CHAPTER 1

INTRODUCTION

> No effective substitute has been or is likely to be found for the individual human mind as an instrument for making fundamentally new discoveries. If our culture heritage which has been built or the products of individuals' curiosity, is to continue to grow healthily, individual scholars must be enabled to pursue their curiosity wherever it leads to.
>
> - Sibley, 1951

In the modern technological Indian society, new facts need to be uncovered everyday as the present information becomes obsolete by tomorrow. Research becomes essential to generate new ideas and information to keep up with the fast moving world. Scientific research in 'basic' or 'pure' and 'applied' sciences, has significantly added to the world's fund of knowledge and the application of this knowledge has contributed measurably to the betterment of human welfare.

With reference to Agricultural Universities in India, there are three areas in which services are rendered to the general public; teaching, research and extension. Vaigneur (1968) speaking on the 'Role of

Agricultural Universities in Teaching, Research and Extension' at the Ninth Biennial Conference of Home Science Association of India, held at Coimbatore; pointed out the importance of research as follows :

> The knowledge which the teacher imparts was developed through the organised effort of someone at an earliert time. Thus, the need for research is to gain knowledge about areas or problems which hinder advancement when a proper understanding is not known. It usually means an organised, scientific investigation. There are two main reasons for conducting research : (1) to learn or discover more about the basic laws of nature and (2) to apply this basic knowledge to the practical solution of practical problems ... Research opens new frontiers in agriculture by helping to develop new instruments and processes. Through research, farming is being placed more and more on a scientific and regulated basis. Major advances at all levels of education result from research.

Thus, it could be observed that research both basic and applied is very essential in Agricultural Universities, if they have to fulfill the expected functions and contribute to the development of the nation.

A teacher in an Agricultural University, is a common denominator to all the three functions of the

University : teaching, research and extension. The future of such a University is dependent largely on its teachers. It is essential that the teacher-scientist should be provided with facilities and an atmosphere where the researcher could pursue his own curiosity. Sibley (1951) in his study found that financial facilities distributed among scholars of widely varied interests have probably contributed more to advancement of knowledge than have large investments in research projects carried on by organised groups, with relation to the total amount of money involved. Therefore, research by individual teacher should be encouraged.

Alongwith the facilities, the teacher should also have a positive attitude towards research. Only then the research could be undertaken more seriously and on scientific basis. For conducting research, the teacher's/research worker's importance has been rightly pointed out by Tyler (1969) as :

> For research, the shortage is not so much of funds or topics for investigation, as of the people with time and skill to identify the important issues and to translate them into researchable questions.

1.1 Importance of Research in Home Science

Home Science, which is still a developing area of education, has contributed to the betterment of human welfare. Realising the importance and contribution of Home Science, it was proposed that every Agricultural University should have a College of Home Science. At present, there are eight Home Science Colleges affiliated to different Agricultural Universities. The Home scientists of the country have the largest responsibility of improving the standard of living of the people.

Home Science teachers, besides teaching and extension, also have the responsibility of conducting and guiding research. Hovde (1954) emphasising the need for women teachers/researchers, stated that:

> One of the greatest untapped resources of ability to do creative work and research in our nation, is the talent of our women, who form the vast majority of students in the field of Home Science. Ways must be found to find and to develop this talent and somehow to put it to work under conditions where it can produce some original work by doing research.

Research in Home Science is as essential as in other disciplines of study. It will grow as a discipline in our educational system only to the degree to which it

extends its frontiers of knowledge through organised and systematic research, explaining the nature and needs of the home. Accomplishment will depend in larger part on the emphasis - home science investigators give to basic investigations, that use and adapt the information and methodologies that related disciplines in the humanities, science and technology may provide.

Deulkar (1962) speaking on the 'Research in Home Science' mentioned that Home Science suffers from paucity of data collected on the basis of systematic research. Sporadic attempts have been made by various Home Science Institutions in the Universities offering post-graduate programmes. These efforts are, however, inadequate for building up the discipline. At present we borrow a large measure of our knowledge from other countries, chiefly the United States of America. Home Science in India should be able to rely on knowledge based upon its own culture. This could only be possible with research by teachers and students. For those institutions, which do not have post-graduate programmes and research personnel to conduct research, student projects may be designed to introduce research orientation in their programme of studies.

