continuously" and "Contact farmers are selected based on their acquaintance with VEW," generated mean scores above 1.50 and were not perceived as critical to their job performance.

Agricultural Extension Officers. AEOs rated which of 18 identified visit techniques or job tasks would be ideal; all 18 of these generated mean scores of 1.50 or lower (Table 28). These 18 techniques or job tasks are indicators of what AEOs perceive as ideal for successful visits.

Subject Matter Specialists. SMSs rated which of 15 identified visit techniques or job tasks would be ideal; all 15 of these generated mean scores of 1.50 or lower (Table 29). These 15 techniques or job tasks are indicators of what SMSs perceive as ideal for successful visits.

Subdivisional Extension Officers. SDEOs rated which of 15 identified visit techniques or job tasks would be ideal; all 15 of these generated mean scores of 1.50 or lower

(Table 30). These 15 techniques or job tasks are indicators of what SDEOs perceive as ideal for successful visits.

Objectives 2 and 3: Training

Village Extension Workers. VEWs rated which of five identified training techniques or job tasks would be ideal; all five of these generated mean scores of 1.50 or lower (Table 31). These five techniques or job tasks are indicators of what VEWs perceive as ideal for successful training.

Agricultural Extension Officers. AEOs rated which of eight identified training techniques or job tasks would be ideal; all eight of these generated mean scores of 1.50 or lower (Table 32). These eight techniques or job tasks are indicators of what AEOs perceive as ideal for successful training.

Subject Matter Specialists. SMSs rated which of 17 identified training techniques or job tasks would be ideal; all 17 of these generated mean scores of 1.50 or lower (Table 33). These 17 techniques or job tasks are indicators of what SMSs perceive as ideal for successful training.

Subdivisonal Extension Officers. SDEOs rated which of 14 identified training techniques or job tasks would be ideal; all 14 of these generated mean scores of 1.50 or lower (Table 34). These 14 techniques or job tasks are indicators of what SDEOs perceive as ideal for successful training.

Objectives 2 and 3: Fortnightly Training Sessions.

Village Extension Workers. VEWs rated which of 53 identified activities would be ideal during fortnightly training sessions; 50 of these generated mean scores of 1.50 or lower (Table 69). Three activities such as "Sometimes topics presented through the training sessions were not needed by trainees" and "Production recommendations presented through the training sessions are demonstrated by theoretical lectures only" generated mean scores above 1.50 and indicate where to make changes in ideal practices to enhance the activities of fortnightly training sessions.

Agricultural Extension Officers. AEOs rated which of 53 identified activities would be ideal during fortnightly training sessions; 50 of these generated mean scores of 1.50 or lower (Table 70). Three activities such as "Discussions were collective and consumed all entire sessions" and "Sometimes topics presented through the training sessions were not needed by trainees" generated mean scores above 1.50 and indicate where to make changes in ideal practices to enhance the activities of fortnightly training sessions.

Subject Matter Specialists. SMSs rated which of 53 identified activities would be ideal during fortnightly training sessions; 47 of these generated mean scores of 1.50 or lower (Table 71). Six activities such as "Sometimes topics presented through the training sessions were not needed by trainees" and "Production recommendations

presented through the training sessions are demonstrated by theoretical lectures only" generated mean scores above 1.50 and indicate where to make changes in ideal practices to enhance the activities of fortnightly training sessions.

Subdivisional Extension Officers. SDEOs rated which of 53 identified activities would be ideal during fortnightly training sessions; 44 of these generated mean scores of 1.50 or lower (Table 72). Nine activities such as "Sometimes topics presented through the training sessions were not needed by trainees" and "Production recommendations presented through the training sessions were demonstrated by theoretical lectures only" generated mean scores above 1.50 and indicate where to make changes in ideal practices to enhance the activities of fortnightly training sessions.

Objectives 2 and 3: Monthly Workshops

Subject Matter Specialists. SMSs rated which of 28 identified activities would be ideal during monthly workshops; all 28 generated mean scores of 1.50 or lower (Table 73), which signifies agreement regarding what SMSs perceive as ideal activities during monthly workshops.

Subdivisional Extension Officers. SDEOs rated which of 28 identified activities would be ideal during monthly workshops; 26 of 28 generated mean scores of 1.50 or lower (Table 74). Two activities, "Monthly workshops provide regular contact between extension workers and researchers" and "Each main crop requires a lead trainer assisted by

fixed number of researchers," generated mean scores above 1.50 and indicate where to make changes in ideal practices to enhance the activities of monthly workshops.

Objective 4: Visits

Based on responses by AEOs, SMSs, and SDEOs, no modifications to the T&V system of visits were indicated. Only the VEWs as a group suggested two issues that they perceived as needing change: "Contact farmers within farmer groups are changed continuously" and "Contact farmers are selected based on their acquaintance with VEW." Contact farmers should be chosen based on merit and expertise, and they should hold that position for an extended period of time.

Objective 4: Training

Based on responses from all four worker groups, no modifications to the T&V system of training were indicated.

Objective 4: Fortnightly Training Sessions

All four worker groups identified at least three areas in which changes should occur (Tables 69-72) during fortnightly training sessions. VEWs and AEOs agreed that the following areas needed modification: "Discussions were collective and consumed entire sessions," "Production recommendations presented through the training sessions are demonstrated by theoretical lectures only," and "Sometimes topics presented through the training sessions were not needed by trainees." SMSs also perceived the need for

changes on the above, and they identified three additional areas for improvement. SDEOs perceived needed changes for the same three areas above, but they identified six additional areas for improvement. The researcher suggests that topics presented must be needed by trainees, that production recommendations presented must not be demonstrated by theoretical lectures only, and that discussions must not be collective and consume entire sessions.

Objective 4: Monthly Workshops

SMSs recommended no changes regarding activities that are currently part of monthly workshops (Table 73). SDEOs identified two areas for improvement: "Monthly workshops provide regular contact between extension workers and researchers" and "Each main crop requires a lead trainer assisted by fixed number of researchers." The researcher suggests increased cooperation between agricultural universities in the region and agricultural research centers so that a team approach supports monthly workshop activities.

CHAPTER 6

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The primary purpose of this study was to evaluate the Training and Visit (T&V) system as a new agricultural information system, used for the first time in Egypt, (1984) and its application in El Minia Governorate. The partnership between agricultural research and agricultural extension systems includes administration and education support for extension staff on a cooperative basis. Quality educational programs and cooperative working relationships among Village Extension Workers (VEWs), Agricultural Extension Officers (AEOs), Subject Matter Specialists (SMSs), and Subdivisional Extension Officers (SDEOs) are necessary to maintain the effectiveness of the training and visit system. To determine specific modifications needed for improving the training and visit system according to the Egyptian conditions, two main areas were examined: the current situation and an ideal situation.

The specific research objectives included

1. determining the current status of the extension service T&V system in El Minia Governorate;

2. identifying perceived appropriate methods for providing the T&V system through the extension service in El Minia Governorate;

3. identifying perceived ideal quality indicators of the extension T&V system in El Minia Governorate ; and

4. determining specific modifications to improve the effectiveness of the extension T&V system according to the Egyptian conditions in El Minia Governorate.

Six of the nine districts of El Minia Governorate were selected by the simple random sampling technique. Those districts randomly selected were El Edwa, Maghagha, Matai, El Minia, Abu Qurqas, and Mallawi. The sample population were all the extension workers who worked with the T&V system in these six districts.

