CHAPTER ONE

INTRODUCTION
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1.1 Importance of Agriculture

Agriculture determines the overall rate of growth of our
country's economy by supplying food to a large population, providing raw
materials to its industry, employing a large pool of labour force and by
raising foreign exchange earnings through exports. The stark reality is that
89.00 per cent of the population of India depend directly or indirectly on
agriculture, 82.00 per cent of the total population live in rural areas and
three-fourths working for their livelihood.

Increasing agricultural production is visibly a challenging task in
view of the rapid population growth. The population of this country in
2000 A.D. would go up to 972 million (Planning Commission, 1985) and
the requirement of foodgrains is estimated at 239-240 million tonnes
(Planning Commission, 1989). This means an addition of 5 million tonnes
of foodgrains per year over the next decade. In order to meet this
requirement, the annual growth rate required for cereals, pulses,
vegetables and fruits is a little over 3.00 per cent except in oil seed where
it is 4.46%. Required annual growth rate for animal products is less than
3.00 per cent while in case of fish production, it is 3.86 per cent. In view
of the past experiences, the aforesaid annual growth rate is seemingly
within reach. Even the level of achievement is both feasible and desirable
if the time horizon is extended further to 2050 A.D. when the requirement
of foodgrains will be 550 million tonnes. Obviously, the country has the
capability of producing much more than what is required in coming decades if the agricultural production system is supported by a proper mix of appropriate policies.

With possibilities of increasing net-sown area is extremely limited, the bulk of the growth of agricultural production has inevitably to come from per hectare yield of crop through the use of all technologies to the fullest extent on the farm. The exploitation of the potentialities at all levels can inevitably increase the present level of production substantially by removing or reducing the existing yield gap.

1.2 Importance of Technology Transfer on Agriculture

Technology transfer has received considerable interest and attention from Government and private agencies over the past few years. It is more so in the case of less developed countries. Technology transfer is the process by which science and technology are diffused through human activity. It is said that there is too much of concentration and investment on production of knowledge than on utilization of know-how.

Technology transfer programmes are based on the belief that the process is essentially one of communication rather than of innovation. Therefore it is necessary to concentrate on the question of how to transfer technology after it is developed, rather than how to develop technology so that it is transferable (Robbins and Milliken).(1)
Though the concept of transfer in its traditional form dates back to foreign conquests, migration, travel and trade in goods, of late more interest is being evinced in view of the set targets of productivity in industry and agriculture - particularly in agriculture, with the launching of intensive extension service schemes such as Lab to Land programme; Training and Visit system etc. It is necessary to make an indepth study of various aspects of technology transfer process.

1.3 Objective of the study

Agriculture is the main occupation of the people of Manipur. But since the population of the state has been growing steadily (which is expected to approach 25 lakh by the turn of the century) the per capita food available at present is marginal. The growth in food grain production depends on the extension of irrigated areas and on increasing the grain yield per unit area “assuming that there may not be any significant increase in the net sown area”. For this purpose the concept of planning for agriculture in terms of homogeneous agro-climatic areas need to be intensified and institutionalised. At the same time, it has also to be noted that the agriculture has become now ‘information-intensive-occupation’. For efficient operation in agricultural management an effective system of ‘communication of information’ from the tail (end users) to the ‘central point’ (planner/administrator) is necessary.
By 'Agricultural-Information-System' we mean the whole process of identification, collection, recording, evaluation, interpretation, preparation (of package) and dissemination and transferring of information related to agriculture in a systematic and scientific way. It also includes the transfer of farm technology from the source to the end-users for the application in the field. Recognising the vital role of individual, institution and document as source in the transfer of farm technology this study has been carried out with the following objectives:

- to determine the information sources used by the scientists, agricultural extension officers and farmers;
- to ascertain the extent of use and order of preference between the variety of sources of information;
- to identify the type of libraries and other depository centers used by the agricultural scientists and extension officers in pursuit of information;
- to determine potential information services the scientists and the extension officers tend to utilize;
- to suggest coordinated means and methods of dissemination of farm information to the extension officers;
- to know how far the farmers are benefited from the extension service; and finally
- to review the whole 'Agricultural Information System' of the state.

1.4 Scope of the study

The scope of this work is to evaluate the 'Agricultural Information System' in the state of Manipur during eighties and nineties (i.e. 1980-1994) applying the 'questionnaire method' with a purpose to
identify the problems in ‘gathering’ and ‘disseminating’ information, and
if necessary, to modify the existing system or to design a new one in
response to the present requirements.