In 1959, the American Home Economics Association, stating the objectives of Home Science emphasised that conducting research to discover the changing needs of individuals and families and the means of satisfying these needs, is one of the major objectives of Home Science education. A survey conducted by Chandra and Chaudhary (1964) on the objectives of Home Science colleges in India, revealed that only 25.3 percent of Home Science colleges of India in 1964 identified research as one of the objectives. Lack of expertise and facilities to carry out research could be some of the major factors in under-estimating the role of research in Home Science.

Chandra (1978) has suggested that since all the Home Science Colleges cater to the needs of urban and sub-urban women, there is a need to reformulate their objectives. One of the major revised objectives suggested by her is:

> Development of research in all specialisations of Home Science for increased and improved applications of scientific knowledge.

1.2 Realisation of Importance of Research at Central Level

The value and importance of research are now fully recognised in those areas in which the returns are tangible and recognisable; such as industry, agriculture, medicine and national-defence. Having realised the value of educational research for the development of nation, the formation of National Research and Development Council (N.R.D.C.) and National Committee on Science and Technology (N.C.S.T.) for commercial exploitation of research carried out at national level, definitely speaks of the determination of the Government in the right direction. In addition to Universities and private organisations, we have the national bodies like Indian Council of Agricultural Research (ICAR), Indian Council of Social Science Research (ICSSR), National Council of Educational Research and Training (NCERT) all engaged in carrying out research for developing the country through science and technology. Besides, State Governments and private bodies; various national and international agencies like ICAR, ICSSR, NCERT, ICMR, UGC, FAO, WHO etc. have schemes for sponsoring worthwhile research projects.

The financial assistance provided by some of these agencies to the teachers, is in the form of research grants, awards and fellowships. From the literature reviewed it was found that these official agencies complained that research funds are not utilised fully by the teachers. At this juncture, it seems very essential to know why teachers do not avail themselves of the facilities like funds, grants, leave with pay, etc. to conduct research. This problem of lack of research by teachers needs to be explored extensively. It becomes essential to find out the inherent problems of teachers of Agricultural Universities, which are hindering their research activity.

1.3 Causes of Meagre Research

Cases are not many where lack of funds has hindered the research work. Besides the professional environment in the institution, there are two reasons given by Paddayya (1973) for low research output :

1. Many of our researchers seem to lose interest in research soon after they attain security in their job.

2. Some of our researchers lose interest in research only to gain what is apparently a more important field i.e., money. The new found interest is fulfilled in many ways like attending conferences, seminars, accepting external examinership etc.

To avoid this situations in field of research, proper values, attitudes and standards have to be inculcated in the students in the beginning itself.

The only activity by which majority of teachers are involved in research is by guiding research-students at M.Sc. and Ph.D. levels. The independent or cooperative research with other teachers, undertaken by teachers is very meagre. One reason that may be attributed to this sorry state of affairs is that teachers' attitudes toward research are not very favourable. There are also other teachers who have very favourable attitudes toward research, who realise the importance of doing research, and who have tried to keep up with their research activities in the face of real odds. Hence, it becomes imperative to study the attitudes of teachers toward research.

A teacher who is highly capable, interested and also has very favourable attitude towards research, may, sometimes find it difficult to do any research. The difficulty may be due to some institutional problems or lack of resources or some personal limitations, which block a teacher's way in conducting research. Weidner (1962) gave the following reasons for low rate of research:

> Money for research or research facilities is often lacking; leaves of absence with pay for research purposes are unknown in most countries. There is also a simple lack of interest in research in many instances.

Problems of poor library facilities and inadequate laboratory facilities were pointed out by Chakravarti (1968) while speaking on the problems of scientific research in India.

It is not that research stagnates because of lack of funds and facilities only, but also in an environment which is not free from professional jealousy and gerontocracy, from suspicion and red-tapism and from insecurity and favouritism. Koshy (1973) supports this view.

Ebel (1969), Allen and Southerland (1963), Brown (1965), Duxbury (1963) Eckerts and Stecklein (1961) Marshall (1964), Ness (1957), Russell (1962), Stecklein

and Lathrop (1960) found some problems of faculty members which gave them dissatisfaction. When a teacher is dissatisfied with his academic profession, facilities; his creative activities may be negligible or none at all. The reasons given by the above experts may be hypothesised to produce low research output, which were :

> ... bad administration, internal tensions, unreasonable teaching loads and questionable standards and methods of evaluation.