The final questionnaire included 30 questions to ask respondents to rate their perceptions of the Training and Visit (T&V) system on a Likert scale according to the current situation and an ideal situation.

The data were presented in tables using frequency counts, percentages, mean scores, standard deviations, Chi-square test and F ratios. The independent variable chosen for this study was job classification, and the dependent variables were the responses to the perceptions of current and ideal program indicators.

The most important results in this work can be summarized as follow:

No modifications to the T&V system of visits were indicated. Only the VEWs as a group suggested two issues that they perceived as needing change: "Contact farmers within farmer groups are changed continuously" and "Contact farmers are selected based on their acquaintance with VEW."

Contact farmers should be chosen based on merit and expertise, and they should hold that position for an extended period of time.

Based on responses from all four worker groups, no modifications to the T&V system of training were indicated.

All four worker groups identified at least three areas in which changes should occur during fortnightly training sessions. VEWs and AEOs agreed that the following areas needed modification: "Discussions were collective and consumed entire sessions," "Production recommendations presented through the training sessions are demonstrated by theoretical lectures only," and "Sometimes topics presented through the training sessions were not needed by trainees." SMSs also perceived the need for changes on the above, and they identified three additional areas for improvement. SDEOs perceived needed changes for the same three areas above, but they identified six additional areas for improvement. The researcher suggests that topics presented must be needed by trainees, that production recommendations presented must not be demonstrated by theoretical lectures only, and that discussions must not be collective and consume entire sessions.

SMSs recommended no changes regarding activities that are currently part of monthly workshops. SDEOs identified two areas for improvement: "Monthly workshops provide regular contact between extension workers and researchers"

and "Each main crop requires a lead trainer assisted by fixed number of researchers." The researcher suggests increased cooperation between agricultural universities in the region and agricultural research centers so that a team approach supports monthly workshop activities.

Conclusions

1. Extension workers need more practical and theoretical training on how to make a successful field visit.

2. All extension worker groups perceive the training they received through the T&V system to be positive.

3. Extension workers need more opportunities for practical training during fortnightly training sessions.

4. Library facilities and audio-visual aids for fortnightly training sessions must be improved.

5. Teaching aids for fortnightly training sessions must be improved.

6. All extension worker groups expressed positive attitudes toward the extension training programs.

7. Monthly workshops would be much more effective if agricultural researchers and extension workers willingly worked together in resolving farmer-related problems.

8. Selection of contact farmers must be based on objective criteria, and they should continue as contact farmers for longer periods of time.

9. All extension worker groups agreed that their

current training met their expectations for ideal training.

10. Fortnightly training sessions would more closely resemble the ideal as perceived by all extension worker groups if discussions occurred in smaller groups, if more opportunities existed for practical application, and if more topics relevant to trainee needs were selected.

11. Ideal monthly workshops should include regular contact between agricultural researchers and extension workers and should include lead trainers and agricultural researchers assigned to each crop.

Recommendations

Because the primary reasons for an extension Training and Visit (T&V) system include creation of strong linkage between research and extension, dissemination of information throughout the agricultural sector, and educational assistance for farmers, it is essential that extension workers maximize the time and effort dedicated to farmers and the time and effort dedicated to training activities. It is this relationship that makes the extension T&V system unique. Through the T&V system, extension workers should become valuable and fully integrated participants in agricultural development.

Toward that end, this researcher offers the following recommendations aimed at improving the T&V system in particular and the development of Egyptian agricultural in general:

1. Specific suggestions for improving visits, training, fortnightly training sessions, and monthly workshops made by participants in this study should be examined, considered, and formulated into an ideal T&V system that can be nationwide.

2. A stronger relationship between agricultural university faculty and teachers in agricultural high schools must exist for the knowledge base of students to increase. Teachers must receive continuous upgrading if they are to transmit needed knowledge and skills to those who will comprise the ranks of Village Extension Workers.

3. Curriculum at the agricultural university level must reflect the knowledge and skills needed by broadly educated professionals in extension; mastery of subject matter is not enough.

4. It is important for extension workers to maximize the time spent on training and visit activities that are unique to the extension training and visit system. Methods of delivering an extension training and visit system program varied and little, if any, training on delivery methods was provided to extension workers.

5. A greater emphasis on communication among the four worker groups may need to occur if the extension workers are to develop a highly effective T&V extension program for the future. Activities that are directed toward consistency among these groups should be implemented. The many

differences that existed in this study point out the need for better planning, communication, and implementation in order to best serve the village farmer during the production cycles.

6. Extension workers need to redirect the time spent on low-need, extension-related activities toward time training and supervising farmers in agricultural skills and competencies. They must also develop a comprehensive program of training and visiting village farmers to ensure the future of agriculture in El Minia Governorate.

7. Extension workers need to place a greater emphasis on publicizing T&V program activities. A plan should be developed that has the approval of the government at the start of the T&V program. Such a plan must be presented to VEWs, AEOs, SMSs, and SDEOs prior to the start of the training year. At the conclusion of the training year, a written summary should be presented to the proper extension administrators. The report should list specific activities, days spent, and the number of farmers involved or contacted within each of the T&V system program activities.

8. Egyptian extension coordinators need to be informed of the results of this study at an annual meeting in order to 1) develop the concept and format for the ideal extension T&V system program of activities, and 2) facilitate communication among VEWs, AEOs, SMSs and SDEOs.

9. A study should be conducted on changing the

extension T&V system mission, or on the emphasis on change in program structure. Such a study could focus on the development of an agricultural extension T&V system that would significantly enhance the delivery of activities and programs to the village farmer.

10. A study should be conducted on developing additional specific T&V system activities to accommodate current and future trends in the agricultural extension industry should be conducted.

11. A study should be conducted on developing extension T&V activities to enhance the learning "About Agriculture" program and identify how the current training and visit system activities might be structured to facilitate this program, should be conducted.

12. A study should be conducted that gathers feedback from extension employees outside El Minia Governorate. To generalize perceptions across the Egyptian agricultural sector.

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APPENDICES

Appendix A

Questionnaire

First: Personal information:

Q1- Name:

Q2- Age:

Q3- Qualification:

Q4- Number of working years in agricultural field:

Q5- Number of working years in agricultural extension:

Q6- Training circulation that you participated in (other than, the I.F.A.D. project).

Number	Circulation field	Training Style		
		Theoretical	Practical	Theo. & Prac.
1-				
2-				

Q7- Training circulation that you participated in through the I.F.A.D. project (except fortnightly training sessions and monthly workshops):

Number	Circulation field	Training Style		
		Theoretical	Practical	Theo. & Prac.
1-				
2-				

Q8- Please indicate to which group of extension worker you belong.

A- Subject matter specialist (SMS).....( ).

B- Subdivisional extension officer (SDEO).....( ).

C- Agricultural extension officer (AEO).....( ).

D- Village extension worker (VEW).....( ).

Q9- Please check all of the transportation types that were available to you through the T&V system.

A- Truck.....( ). B- Van.....( ).

C- Car.....( ). D- Bicycle.....( ).

E- Motorcycle...( ). F- None.....( ).

Q10- Please indicate your usage of audio & visual aids that you used to transfer the extension messages to farmers.

Number	Audio & Visual Aids	Usage			
		never used	seldom used	average used	always used
1-	Posters.				
2-	Blackboard.				
3-	Loud speaker.				
4-	Cinema.				

Q11- Please indicate your usage of the extension methods that you used to diffuse the extension messages.