1.5 Literature survey

The literature of agriculture and its related fields has proliferated as
countries throughout the world have become engaged in major
agricultural activities and research. Today’s expanding information
technology has as increasing impact on the ‘management’, ‘control’, and
dissemination’ of this agricultural information. As in all disciplines, key
documents have helped to shape and define the boundaries of discussion.
The documents, although static in nature form a foundation which allows
the discipline to grow in the future.

Emphasis of all recently published literature, if reviewed, have been
thrown on the topics like ‘current and future trends in agricultural
information’, ‘libraries’, ‘user needs’, ‘issues in developing countries’,
technology advances’, and ‘special problems’. These documents provide
a framework for understanding the current and future status of agricultural
information and agricultural libraries.

Balachard (2) traces the development of agricultural libraries in the
United States. Farely (3) expands upon various points discussed by
Balachard in his history of agricultural libraries and focuses on the
centralization of the U.S. Department of Agriculture’s (USDA) library
system in the late nineteenth century. Greathouse (4) traces the history of
'Agricultural-Information-System' of the agricultural libraries in U.S.A.
Overfield (5) considers sources of information on agricultural experiment
stations, showing the scientific role played by these stations.

Begum and Sami (6) based on records taken from Indian Science
Abstracts, conducted a study on the increasingly interdisciplinary nature of
agricultural science. Colle's (7) article examines how scientific
knowledge is communicated in the field of agriculture. His discussion
provides useful insights for agricultural public service. There is
information gap in the knowledge of agricultural user needs. Russell (8)
divides the user population into eight categories, discussing in some detail
the information needs of each. The categories of users identified are:
policy makers and administrators; research scientists; specialist advisors;
general advisors; educators and students; agricultural service industries;
and farmers and rural people. Russell states that studies to determine user
needs should include surveys but should also include direct observation of
the various user populations.

Regarding sources of agricultural information, the ACCIS guide (9)
records the sources of information available from the United Nations
(U.N.) system. The CAB thesaurus (10) is of prime importance in searching
two of the world's most important agricultural data bases and it is also
useful for determining free-text search terms, for these and other databases
and for providing subject headings and indexing terms for special and departmental agricultural related libraries. The annotated bibliography prepared by Johnson (11) provides valuable information on the development and transfer of agricultural technology in both developed and developing countries.

Access to source documents is very important for agricultural scientists. Bellamy (12) discusses the information gap in African Agriculture. Currie (13) study examined various document delivery systems in relation to time of delivery and handling charts. He also examined whether commercial document services can provide documents more quickly and more inexpensively than traditional library sources.

Broadbent (14), Cooney et al (15), Durrani (16), Griffiths (17), Kuniki (18), Kaungamno (19) and many others have worked on various issues of ‘Agricultural-Information-System’ for developing countries.

Coming back to our country, it has been observed that Deshmukh (20) and others have examined the information system for agricultural science and technology (at the first ICAR summer institute). Bose (21), Parikh (22), Mohan (23), Subbaiah (24), Livingston (25) and many others have studied and published regarding existing ‘Agricultural Information System’ in the country. The problems of users for collection of agricultural data are highlighted in various publications from Ahsan (26), Munshi (27), Surender (28), Phadnis (29), Bankpur (30) and many others.
The recent publications have highlighted various issues and problems of agricultural libraries in India as these are seen in the articles of Naidu (31), Rajasekharan (32), Despande (33), Prasher (34), Lal (35), Rajashekharan (36), Naidu (37) and many other.

It has been observed from the above discussion that the study of ‘Agricultural Information System’ of a particular State or Province as a whole, has so far not been conducted particularly in Indian context.

1.6 Hypothesis

A preliminary study before the final work has directed to draw the following hypothesis which are tested during the course of the work: It is assumed that

- ‘Agricultural Information System’ is not efficient and effective in the State of Manipur;
- the agricultural information is not properly communicated to the farmer;
- facilities for improving agriculture to the farmer are very less particularly in the remote areas;
- agricultural information available in the state is not sufficient for agricultural scientists or extension officials.

It is also further assumed that

- agricultural scientists and extension officials utilise University and Research Institutional Publications heavily for information;
- the Institutional variations and district wise variations do not affect the nature and mode of approach and usage of different sources of information by the agricultural scientists and extension officials.
1.7 **Methodology:**

The 'method' applied to conduct the research is 'survey method'.