1.4 Need for the Study

Looking at the problems of teachers, it will be interesting to find which ones of these are felt by the teachers of Agricultural Universities and which are the other problems which have not been diagnosed. The problems may vary from one college to another in the same University, from University to University and from department to department. It is necessary that research should be taken up to explore :

1. The problems of teachers hindering their research work.
2. The factors facilitating the research work.

3. Attitudes of teachers toward research.

4. The research output of University teachers.

1.5 Scope of the Study

Research is basic to the growth of any discipline and to the development of a nation. Universities, as universally agreed upon, are the institutions of higher learning. As such, their major functions are gaining and dissemination of knowledge. The companion act of gaining and dissemination cannot be separated. In order to distribute, the knowledge must be gained and gaining without distributing is of no significance. Knowledge produced from research has been recognised as the most vital form of gaining knowledge, which is the major research responsibility of the Universities. The Agricultural Universities work towards this philosophy with their 3-fold activities; Teaching, Research and Extension ; where Teaching and Extension are forms of distributing knowledge and Research activity to gain knowledge.

Although there are many research laboratories which have the basic responsibility of doing research. These research laboratories are well equipped and have

trained staff with plenty of funds available. But still scientists believe that the Universities have a major role to play in scientific research. This view has been supported by Pande (1972) by giving two reasons :

1. The number of Universities is much more than the research institutes and departments.
2. Trained and qualified people are available in Universities.

Besides, research being more efficient and economical in the Universities, it provides some valuable experience to the students in the field of research. This idea has also been emphasised by Seshadri (1965) as :

> It should not be forgotten that a University's main function is to promote growth of knowledge and culture. It should help students to develop wisdom and grow to the highest level of human personality. An atmosphere of original thinking and research is essential for this purpose.

Therefore, the research in the Universities has a vital role to play in the development of the nation. The Indian Government is well aware of the tremendous need for doing research in the Agricultural Universities. In view of the crucial role of the Agricultural

Universities in rural development, it is very urgent to promote research in these Universities relating to the needs and interests of the Indian farm and family.

The kinds of activities in which faculty members engage themselves are dissimilar from institute to institute. Teaching is the only activity found in all educational institutions. Research on a very broad scale is confined to relatively a few University systems. Agricultural Universities are such where the teachers are engaged, besides teaching, in research and extension, too. Every teacher in an Agricultural University along with his teaching responsibility either has a research or extension responsibility. Sometimes a teacher's annual increment is withheld because she/he does not have any research to his/her credit. But even then, the research output is not as much as it is expected every year. The research in Home Science is far from satisfactory. This state of affairs could be attributed to some unknown problems or reasons which, when explored, can be overcome and the research output could be enhanced in these institutions.

Bose (1970) points out the importance of teachers by saying that :

> If there are no capable teachers to kindle the interest and understanding in the minds of young students of science, funds spent on increasing the number of doctorates would be a sheer waste.

It seems to be a vicious circle of teacher-student and research output. A teacher with not very favourable attitudes, may not be able to instill the same zeal and enthusiasm in the students working under his guidance. Graduate and post-graduate students should be given such experiences which will enable them to conduct research independently when they will be holding some responsible posts in various institutions.

The knowledge generated in Agricultural Universities by pure and applied research is meant to be used for improving the living standards of rural people. The extension services of the Agricultural Universities have the responsibility of taking the generated knowledge through research in University laboratories to the people who are its immediate users, i.e. the rural people. Extension agents are also expected to bring the problems of rural people to the scientists in the University, so that proper solutions

are found. This way, the extension workers act as a link between the generators of the knowledge and the users of the knowledge (Figure 1).

1.6 Research Dissemination and Utilisation

Once the needs of the families have been found and means have been searched, the actual usefulness of the research is realised when it reaches its users in simple and understandable language, only then, we may hope that research will make homes more happy and satisfying. In other words, it could be said that research not only needs to be conducted but disseminated and utilised, too ; to make the fundamental unit of the community, i.e., the home, a contented one.

The problem of research findings being not published and circulated among the Home Scientists in the different parts of the country by the researchers, was very seriously thought over in the 14th Biennial Conference of Home Science Association of India, held in Baroda, 1978 (November). Suggestions were invited from all the participating delegates, so that the research results could be made available to all the institutions throughout the country.