Number	Extension methods	Usage			
		never used	seldom used	average used	always used
1-	General Ext. meeting.				
2-	Ext. assemblies.				
3-	Ext. lectures.				
4-	Ext. pamphlet.				
5-	Ext. fields.				
6-	Field days.				
7-	Demonstrated field trial.				

Q12- In your extension work through the T&V system, you have made visits to farmers. Please indicate the average number of visits per week and the number of hours that you spent in each visit on average.

average number of visit/week. average number of hours/visit.

( ) ( )

Q13- Do you live in your working area or nearby it?

yes.....( ) no.....( )

Q14- Were your scheduled visits announced and known by the farmers in your working area?

yes.....( ) no.....( )

Q15- During your extension work through the T&V system, were you absolutely devoted to your educational extension work?

yes.....( ) no.....( )

Second: The concept of the training and visit system:

Q16- In the next table, please use the following five-point scale: 1 = strongly agree, 2 = moderately agree, 3 = neutral, 4 = moderately disagree, and 5 = strongly disagree. For each phrase, indicate in the first column your agreement level regarding the current situation or what had happened through the application of the T&V system. Indicate in the second column what you think would be an ideal situation or the modifications that you would want to introduce into the T&V system to make it better fit the local conditions in your working area.

1- THE VISITS

No.	Phrase	Current situation					Ideal situation				
		1	2	3	4	5	1	2	3	4	5
1-	Visits by extension workers to farmers were regular and scheduled.										
2-	All farmers (contact and other farmers) knew the appointed times of extension worker visits.										
3-	VEW circles are contiguous, compact, and well-known.										
4-	VEW can cover his circle completely during two weeks.										
5-	Farmer groups inside VEW's circle are well-known and fixed.										
6-	Contact farmers within farmer groups are changed continuously.										
7-	Contact farmers are selected based on their acquaintance with VEW.										
8-	VEW resides within or near his circle.										
9-	VEW teaches and explains production recommendations to his farmers.										
10-	VEW encourages his farmers to try and to adopt production recommendations.										

11-	VEW dose'nt ignore the ordinary farmers.										
12-	VEW focuses on contact farmers.										
13-	Afternoon or evening meetings with all farmers support the influence of field visits.										
14-	Extension workers evaluate the influence of field visits on farmer receptiveness toward extension recommendations.										
15-	Extension workers know the reasons for farmer rejection of production recommendations.										
16-	Extension workers assist farmers in solving problems connected with application of production recommendations.										
17-	VEW advises farmers in order to solve simple field problems.										
18-	VEW provides farmers with the necessary skills to carry out production recommendations.										
19-	Extension system ensures that production requirements are adequate for applying production recommendations.										

20-	Complicated field problems are passed to researchers, and suggestions are relayed to farmers .										
21-	VEWs & AEOs conduct farm trials on farmers' fields.										
22-	VEWs & AEOs participate in conducting and holding field days in their circles.										
23-	AEO field visits aimed at increasing effectiveness of VEWs wherever possible.										
24-	AEOs record the farm activities during their field visits.										
25-	VEWs & AEOs are concerned with recording field problems.										
26-	VEWs & AEOs record farmers' reactions toward production recommendations.										
27-	AEOs ensure that recommendations are well understood by VEWs.										
28-	AEOs & VEWs present suggestions for adjusting production recommendations to fit environmental conditions (land, labor, financial resources).										

29-	AEOs should ascertain that the VEWs field visits were regular during their field visits.										
30-	AEOs determins reasons for adoption or rejection of production recommendations by farmers.										
31-	AEOs organize field visits for SMSs and researchers in case of urgent problems or decrease the adoption rates of farmers to recommendations.										
32-	SDEOs ensure that their VEWs visit farmer groups regularly.										
33-	During field visits, SDEOs ensure that extension recommendations are known, understood and being adopted by farmers.										
34-	SDEOs ensure that farmers know their VEWs and their scheduled visits.										
35-	SDEOs review / examine VEW & AEO diaries and reports during their field visits.										
36-	SDEOs concentrate on farmer adoption rates as an indicator of training efficiency by extension workers.										

37-	SDEOs prepare exhaustive reports about the field problems and local situations during their field visits in order to develop production recommendations.										
38-	SDEOs review whether AEOs ranges and VEWs circles have been appropriately formed.										
39-	SDEOs ensure that contact farmers have been properly selected.										
40-	SMSs check VEW recommendations to farmers for appropriateness.										
41-	SMSs ascertain farmer adoption rates of production recommendations.										
42-	SMSs ensure that extension messages reach farmers in a timely, profitable, and suitable way.										
43-	SMSs follow up on field problems reported to them by extension staff, by farmers, or that they themselves discover.										
44-	SMSs are continuously looking for practices and recommendation effects.										

45-	SMSs follow local farm conditions that require discussion with research staff.										
46-	SMSs know farmer reactions and responses toward production recommendations.										
47-	Training officers identify training needs of VEWs & AEOs.										
48-	District extension officer (DEO) knows how positively or negatively extension workers are performing their work.										
49-	DEO ascertains farmer adoption rates toward recommendations and the range of its suitability.										
50-	DEO ensures the appropriateness and regularity of the extension work.										
51-	DEO ensures suitability of training session and curriculum to the needs of extension staff in the district.										
52-	DEO ensures the arrival of field problem solutions to farmers.										

53-	DEO follows up field trials to develop recommendations based on local conditions.										

2- THE TRAINING

Q17- The following phrases deal with the training aspects. It is ordered exactly like the preceding table. Using the same five-point scale, please mark your responses for both current and ideal situations.

No.	Phrase	Current Situation					Ideal situation				
		1	2	3	4	5	1	2	3	4	5
1-	VEWs & AEOs participate regularly in fortnightly training sessions to be familiar with production recommendations and impact points.										
2-	Reports of VEWs & AEOs must deal with field situations, unseasonal problems and adoption rates.										
3-	Fortnightly training sessions upgrade and update professional skills of AEOs & VEWs and give them new knowledge.										
4-	Special short courses which received by VEWs & AEOs upgrade their skills and increase their knowledge.										

5-	AEO & VEW review of field problems in their circles serve to develop and modify production recommendations during training sessions.										
6-	AEOs ensure that their VEWs participate in training sessions regularly and actively.										
7-	AEOs relay production recommendations to their VEWs who missed a training session.										
8-	AEOs assist in increasing the efficiency and competence of their VEWs in transfering recommendations to farmers.										
9-	SDEO is responsible for effective organization and operation of all fortnightly training sessions.										
10-	SDEOs attended monthly, seasonal workshops, and research meetings.										
11-	Prior to each fortnightly training session SDEO prepares teaching aids / materials.										
12-	SDEO ensures that recommendations presented in training sessions are correct.										

13-	SDEO ensures that all trainees acquire necessary skills to diffuse recommendations.										
14-	SDEO leads the fortnightly training sessions.										
15-	SDEO ensures written summaries of recommendations are given to participants in training sessions.										
16-	SDEOs transmits farmer reactions toward recommendations to researchers through monthly workshops.										
17-	SDEO exhibits reports about field problems and local conditions to researchers through monthly workshops.										
18-	SDEO attends monthly workshops to ensure recommendations are suited to farmer conditions and resources.										
19-	SDEO suggests adjusting recommendations to suit local conditions through monthly workshops.										
20-	SDEO discusses results of field trials through monthly workshops when formulating recommendations.										