In survey research the steps are as follows:

- identification and specification of the problems;
- design of schedule (interview, questionnaire, etc.);
- collection of data;
- analysis of data;
- interpretation of data;
- formulation of generalization or hypothesis;
- testing of hypothesis;
- writing of the report;

In survey research normally the tools employed are the following:

(i) Questionnaire  (ii) Check-list  (iii) Rating scale  (iv) Score-card  (v) Observation  (vi) Interview  (vii) Social measures  (viii) Psychological-tests  (ix) Reports and records  (x) Visits.

Hillways (38) states 'survey research is a method for collecting data through highly structured and detailed questionnaire or interviews'. Accordingly, a highly structured and detailed questionnaire was prepared and most of the tools mentioned above were used for this purpose.

1.7.1 **The instrument:**

1.7.1 A **Questionnaire**

For conducting the study the questionnaire and interview methods have been adopted. Mark (39) has conducted a study of literature and information methods within Maryland cooperative extension service. The questionnaire designed by Steven Mark has been modified to suit the
Indian set-up. The instrument was designed to obtain information on some broad and interrelated topics:

(i) From where scientist and extension officers obtain their information; how often they use it; and what they do with it;

(ii) What various publications the scientists and extension agent use in job activities and the evaluation of them;

(iii) Information on publications accessible in the department where they work and the documents the scientist and extension agent own personally;

(iv) Library and information services the scientists and extension officers utilize and would like to be rendered;

(v) Opinion of the scientists and extension officers about the usefulness of Radio and Television Programmes on agriculture in disseminating current and relevant information;

(vi) Information on specific instances where an extension officer has failed to render advice for want of timely information.

A Questionnaire for farmers was prepared separately to obtain the following information:

(i) Education, locally belonged, monthly income, land acquired by them, crop produced and amount of production etc.

(ii) Their method of collection of information and application of acquired knowledge to the land for better production.

(iii) Their difficulties and problems for collection of latest information.
(iv) Their experiences with the extension services provided by the Govt.

1.7.1 B Documents studied

Various documents of the ICAR, Dept. of Agriculture, Manipur Agricultural College etc. were physically verified and consulted during the course of work.

1.7.1 C Interviews conducted

Various persons associated with agriculture in the state i.e. farmers, villagers, Govt. officials, teachers and scientists were interviewed repeatedly during the work.

1.7.1 D Visiting the spots

Different agricultural spots in various villages were also visited to understand the problem.

1.7.2 While preparing the citations for ‘references’ at the end of every chapter and ‘bibliography’ at the end of the dissertation, design of ISI standard IS:2378 of 1978 was followed. Arrangement of the references in ‘bibliography’ was made alphabetically under the ‘heading’ of different types of publications.

1.8 Chapters description

The introductory chapter elucidates the importance of agriculture and importance of technology transfer on agriculture. It also points out that agriculture provides not only food and raw materials but also employment to a very large proportion of population. Increased agricultural income
creates market demands for industrial consumption goods, thereby providing a stimulus for market development. The research process is not complete until the adoption of new techniques by farmers results in higher yield and increased incomes. Adoption requires that the farmers be made aware of new practices, become interested in it, try it out and then adopt the process in other words called Technology Transfer.

The second chapter discusses the concepts and definitions of information and reiterated the value of information in decision-making and the source of information useful at each stage of adoption of innovations.

Chapter three includes the description of concepts and definition of technology transfer system distinguishing it from information transfer system. It also reinforces the idea that information is a pre-requisite in the process of diffusion of agricultural innovations as studied by rural sociologists.

Chapter four describes the characteristics of 'Agricultural-Information-System' and discusses the system prevailed in Manipur. An outline of agricultural-situation in present Manipur has also been drawn. It also describes the general organisational set up, agricultural teaching, research and extension system in the development and flow of farm information in Manipur. It also manifests the public view about the 'Agricultural-Information-System' in Manipur.
Chapter five analyses the data collected from the scientists, extension agencies and the farmers. It identifies the sources of information used by the scientists, agricultural extension officers and farmers and also their preferences about the various information services. The chapter also narrates how the agricultural information is communicated to the farmers and how far the information is acquired by the farmer. And, finally, it presents the findings of the study.

In chapter six, the recommendations based on the findings are presented. A ‘model’ for better ‘Agricultural-Information-System (AIS)’ is designed for consideration.
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(Chapter - 1)


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