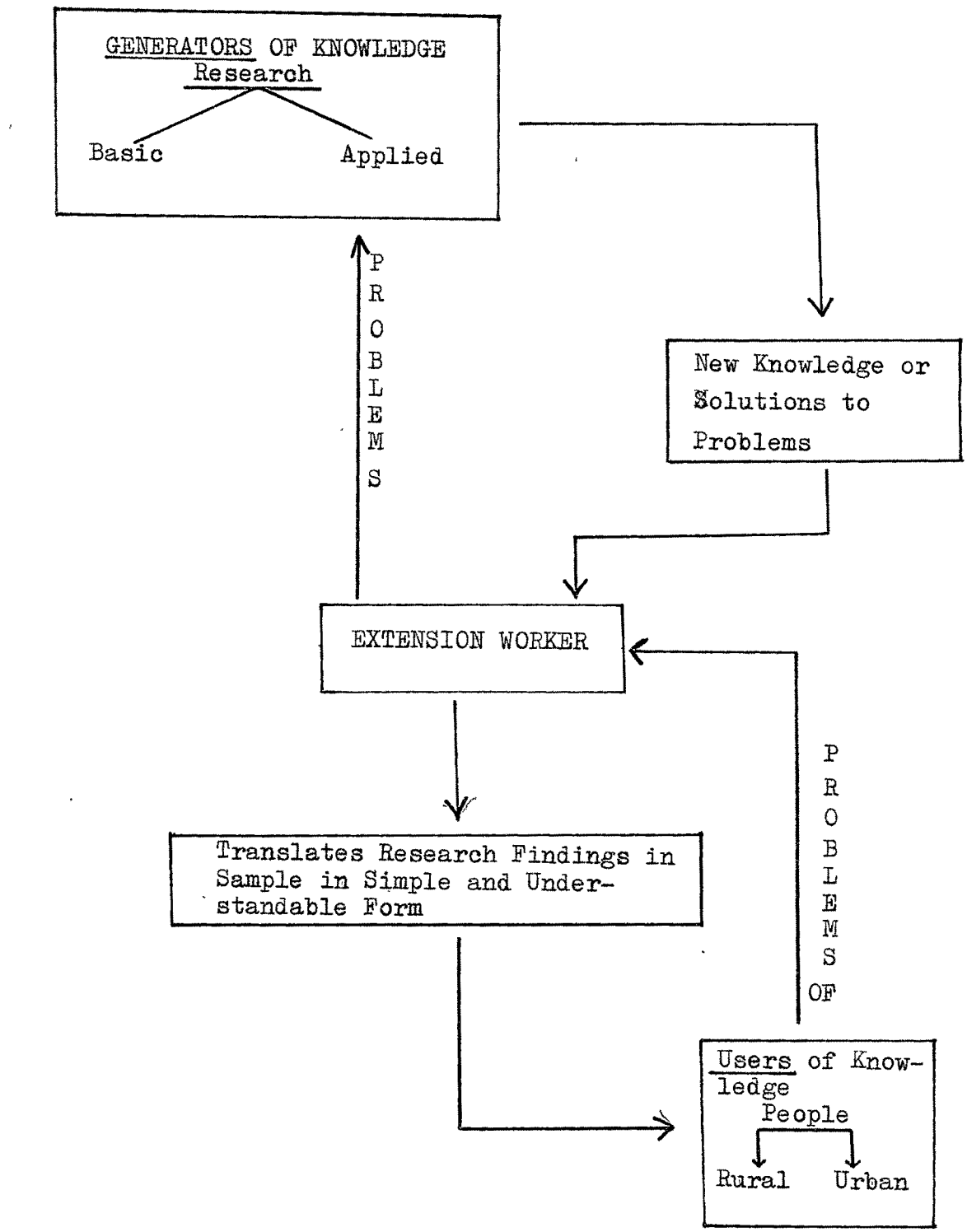


FIGURE 1 : Extension Worker as a Link Between Generators and Users of Knowledge

The research findings/results should be utilised to their maximum extent. Research discoveries should not become personal possessions or a 'stock' in the libraries, but they should be published, put to use and thus make a contribution to the field of knowledge. A researcher's job is incomplete unless he/she presents the research results in a clear, simple, logical and scientific way to the public.

Bose (1970) speaking on Teaching of Science, Research and development, explained that the main objective of the Indian Science News Association has been to take through its official organ, i.e., Science and Culture, his message of science in a non-technical language to people. The Agricultural Universities have various means of disseminating knowledge through written form and verbal forms. Many individual, group methods and mass media, are used to reach the knowledge to people.