21-	SDEO determines training needs of extension staff.										
22-	SDEO appoints and organizes special short courses for extension staff.										
23-	During fortnightly training sessions SMSs discuss local conditions with VEWs & AEOs.										
24-	SMSs adapt recommendations to fit farm resources and local conditions.										
25-	SMSs identify impressions of VEWs & AEOs toward production recommendations.										
26-	Production recommendations presented at fortnightly training sessions are printed and distributed to all participants.										
27-	SMSs acquire necessary skills for diffusing production recommendations to all participants in training sessions.										
28-	SMSs ensure that necessary teaching aids are prepared before training sessions.										
29-	SMSs give extension staff short courses in their own fields of specialization.										
30-	SMSs attend monthly workshops regularly.										

31-	Through monthly workshops SMSs understood production recommendations they will give participants in the coming two fortnights.										
32-	Through monthly workshops, SMSs discuss farm conditions and field problems with researchers in formulating recommendations.										
33-	SMSs review progress and results of farm trials in monthly workshops for orientation research to recommendations and impact points relevant to farmers.										
34-	Contact between SMSs and researchers through visits to agricultural research stations or research institute serve to strengthen the link between the extension system and research.										
35-	Researchers give SMSs special short courses to raise their professional competence.										
36-	Training officer develops effective training for VEWs & AEOs in the field of communications, extension methods, and audio-visual aids.										

37-	Training officer cooperates with SDEO & SMSs in planning and preparing special short courses for VEWs & AEOs.										
38-	Training officer is active in preparing and organizing contacts between SMSs and researchers.										
39-	Training officer plays a basic role promotting understanding of the T&V system by extension staff.										
40-	SDEO attends fortnightly training sessions to ensure their regularity and attendance by extension staff.										
41-	DEO prepares, plans, and attends fortnightly training sessions in the subdivisions where recommendation adoption rates are low.										
42-	DEO plans for monthly workshop meetings two days every month that are not days that have been fixed for training sessions or scheduled visits.										
43-	DEO works in diverse ways toward increasing linkages between extension system and research through monthly workshops.										

Third: The personal evaluation:-

1- VISITS.

This group of questions will deal with your personal evaluation on the field visits that you have made by yourself through the T&V system. We need to know your opinions on these different points; please check.

Q18- What is your personal evaluation of the field visits that you have made in your circle?

excellent	very good	good	acceptable
( )	( )	( )	( )

Q19- Through your work in the T&V system, how would you rate the time of your field visits?

too long	long	just right	short	too short
( )	( )	( )	( )	( )

Q20- Did you obtain any practical or theoretical training on how to make successful field visit?

very much	much	some	little	none
( )	( )	( )	( )	( )

Q21- Do you think that the visits you make in your circle were useful to increasing your awareness to your professional tasks in extension system?

very useful	useful	normal	limited use	useless
( )	( )	( )	( )	( )

2- TRAINING.

The next group of questions will deal with your personal evaluation on the fortnight training sessions and the special short courses.

Q22- From your attendance in fortnightly training sessions or special short courses offered to you through the T&V system, how would you rate the training time according to the next scale?

too long ( ) long ( ) appropriate ( ) short ( ) too short ( )

Q23- In the next table, which presents some activities of the training program, please use the following five-point scale: 1 = too long, 2 = long, 3 = appropriate, 4 = short, and 5 = too short.

No.	Activities	Timely Estimation				
		1	2	3	4	5
1	Lectures.					
2	Practical training.					
3	Discussion.					
4	Field trial visits.					

Q24- How useful do you think this training program will be to your professional career?

very useful ( ) quite useful ( ) of limited use ( ) useless ( )

Q25-In the next table, which includes some aspects of the training program that you received through the T&V system, please use the following five-point scale: 1 = excellent, 2 = very good, 3 = good, 4 = satisfied, and 5 = dissatisfied.

No.	Aspects	Degree of satisfaction				
		1	2	3	4	5
1	Duration of sessions.					
2	Classrooms.					
3	Teaching methods.					
4	Laboratory facilities.					
5	Audio-visual aids.					
6	Field trial visits.					
7	Knowledge gained.					
8	Skills acquired.					
9	SMSs competence.					
10	Supervision by SDEO.					
11	Program schedule activities.					
12	Working relationships.					
13	Theoretical lectures.					
14	Practical parts.					
15	Necessary teaching aids.					
16	Contact with training staff.					
17	Number of trainees.					
18	Trainee discussions.					
19	Use of training curriculum in your own work.					

Q26- Do you think that the money you were paid as a result of your participation in the T&V system was enough to cover your basic needs?

yes.....( ) no.....( )

Q27- Are you willing to attend future training programs?

yes.....( ) no.....( )

Q28- In the next table, please use the following five-point scale: 1 = strongly agree, 2 = agree, 3 = uncertain, 4 = disagree, and 5 = strongly disagree. Please indicate your level of agreement with each phrase.

No.	Phrase	Feeling degrees				
		1	2	3	4	5
1-	My professional responsibilities increased after attending the fortnightly training sessions.					
2-	I have a better chance of being promoted in rank after attending the fortnightly training sessions.					
3-	Following my attendance at the fortnightly training sessions, my work with farmers became more enjoyable and useful than before.					
4-	At the end of the T&V training program, I could evaluate my work because I can apply what I learned.					
5-	My thoughts are more acceptable now than before attending training sessions.					
6-	My confidence in my work has increased after attending the training sessions.					
7-	As a result of my training, it is easier for me to work with other extension staff than before.					

8-	I am more secure now in my job than before attending training sessions.					
9-	I can do much of what is expected from me because I receive appropriate support from my administrators.					
10-	I now have a better understanding of my work than before attending the training program.					
11-	It is my responsibility to share with other extension staff what I learned in the T&V training sessions when the need arises.					
12-	The T&V system organized the extension staff's time; therefore, their professional competence increased.					
13-	The fortnightly training sessions presented new knowledge, and I have gained technical skills from it.					
14-	Production recommendations formulated through the fortnightly training sessions were relevant to local farmers' conditions.					
15-	Time of discission in the training sessions was appropriate, and we reached many points of consensus.					
16-	Fortnightly training sessions created new opportunities for cooperation among extension staff in every subdivision.					
17-	Conducting of field trials impacted positively the formulation of production recommendations appropriate for local conditions.					
18-	Scheduled field visits offered a good opportunity for extension staff to diffuse their knowledge, practices, and recommendations to a large number of farmers.					
19-	Reports presented by VEWs & AEOs had adequate interest during the fortnightly training sessions.					

20-	Raising complicated field problems to researchers did not require strenuous effort.					
21-	Obtaining solutions for complicated field problems did not require too much time.					
22-	Opportunities for input toward production recommendations and practices were available and adequate for all farmers.					
23-	In general, the T&V system offered a good opportunity for raising farmers' confidence in the extension system.					
24-	The T&V system created good opportunities for linkage between extension and research.					
25-	Participation of extension and research through the T&V system created useful recommendations for farmers.					
26-	SMSs offered worth-while experiences to the trainees.					
27-	The T&V system offered good opportunities for extension staff to become more devoted to their extension work.					
28-	Productivity of farmers who adopted production recommendations diffused by the T&V system was higher than other farmers.					
29-	Through T&V system, the extension system had an important role in conducting research toward solving farmers' local problems.					
30-	The use of audio-visual aids raised recommendation adoption rates by farmers.					
31-	Appropriate selection of contact farmers makes the work of extension staff easier and raised recommendation adoption rates.					

Fourth: The evaluation of the fortnightly training sessions:-

This part will deal with your personal evaluation of the fortnight training sessions that you had shared in as a trainee or trainer through your work in the extension system. This evaluation will move around extension methods, audio-visual aids,and teaching methods of the training curriculum through a group of phrases.

Q29- In the next table, please use the following five-point scale: 1 = strongly agree, 2 = moderately agree, 3 = neutral, 4 = moderately disagree, and 5 = strongly disagree. Please mark your responses for both current and ideal situations related to the fortnightly training sessions.

No.	Phrase	Current situation					Ideal situation				
		1	2	3	4	5	1	2	3	4	5
1	Production recommendations presented through the training sessions are demonstrated by theoretical lectures only.										
2	Participants in the training sessions were divided into discussion groups to share opinions and recommendations.										
3	Practical demonstrations of recommendations were focused on throughout training sessions.										

4	Remarks and reports of AEOs & VEWs were discussed seriously in the training sessions.										
5	Participants in the training sessions actually visited research stations and field farm trials.										
6	Trainees shared in determining the training curriculum according to their training needs.										
7	SMSs conducted and supervised practical recommendations through the training sessions.										
8	Sometimes films were used during training sessions to explain the impact of recommendations.										
9	Training requirements were available during sessions to give trainees the necessary skills for diffusing recommendations.										
10	Sometimes slides were used during training sessions to explain the impact of recommendations.										
11	Printed copies of production recommendations were distributed among trainees during sessions.										

12	Sometimes videotapes were used during sessions to explain or demonstrate parts of the training curriculum.										
13	During sessions the AEOs & VEWs were trained on how they can make successful field visits.										
14	Discussions were collective and consumed entire sessions.										
15	Questions and answers were presented as a basic part of training sessions after presentation of recommendations.										
16	Sometimes televisions were used in the sessions to present examples.										
17	Discussions introduced some modifications to recommendations diffusion among farmers.										
18	SDEO ensures that the trainees attend the training sessions.										
19	SDEO conducted the training sessions by himself.										
20	Sometimes topics presented through the training sessions were not needed by trainees.										

21	Fortnightly training sessions conducted by the training officer gave trainees needed skills.										
22	SMSs who shared in the training sessions had a high degree of experience and efficiency.										
23	Trainees were trained on using audio-visual aids during sessions.										
24	Few recommendations were developed in a session.										
25	Recommendations presented through the sessions were easy to understand and to apply.										
26	Needed resources for successful sessions were adequate and available for all trainees.										
27	Production recommendations were seasonally appropriate and related to the working areas of trainees.										
28	Farmer reactions toward recommendations were reviewed by extension workers throughout the sessions.										

29	Field problems discussed during sessions were passed quickly to the research system to find realistic solutions.										
30	Trainees numbered about 30 per session.										
31	Half of the training session time was spent on teaching and the rest on practical work.										
32	Fortnightly training sessions increased the confidence of trainees in themselves and in their agricultural work.										
33	Training sessions increased the ability of extension staff to convince farmers to try recommendations.										
34	Production recommendations presented in the training sessions were appropriate for local farmers' conditions.										
35	Farmers were sometimes invited to share in the fortnightly training sessions.										
36	Training session locations were appropriate and easy to reach by all trainees.										

37	Sometimes researchers and experts shared in training sessions.										
38	Adequate land was available at the training location for practical field work.										
39	Agricultural topics discussed during sessions were related to farming seasons.										
40	Production recommendations for each crop were seasonally appropriate.										
41	During sessions AEOs observed effective participation of their VEWs.										
42	AEOs who participated in training sessions were concerned their VAWs gaining necessary skills for diffusing recommendations.										
43	AEOs ensure that their VEWs understand production recommendations during training sessions.										
44	AEOs helped SMSs during sessions by identifying and focusing on the weaker VEW when recommendations were presented.										
45	VEWs wrote the recommendations and new practices presented through training sessions.										

46	Training session classrooms were comfortable and well-accommodated.										
47	Complaints raised by VEWs about application of recommendations in their circles were discussed at once.										
48	Participants in the fortnightly training sessions wrote their own personal notes about session topics.										
49	There was balance between theoretical presentation and practical work in the training sessions.										
50	Discussions by participants focused on field problems, local conditions, and farmer reactions toward recommendations.										
51	The training officer did his work efficiently during sessions.										
52	Sometimes posters were used to present production recommendations and their impact.										
53	Through the training sessions, I was trained well on extension methods.										

Appendix B

Questionnaire

Special for the participants in monthly workshops

(SDEOs & SMSs)

The next table contains a group of phrases regarding monthly workshops. Please use the following five-point scale: 1 = strongly agree, 2 = moderately agree, 3 = neutral, 4 = moderately disagree, and 5 = strongly disagree.

No.	Phrase	Current situation					Ideal situation				
		1	2	3	4	5	1	2	3	4	5
1-	Monthly workshops are the main venue of in-service training for SMSs.										
2-	Monthly workshops provide regular contact between extension workers and researchers.										
3-	Discussions and formulations of relevant production recommendations occur.										
4-	Discussion among participants is very important.										
5-	Monthly workshops improve technical skills of SMSs in their fields of specialization.										
6-	Through feedback and discussion of farmer reactions toward recommendations, monthly workshops direct scientific researchers in the right direction.										

7-	Results of farm trials are discussed to modify production recommendations .										
8-	Monthly workshops are held at an appropriate area for all participants.										
9-	Days that are chosen for workshops do not conflict with official tasks of participants.										
10-	The maximum number of participants is 35.										
11-	Monthly workshops are planned, coordinated, and organized by the District Extension Officer DEO.										
12-	Primary trainers are scientific researchers as well as other suitably experienced persons.										
13-	Each main crop requires a lead trainer assisted by a fixed number of researchers.										
14-	Participants are encouraged to discuss topics in detail.										
15-	General planning for all workshops in one season should be done ahead of time.										
16-	Suitable fields for carrying out farm trials and production recommendations are necessary for successful workshops.										

17-	About 2/3 of workshop time is spent in discussion, and the rest spent in scientific application of production recommendations.										
18-	Adequate and available production input and equipment is necessary for successful workshops.										
19-	Field problems for which no solutions are found are sent to agricultural universities or research stations.										
20-	Farmers' local conditions are considered during formulation of production recommendations.										
21-	Basic teaching aids are available to make meetings successful.										
22-	Reasons for farmer rejection of recommendations are reviewed.										
23-	Formulation and discussion of recommended practices for major crops for the coming two fortnightly training sessions are accomplished.										
24-	Difficulties facing VEWs in diffusing production recommendations are discussed.										

25-	There are organized visits to farm trials fields and farmers' fields to observe the recommendations effects.										
26-	The outline of the training and educational plan for the coming two fortnightly training sessions are discussed.										
27-	A broad outline of the topics covered in the next workshop are planned before the end of the meeting.										
28-	Participants are responsible for the sequence of production recommendations presented by extension staff during the season.										

Appendix C

Characteristics of Respondents

Characteristics of Respondents

Of the 500 total surveys returned and usable, 340 were from Village Extension Workers (VEWs), 121 were from Agricultural Extension Officers (AEOs), 33 were from Subject Matter Specialists (SMSs), and 6 were from Subdivisional806XExtensiOfficers (SDEOs).

Table 2 summarizes the respondents according to their age categories. More than one-half (51%) of the respondents reported their age as less than 41 years.