1.7 Agricultural Education and Agricultural Universities in India

1.7.1 Agricultural Education Before Pre-independence (1906-1947)

It is only in very recent years that there has

been adequate recognition of the fact that higher education in agriculture and related fields is essential to the economic progress and development of the country. Agricultural education at the college level began in India in 1906. Veterinary colleges have been affiliated to universities since 1946, the Madras Veterinary College being the first college to be so affiliated. Colleges of agriculture were conceived and developed in India with the primary purpose of preparing young men for Government service, with the result that they did not provide opportunities for specialization. Their objectives was to train 'multipurpose' men who could fit reasonably well into any or more of the several types of jobs for which they were needed by the Government. The curriculum was uniform and rigid; scope for specialization in veterinary sciences and animal husbandry was very meagre.

1.7.2 Origin of Land-Grant Colleges in the U.S.A.

Prior to 1862, there was no agricultural education worth the name in the States of America. The Morrill Act, better known as the Land-Grant Act, made available to the States of Union, grants of land for establishing colleges that would teach agriculture and the mechanic art and also

offer military training without excluding the humanities. All the States, in the Union and even the succeeding States, accepted the Land-grants through their respective legislatures, either immediately or within a few years after the end of the American Civil War. These grants of land became the permanent endowment of the colleges started with their aid, which came to be known as Land-Grant Colleges, described as 'the most comprehensive system of scientific technical and practical higher education, the world has ever seen'. The establishment of these colleges resulted in the democratisation of higher education for the masses and the introduction of sciences into curriculum with its application mainly in agriculture and to industrial arts and crafts. The agricultural programme of the Land-Grant Colleges is 3 fold : Teaching, Research and Extension. This programme has worked wonders in developing the economic structure of America.

The philosophy behind the Land-Grant Colleges was that the knowledge and the training acquired in them should be of immediate service to the community.

1.7.3 Agricultural Universities in India

The need for developing agricultural education in India was first emphasized by the University Education Commission

(1948-49, p.198) by having agricultural universities. The existence of several Agricultural Universities can be traced to this recommendation. A joint Indo-American team was appointed by the Government of India under the chairmanship of Mr.K.R.Damle in 1955 to examine the problems of agricultural research and education and make its recommendations. Endorsing the recommendations of the University Education Commission, this team suggested that an Agricultural University on the model of Land-Grant Colleges be established on the Tarai State farm (Pant Nagar Farm). The State Government of Uttar Pradesh enthusiastically welcomed the idea and with the expert advice of Dean, H.W. Hannah of the University of Illinois, worked out the details of a scheme for the University. Two officers of the U.P. Government were deputed to U.S.A. to study the administrative pattern of the Land-Grant Colleges, their curricula and methods of the teaching as well as the details of the research and extension schemes forming part of the Land-Grant system of agricultural education.

G.B.Pant University of Agriculture and Technology was established in 1960, at Pant Nagar, Uttar Pradesh.

Looking at the achievements of the University, The Education Commission Report 1964-66 recommended the establishment of at least one agricultural university in each state. This Commission pointed out that the Agricultural Universities should be committed to the following 5 essential purposes :

1. Their concern with all aspects of increasing, disseminating and application of knowledge related to agriculture including basic and applied research.
2. Their primary emphasis on teaching and research directly and immediately related to the solution of the social and economic problems of the countryside.
3. Their readiness to develop and teach the wide range of applied sciences and technologies needed to build up the rural economy.
4. Their readiness not only to teach the undergraduates, post-graduates and research students, but also to give specialized technical training to young people who are not candidates for degrees.
5. Their emphasis on adult and continuing education side by side with teaching regularly enrolled students.

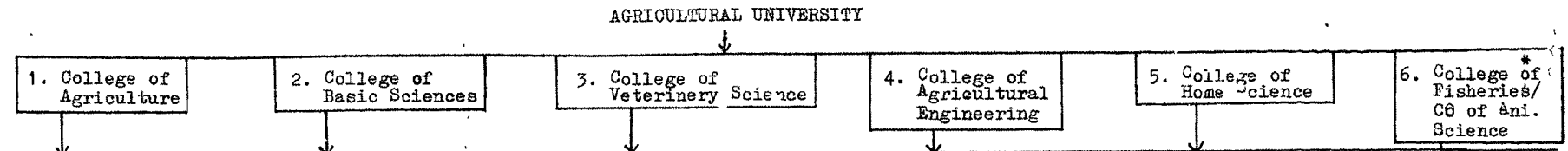
In short, it could be said that the Agricultural University serves the entire population by its efforts to increase agricultural production and improve the processing and distribution of agricultural products, thereby, advancing the economic and social welfare of all people..