Table 2

Respondents by Age Categories

Age categories	Frequency	%	Cum. frequency	Cum. %
- 30	30	6.0	30	6
31 - 35	100	20.0	130	26
36 - 40	125	25.0	255	51
41 - 45	160	32.0	415	83
46 - 50	54	10.8	469	93.8
51 - 55	24	4.8	483	98.6
56 - 60	7	1.4	500	100.0

Source: Questionnaire.

Table 3 summarizes respondent age by worker category. Most (84.3%) of the respondents under 41 years old were Village Extension Workers (VEWs). The majority of the Agricultural Extension Officers (AEOs) (60.33%), Subject Matter Specialists (SMSs) (60.61%), and Subdivisional Extension Officers (SDEOs) (83.33%) were between 41 and 50

years old.

Table 3 .

Respondent Groups by Age Categories

Age categories	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
- 30	29	8.53	1	0.83	0	0.00	0	0.00
31 - 35	88	25.87	11	9.08	1	3.02	0	0.00
36 - 40	98	28.81	17	14.05	10	30.29	0	0.00
41 - 45	96	28.24	49	40.50	14	42.41	1	16.67
46 - 50	20	5.87	24	19.84	6	18.17	4	66.66
51 - 55	8	2.34	13	10.73	2	6.05	1	16.67
56 - 60	1	0.28	6	18.17	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.

Table 4 illustrates that more than three-fourth of the respondents (77%) have completed agricultural high school as their highest educational experience. Another 22.4% of the population completed their B.Sc. in agriculture.

Table 4

Respondents by Educational Experience

Educational experience	Frequency	%
Agricultural high school	385	77.0
B.Sc. in agriculture	112	22.4
M.S. or Ph.D. in agriculture	3	0.6
Total	500	100.0

Source: Questionnaire.

Table 5 illustrates that the majority of VEWs (85.3%) and AEOs (76.0%) have completed a high school degree in agriculture. The majority of the SMSs (87.8%) and SDEOs (83.3%) have completed their B.Sc. in agriculture.

Table 5

Respondent Groups by Educational Experience

Educational experience	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
Agricultural high school	290	85.3	92	76.0	2	6.1	0	0.0
B.Sc. in agriculture	50	14.7	29	24.0	29	87.8	5	83.3
M.S. or Ph.D. in agriculture	0	0.0	0	0.0	2	6.1	1	16.7
Total	340	100.0	121	100.0	33	100.0	6	100.0

Source: Questionnaire.

Table 6 illustrates that the majority of VEWs (52.84%), AEOs (80.99%), and SMSs (57.57%) have served in the agricultural field for more than 15 years. All of the SDEOs have served for more than 20 years. The range in length of service was from 1 to 36 years.

Table 7 summarizes the number of the extension workers in each group of the sample who lived in their work areas. Most of the VEWs (85.59%), AEOs (81.82%), SMSs (93.94%), and SDEOs (83.33%) lived in their working areas.

Table 8 summarizes the transportation types that were available to the extension workers by groups. More than 50% have no transportation for their jobs.

Table 6

Years of Service in the Agricultural Field

Years of service	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
- 5	36	10.59	3	2.48	0	0.00	0	0.00
6 - 10	57	16.76	9	7.44	2	6.06	0	0.00
11 - 15	67	19.71	11	9.09	12	36.37	0	0.00
16 - 20	117	34.40	26	21.49	7	21.21	0	0.00
21 - 25	48	14.12	42	34.70	7	21.21	3	50.00
26 - 30	9	2.65	18	14.88	3	9.09	3	50.00
31 - 35	4	1.08	11	9.09	2	6.06	0	0.00
36 -	2	0.59	1	0.83	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.

Table 7

Living Situation by Extension Worker Groups

Living situation	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
In their working areas	291	85.59	99	81.82	31	93.94	5	83.33
Out of their working areas	49	14.41	22	18.18	2	6.06	1	16.67
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.

Table 9 illustrates that the majority of VEWs (77.94%), AEOs (92.56%), and SMSs (90.91%) have served in the agricultural extension field for more than five years. All of the SDEOs have served for more than five years in the

agricultural extension field. The range in length of service was from 1 to 36 years.

Table 8

Transportation Types by Extension Worker Groups

Transportation types	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
None	220	64.71	62	51.24	1	3.03	1	16.67
Motorcycle	86	25.29	55	45.45	27	81.82	2	33.33
Bicycle	33	9.71	4	3.31	0	0.00	0	0.00
Car	0	0.00	0	0.00	3	9.09	3	50.00
Truck	1	0.29	0	0.00	2	6.06	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Table 9

Years of Service in the Agricultural Extension Field

Years of service	Extension worker groups							
	VEWs		AEOs		SMSs		SDEOs	
	F.	%	F.	%	F.	%	F.	%
- 5	75	22.06	9	7.44	3	9.09	0	0.00
6 - 10	190	55.88	60	49.59	12	36.37	1	16.67
11 - 15	59	17.36	32	26.45	13	39.39	1	16.67
16 - 20	12	3.53	13	10.73	4	12.12	2	33.32
21 - 25	3	0.88	1	0.83	1	3.03	1	16.67
26 - 30	1	0.29	5	4.13	0	0.00	1	16.67
31 -	0	0.00	1	0.83	0	0.00	0	0.00
Total	340	100.00	121	100.00	33	100.00	6	100.00

Source: Questionnaire.

الملخص و الإستنتاجات و التوصيات

إن الهدف الرئيسى من هذه الدراسه هو تقييم نظام التدريب و الزياره كنظام جديد لنشر المعلومات الزراعيه, استخدم للمره الأولى فى مصر (١٩٨٤), وكذلك تقييم تطبيق النظام فى محافظة المنيا.

أن المشاركه فيما بين الجهاز البحثى الزراعى و الجهاز الإرشادى ترتكز اساسا على التعاون فيما بينهما فى مجالات الإداره و الدعم التعليمى الثقافى لهيئة الإرشاد.

إن نوعية البرامج التعليميه و علاقات العمل التعاونيه فيما بين رجال الإرشاد على مستوى القريه, مديرى إرشاد القطاعات, أخصائيو المواد و مديرى إرشاد المراكز ضروريه للحفاظ على استمرار فاعلية نظام التدريب و الزياره. ولتحديد تعديلات مطلوبه لتحسين نظام التدريب و الزياره وفقا للظروف المصريه فلقد تمت الدراسه لمجالين رئيسيين هما: الوضع الحالى و الوضع المثالى.

هذا و لقد أشتملت أهداف الدراسه على:

١. تحديد الوضع الحالى للخدمه الإرشاديه من خلال نظام التدريب و الزياره فى محافظة المنيا.

٢. تمييز أفضل الطرق المدركه المطلوبه لأستخدام نظام التدريب و الزياره من خلال الخدمه الإرشاديه فى محافظة المنيا.

٣. تعيين المؤشرات النوعيه المثاليه المدركه لنظام التدريب و الزياره فى محافظة المنيا.

٤. تحديد تعديلات محدده لتحسين فاعلية إرشاد نظام التدريب و الزياره تبعا للظروف المصريه فى محافظة المنيا.

هذا و لقد تم إختيار سته من مراكز محافظة المنيا التسعه بأستخدام تكنيك الإختيار العشوائى البسيط فكانت المراكز المختاره عشوائيا كما يلى: العدوه, مغاغه, مطاى, المنيا, أبو قرقاص و ملوى. و تمثل مجتمع الدراسه فى كل رجال الإرشاد الزراعى اللذين عملوا بنظام التدريب و الزياره فى هذه المراكز السته.

أشتملت إستمارة الأستبيان على ٣٠ سؤال مقدمه للمبحوثين من رجال الإرشاد كى يقدروا ادراكهم و فهمهم لنظام التدريب و الزياره و استخدم فى القياس مقياس ليكارت بدرجات مختلفه فى كلا من الوضعين الحالى و المثالى.

ولقد تم عرض البيانات فى جداول مستخدمين المجموع التكرارى, النسبه المئويه, المتوسط الحسابى, الأنحراف المعيارى, إختبار كاى وإختبار تحليل التباين. و تمثل المتغير المستقل المختار لهذه الدراسه فى الدور الوظيفى لرجال الإرشاد وتمثلت المتغيرات التابعه فى الأستجابات الإدراكيه للمؤشرات الحاليه و المثاليه للبرنامج.

هذا و يمكن تلخيص أهم النتائج فى هذا العمل كما يلى:

فيما يتعلق بالزيارات لم يشر الى أية تعديلات لنظام التدريب و الزياره و إن أشارت مجموعة مرشدى القرى الى نقطتين يحتاجان الى تعديل: "زراع الأتصال يتم تغييرهم بأستمرار." و "يعتمد إختييار مزارعى الأتصال على معرفتهم الشخصيه بمرشد القريه." إن أختييار مزارعى الأتصال ينبغى أن يكون على أساس التفوق و الخبره و ينبغى أن يستمروا فى مواقعهم لمده أطول.

بناء على أستجابات المجموعات الأربعه لرجال الإرشاد لم توجد أية تعديلات مقترحه لنظام التدريب و الزياره فيما يتعلق بالتدريب.

إن المجموعات الأربعه لرجال الإرشاد قد حددت على الأقل ثلاث مناطق يمكن إحداث تغيير فيها خلال جلسات التدريب كل أسبوعين. فمجموعتى مرشدى القرى و رؤساء القطاعات الإرشاديه أتفقتا على أن المجالات التاليه تحتاج إلى تعديل: "المناقشات جماعيه و تستهلك الجلسات بالكامل," "التوصيات الأنتاجيه المقدمه من خلال جلسات التدريب يتم عرضها من خلال محاضرات نظريه فقط" و "الموضوعات المقدمه من خلال جلسات التدريب تكون أحيانا بعيده عن إحتياجات المتدربين."

هذا و لقد أدركت مجموعة أخصائيو المواد الحاجه لأحداث تغيير فى المجالات المشار إليها كما حددت تلك المجموعه ثلاث مجالات أخرى أضافيه لتحسينها. و فيما يتعلق بمجموعة مديرى أرشاد المراكز فلقد أدركوا الحاجه للتغيير فى المجالات الثلاث المشار اليها سابقا بالأضافه لسته مجالات

أخري جديده تحتاج لتطوير و تحسين. و يرى الباحث أن تلك الموضوعات المعروضه لابد و أنها تمثل إحتياجات المتدربيين و ينبغى الا تقدم التوصيات الأنتاجيه من خلال المحاضرات النظريه فقط و الا يكون النقاش جماعى و يستهلك الجلسات بالكامل.

و فيما يتعلق بورش العمل الشهريه فلم توصى مجموعة أخصائيو المواد باية تغييرات, فى حين عينت مجموعة مديرى إرشاد المراكز مجاليين لتحسينها: "ورش العمل الشهريه توفر أتصال منتظم ما بين رجال الإرشاد الزراعى و رجال البحث العلمى" و "يتطلب كل محصول رئيسى وجود مدرب رئيسى يعاونه عدد محدد من الباحثيين."

ويقترح الباحث ضرورة زيادة التعاون فيما بين الجامعات الزراعيه بالمنطقه و مراكز البحوث الزراعيه لخلق مدخل لفريق عمل يدعم أنشطة ورشة العمل الشهريه.

الإستنتاجات

١. يحتاج رجال الإرشاد إلى مزيد من التدريب العملى و النظرى على كيفية عمل زيارات حقليه ناجحه.

٢. أدركت كل مجموعات رجال الإرشاد أن التدريب الذى تلقونه من خلال نظام التدرب و الزياره كان إيجابيا.

٣. يحتاج رجال الإرشاد إلى مزيد من الفرص المناسبه للتدريب العملى من خلال جلسات التدريب كل أسبوعين.

٤. يجب تحسين التسهيلات الخاصه بالمعينات السمعيه و البصريه و كذا المكتبات المستخدمه خلال جلسات التدريب كل أسبوعين.

٥. ينبغى تحسين المعينات التعليميه الخاصه بجلسات التدريب كل أسبوعين.

٦.أظهرت كل مجموعات رجال الإرشاد الزراعى اتجاهات إيجابيه نحو البرامج الإرشاديه التدريبيه.

٧. من الممكن أن تصبح ورش العمل الشهريه أكثر فاعليه إذا ما أظهر كل من رجال البحث العلمى و رجال الإرشاد الزراعى إستعدادا للعمل معا على حل المشكلات المتصله بالمزارع.

٨. إن إختيار زراع الإتصال ينبغى أن يعتمد على معاييرموضوعيه و يجب أن يستمروا لمدة أطول كزراع إتصال.

٩. إتفقت كل مجموعات رجال الإرشاد الزراعى على أن ما تلقونه من تدريب قد وافق توقعاتهم للتدريب المثالى.

١٠. من الممكن أن تتماثل جلسات التدريب كل أسبوعين مع التوقع المثالى لها كما تراه مجموعات رجال الإرشاد إذا ما تمت المناقشات من خلال مجموعات أصغر, و إذا ما زادت التسهيلات الخاصه بالتطبيق العملى و إذا ما تم إختيار الموضوعات ذات الصله بإحتياجات المتدربين.

١١.إن ورش العمل حتى تصبح مثاليه ينبغى أن تشتمل على إتصال منتظم فيما بين رجال الإرشاد و رجال البحث الزراعى, كما يجب أن تضم قائد للمدربيين و بحاث زراعيين مخصصين لكل محصول.

التوصيات

لأن الأسباب الأساسيه لإرشاد نظام التدريب و الزياره تشتمل على خلق رابطه قويه فيما بين البحث العلمى و الجهاز الإرشادى, نشر المعلومات فى كل مكان بالقطاع الزراعى و الدعم التعليمى الثقافى للمزارعيين فإنه يكون أساسيا لرجال الإرشاد الزراعى أن يعظموا الوقت و المجهود المكرسان للمزارعيين و كذلك الوقت و المجهود المخصصان للأنشطه التدريبيه. إنها تلك العلاقه التى تجعل إرشاد التدريب و الزياره فريدا.فمن خلال نظام التدريب و الزياره فإن رجال الإرشاد يصبحون أكثر قيمه و يشاركوا باندماج كامل فى التنميه الزراعيه.

إن الباحث ليعرض التوصيات التاليه فى النهايه أملا تحسين نظام التدريب و الزياره بصفة خاصه و تطوير الزراعه المصريه بصفة عامه:

١. ينبغى فحص الأقتراحات المحدده التى قدمها رجال الإرشاد المشاركين فى هذه الدراسه و المتصله بتحسين الزيارات, التدريب, جلسات التدريب كل أسبوعين و ورش العمل الشهريه و أن تؤخذ فى الأعتبار و أن يصاغ من خلالها نظام مثالى للتدريب و الزياره يمكن نشره على مستوى الجمهوريه.