1.7.4 Academic Units of an Agricultural University

To achieve the basic objectives, an Agricultural University comprises of constituent colleges, the academic units of the University. The departments are the basic units of the colleges and in turn of the University organization. An Agricultural University normally has 5 constituent colleges, of which at least 3 are to be located at the main campus of the University. The colleges are :

1. College of Agriculture (COA).
2. College of Basic Sciences and Humanities (COBSC)
3. College of Veterinary Science (COVSC).
4. College of Agricultural Engineering (COAENG)
5. College of Home Science (COHSC)

Thus, the departments forming colleges are the fundamental units for the University to enable it to achieve its aims and serve the nation (Figure 2).



Departments	Departments	Departments	Departments	Departments	Departments
1.1 Agricultural Botany	2.1 Botany	3.1 Animal Sciences	4.1 Civil Engineering	5.1 Child Development	6.1 Marine Biology
1.2 Agricultural Chemistry	2.2 Biochemistry	3.2 Anatomy and Physiology	4.2 Electrical Eng.	5.2 Clothing & Textiles	
1.3 Agricultural Extension	2.3 Business Management	3.3 Bacteriology and Virology	4.3 Farm power and machinary	5.3 Foods and Nutrition	
1.4 Agronomy	2.4 Economics	3.4 Gynacology and Obstratics	4.4 Mechanical Engineering	5.4 Home Management	
1.5 Entamology and Zoology	2.5 Mathematics and Statistics	3.5 Medicine	4.5 Processing and Agriculture	5.5 Home Science Education and Extension	
1.6 Food Science and Technology	2.6 Physics	3.6 Paracytology	4.6 Soil and Water Engineering		
1.7 Genetics	2.7 Microbiology	3.7 Pharmachology	4.7 Environmental Control		
1.8 Horticulture	2.8 Chemistry	3.8 Vet. Public Health			
1.9 Plant Breeding	2.9 Literature	3.9 Animal Mgt.			
1.10 Plant Pathology	2.10 Finance-Management	3.10 Animal Husbandry			
1.11 Soil Science		3.11 Poultry Products			
1.12 Vegetable Crops		3.12 Vet. Pathology			
1.13 Agrometry		3.13 Co-operation			
1.14 Plant Physiology		3.14 Animal Nutrition			
		3.15 Animal Physiology			
		3.16 Animal Breeding			

FIGURE 2

COLLEGES AND DEPARTMENTS OF AN AGRICULTURAL UNIVERSITY

* Not in all the Universities. One university had college of Fisheries and another college of animal sciences besides the usual 5 colleges.

1.7.5 College of Home Science in an Agricultural University

Since the investigator, conducting research in Home Science, belongs to the discipline of Home Science and is also working in college of Home Science in one of the Agricultural Universities, it would be worthwhile to give a brief introduction to the college of Home Science in an Agricultural University.

The Report of the joint Indo-American study team (1970, p.19) pointed out that women's education has not kept pace with the progress in education for men. The report has pointed out (p.19).

> The influence of the housewife and mother on the economic, social and spiritual outlook of the Indian family has never been challenged. In fact the Indian mother may have a more profound influence on her children than her counter-part in many of the western nations. The strength and welfare of democracy depends upon an enlightened citizenry, and the need for educational opportunities for the young women of to-day, who will be the wives and mothers of to-morrow, is urgent.

Higher educational opportunities for rural women have been almost non-existent. The colleges of Home Science in Agricultural Universities are entrusted with the responsibility of providing instructional, research and

extension educational programmes oriented toward the improvement of rural homes and farm family life. The essential instructional units of a college of Home Science are :

1. Foods and Nutrition (FN).
2. Child Development (CD).
3. Home Management (HM).
4. Clothing and Textiles (CT).
5. Home Science Education and Extension (H.Ed.Ext.)

Besides the training leading to a B.Sc. degree in Home Science, some colleges of Home Science also have post-graduate studies specialising in various disciplines of Home Science. The research is conducted by a post-graduate student leading to the degree of M.Sc./ Ph.D. Teachers also engage themselves in the creative work by guiding and doing research.

Various short-training courses are run for farm girls and women to train them in the field of Home Science and also agriculture.

1.7.6 Contribution of Agricultural Universities

Though India has food shortage, its achievements in the field of agricultural advancement in recent years are spectular. In 1955-56 food grain production was 66.9 million tones.By 1970-71, within 15 years (a decade of establishment of agricultural universities) it had touched the record level of 108.4 million tonnes recording an increase of 62 percent. This increase in agricultural output has been possible through a combination of factors, like higher investments in agriculture, better inputs and institutional reforms. However, the main inducement to invest and higher inputs, itself has resulted in higher yield per acre, which has been a major contribution of research in agriculture. Most important breakthrough has been achieved in wheat crop.

The success in wheat production is mainly due to the high yielding varieties which have been put into use by Agricultural Universities due to their constant research in the field. As for rice, the country has 14 new strains developed by Agricultural Scientists which would multiply yield to a significant extent (Mirchandani, 1975,p.5) (Table 1).

TABLE 1

YIELD OF WHEAT

S.N.	Year	Yield (Tonnes/Hactare)
1.	1947 - 48	0.6
2.	1950 - 51	0.7
3.	1960 - 61	0.9
4.	1964 - 65	0.9
5.	1965 - 66	0.8
6.	1966 - 67	0.9
7.	1967 - 68	1.1
8.	1968 - 69	1.2
9.	1969 - 70	1.2
10.	1970 - 71	1.3
11.	1971 - 72	1.4

(Source - National Commission on Agriculture Report, 1976).

Agricultural research has not only covered the scheme for the stabilisation growth in food production, but has also researched the area of soil care and fertility along with water management. Production of cash crops and oil seeds have also been the job of Agricultural Universities. Since the research is the fundamental job of the University, the present study of "Teachers' Problems, Attitudes and Output Related to Research' in Agricultural Universities of India" has been selected.

1.7.7 Conclusion

The fusion of research, teaching and extension- the tripod, on which modern agriculture rests, is the main feature of all Agricultural Universities (Figure 3).

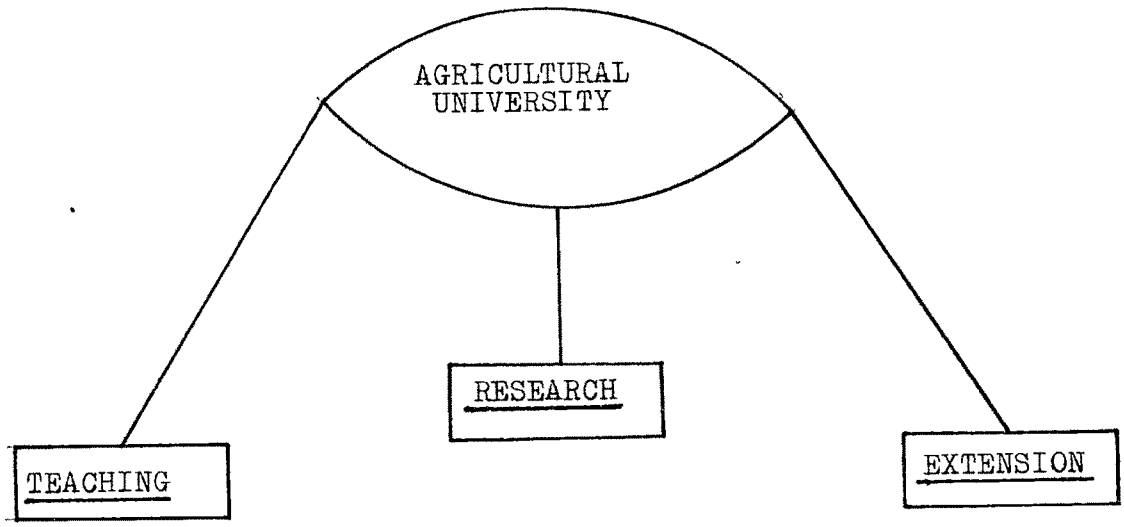


Figure 3 : The Tripod of an Agricultural University

Since 1960, 20 Agricultural Universities have been constituted by Act of State Legislatures, beginning with the G.B.Pant University of Agriculture and Technology, Uttar Pradesh in 1960: based on the American model of Land-Grant Colleges.