٢. ينبغى خلق علاقه قويه فيما بين هيئات التدريس بالكليات و المعاهد الزراعيه و المدرسيين بالمدارس الثانويه الزراعيه لرفع المستوى العلمى

لمدرسى المدارس الثانويه الزراعيه بأستمرار من أجل زيادة المعارف الأساسيه لطلاب تلك المدارس اللذين سيعملون كمرشدى قرى فى المستقبل.

٣. فيما يتعلق بالمناهج الدراسيه على المستوى الجامعى بكليات الزراعه ينبغى أن تشتمل على مقررات دراسيه فى الإرشاد الزراعى لأكساب خريجى الشعب المختلفه المعارف و المهارات الإرشاديه الازمه للعمل كأخصائى مواد فى المستقبل حيث أن أتقان تخصصاتهم وحده غير كافى للقيام بهذه المهمه.

٤. من المهم بالنسبه لرجال الإرشاد أن يعظموا الوقت الذى يقضونه فيما بين أنشطه التدريب و الزياره التى ينفرد بها نظام التدريب و الزياره للخدمه الإرشاديه. أن أساليب أو طرق تناول برنامج نظام التدريب و الزياره متنوعه و قليله إذا ما تم تزويد رجال الإرشاد بتدريب على تلك الأساليب أو الطرق.

٥. ينبغى التأكيد بصفة خاصه على تقوية سبل الأتصال فيما بين مجموعات رجال الإرشاد إذا ما أراد رجال الإرشاد أن يطوروا برنامج إرشادى للتدريب و الزياره أكثر فاعليه فى المستقبل. أن الأختلافات العديده التى أبرزتها هذه الدراسه أشارت الى الحاجه للتخطيط, الأتصال و التطبيق لتحسين الخدمه المقدمه للمزارع على مستوى القريه خلال مراحل الأنتاج المختلفه.

٦. يتعين على رجال الإرشاد إن يعيدوا تقسم الوقت المنفق فى العمل بحيث يتم تخصيص الوقت المقضى فى أنشطه غير محتاج اليها كى يقضى فى أنشطه إرشاديه ذات علاقه بالتدريب و الإشراف على إكساب الزراع المهارات و القدرات الزراعيه. كمايتعين عليهم أيضا أن يطوروا برنامج متكامل لتدريب و زيارة الزراع بالقرى للتأكد من مستقبل الزراعه بمحافظة المنيا.

٧. يحتاج رجال الإرشاد إلى أعلام الزراع على مستوى القريه مسبقا بأهمية الأنشطه التعليميه التى سوف تقدم لهم من خلال برنامج التدريب و الزياره. أن خطه مثل هذه كى تطور ينبغى أن تحصل على موافقة الحكومه عند بداية برنامج التدريب و الزياره. أن مثل هذه الخطه ينبغى أن تعرض على مرشدى القرى, رؤساء القطاعات, أخصائيو المواد و مديرى ارشاد المراكز بفترة كافيه قبل بداية العام التدريبى و فى نهاية العام التدريبى ينبغى تقديم

ملخص مكتوب للمسؤليين عن العمل الإرشادى و ينبغى أن يشتمل التقرير على الإنشطه الممارسه بالفعل, الأيام التى أنفقت فى تلك الأنشطه و أعداد الزراع اللذين أمكن الأتصال بهم من خلال كلا من هذه الأنشطه لبرنامج التدريب و الزياره.

٨. ينبغى عرض نتائج هذه الدراسه على الساده مديرى الإرشاد الزراعى بالمحافظات المختلفه خلال اجتماعهم السنوى كى يتم: أ. تطوير مفهوم و صياغة أنشطة برنامج مثالى لأرشاد التدريب و الزياره. ب. تسهيل الأتصال فيما بين مرشدى القرى, رؤساء القطاعات, أخصائيو المواد و مديرى ارشاد المراكز.

الدراسات الموصى بأجرائها مستقبلا

١. دراسه تركز على تغيير فى أهداف نظام التدريب و الزياره و أن تركز على إحداث تغيير فى بناء البرنامج ذاته, أن مثل هذه الدراسه يمكن أن تلقى الضؤ على الطرق المناسبه لتطوير نظام التدريب و الزياره بما يتلاءم و رفع معنوية الأنشطه و البرامج المقدمه للزراع على مستوى القريه.

٢. دراسه تتناول البحث عن أنشطه أضافيه محدده يمكن ممارستها من خلال نظام التدريب و الزياره كى يتفق النظام مع الأتجاهات الحاليه و المستقبله فيما يتعلق بصناعة الإرشاد الزراعى.

٣.دراسه تتناول تطوير أنشطة التدريب و الزياره لترقية البرنامج التعليمى "المختص بالزراعه" على أن تخرج الدراسه بتصور عن كيفية أعادة بناء الأنشطه الحاليه لنظام التدريب و الزياره بما يتفق و دعم البرنامج التعليمى الزراعى.

٤. دراسه تتناول جمع رجع الصدى من رجال الإرشاد خارج محافظة المنيا للخروج بتعميمات عن ادراكات أو فهم رجال الإرشاد العاملين بقطاع الزراعه المصرى لنظام التدريب و الزياره.

صفحة الموافقه

تقييم نظام التدريب و الزياره فى محافظة المنيا

رســاله علميه مقدمه من

إســماعيل عبد الفتاح على

لجنة الفحص و المناقشــه

ناقش هذه الرســاله و أجازها كل من الســاده:-

١) الأســتاذ الدكتور/ بهجت محمد عبد المقصود

التوقيع

اســتاذ الأرشــاد الزراعى، بكلية الزراعه، جامعة أســيوط

٢) الأســتاذ الدكتور / الشــحات محمد ذكى أبو الشــحات

التوقيع

اســتاذ الأرشــاد الزراعى، بكلية الزراعه، جامعة الزقازيق

٣) الأســتاذ الدكتور / أحمد ضياء الدين الســيد زيتون

التوقيع

اســتاذ الأقتصاد الزراعى، بكلية الزراعه، جامعة المنيا

أودعت الرســالة بمكتبة الكليه تحت رقم

بتاريخ / /١٩٩٦

٥٤٦

تقييم نظام التدريب و الزياره فى محافظة المنيا

رسـاله علميه مقدمه من

إسـماعيل عبد الفتاح على

بكالوريوس فى العلوم الزراعيه "إرشـاد زراعى" جامعة عين شمس ١٩٧٦

ماجسـتير فى العلوم الزراعيه "إرشـاد زراعى" جامعة المنيا ١٩٨٩

إسـتيفاء للدراسـات المقرره للحصول على درجة

دكتوراه الفلسـفه فى العلوم الزراعيه

"إرشـاد زراعى"

لجنة الإشـراف

الإسـتاذ الدكتور/أحمد ضياء الدين السـيد زيتون

أسـتاذ الإقتصاد الزراعى

كلية الزراعه -جامعة المنيا

الإسـتاذ الدكتور/ يحى على الشـناوى زهران

أسـتاذ الإرشـاد الزراعى

كلية الزراعه -جامعة المنصورة

الإسـتاذ الدكتور/خيرى حسن أبو السـعود

إسـتاذ الإرشـاد الزراعى

كلية الزراعه جامعة القاهره

الإسـتاذ/الدكتور/ مايكل كنت سـوان

اسـتاذ مسـاعد التعليم و الإرشـاد الزراعى

كلية التربيه و التنميه البشـريه -جامعة نورث داكوتا

قسـم الإقتصاد الزراعى - كلية الزراعه -جامعة المنيا

١٤١٦ هـ -١٩٩٦ م