1.8 The Description of the Present Study

Since conducting research is one of the major responsibilities of a teacher employed in an agricultural University, it becomes imperative to expect some important research related activities of teachers. The success of an agricultural university depends mainly on the research conducted and disseminated by its teachers. If research in agricultural universities contributes measurably to the development of the nation, it needs to be accelerated by providing maximum facilities and supportive environment to the teachers. Facilities could only be provided if the authorities know what problems the teachers face. The factors which enhance further the production of research, should also need to be known and strengthened. The present study, 'Teachers' Problems, Attitudes and Output Related to Research in Agricultural Universities of India' had been undertaken, with a view that the findings of the research will help in boosting up research output of teachers in agricultural universities.

The broad objectives of the study were :

1. To study the problems of teachers in doing research.
2. To study the attitudes of teachers toward research.

3. To study the research output of teachers
4. To study the differences in the problems, attitudes and research output of teachers according to their personal characteristics.
5. To study the various inter-relationships among the personal characteristics of teachers and their problems, attitudes and output related to research.

1.8.1 Specific Objectives of the Study

To study the problem more precisely and specifically, the following questions were taken up for investigation :

1. What are the existing problems of teachers in the Agricultural Universities, in the following aspects ?
   - 1.1 Personal problems - problems regarding lack of time, lack of knowledge in research methodology, lack of confidence etc. will be studied.
   - 1.2 Material resources : Problems regarding finance, library, laboratory and transportation will be explored in various departments/colleges.
   - 1.3 Human relations : Problems due to 'Head's/Dean's non-cooperation and his non-emphasis on research and intimacy among staff members.
   - 1.4 Administrative duties : Problems due to administrative duties which hinder the research work of Heads or Incharges of the Departments in various colleges, will be studied.

2. What are the teachers' attitudes toward research in the following aspects :

   2.1 towards the importance of research
   2.2 towards conducting research
   2.3 towards guiding research
   2.4 towards dissemination of research.

3. What is the research output of teachers ?

4. Do teachers differ significantly in their problems, attitudes, and output related to research according to their personal characteristics ?

5. What are the relationships and inter-relationships among the personal characteristics of teachers, and their problems, attitudes and output related to research ?

6. The problems, the attitudes and the research output will also be studied in relation to the personal characteristics of the respondents. The personal characteristics are : (1) College, (2) Age of the respondents, (3) Marital status, (4) Academic qualifications, (5) Sex, (6) Professional status, (7) Teaching experience, (8) Place of residence.

1.8.2 Assumptions

The following assumptions were made for the study :

1. There are some problems which block teachers' way of conducting research.

2. There are some factors which enhance research output.

3. Teachers have either favourable, less favourable or more favourable attitudes toward importance of research, conducting research, guiding research and disseminating research,
4. The information provided by the respondents is reliable.
5. The problems regarding conducting research can be explored.
6. Attitudes towards research and research output of teachers can be measured.

1.8.3 Hypotheses

Various 'Null','Relational' and 'Inter-relational' hypotheses had been formed to be tested through the study :

Null Hypotheses :

There are no differences in the problems, attitudes and output related to research of teachers due to their University, College, age, marital status, academic qualifications, sex, professional status, teaching experience and place of residence.

Relational Hypotheses :

Problems, attitudes and output regarding research are related to teachers' age, academic qualifications, professional status, teaching experience and place of residence.

Inter-relational Hypotheses :

Different areas of problems regarding research are inter-related.

Aspects of attitudes are inter-related.

Kinds of research output are inter-related.

1.8.4 Operational Definitions

The following terms have been operationally defined for this study :

1. Attitudes : The degree of positive or negative affect associated with research activities of University teachers.
2. Research : A systematic study to make new discoveries, pursue one's curiosity to know something or test something, which has already been discovered somewhere else.
3. Research output : Number of research projects undertaken, research papers published, research papers presented at professional meetings, in the last 5 years i.e. 1973-1978 (Research projects completed, research projects under process).
4. Academic qualifications : The final degree received by the teacher which may be either B.A./B.Tech., M.Sc./M.A. or Ph.D.
5. Professional status : Whether a teacher is Assistant Professor, Associate Professor or a Professor, in any of the colleges affiliated to Agricultural Universities of India.