Chapter 4.

ROLE OF LIBRARIES IN AGRICULTURAL EDUCATION AND RESEARCH

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4.1 Introduction

Agricultural Science now, is not limited to farming alone. The subject is broadened to include allied sciences such as Animal Husbandry, Veterinary Science, Sericulture, Fisheries Science, Forest Science and Horticulture. Further the Agricultural Science is multidisciplinary in nature as it includes certain applied sciences such as Entomology, Botany, Environmental Science, Chemistry, Chemical Engineering, Soil Science, Genetics and Technology. Hence the literature of agricultural science spread over various forms of these subjects.

Agricultural information plays an important role in education, research and finally farming. As agricultural science spread over various subject disciplines mentioned above and various forms of literature like books, research reports, patents, standards, thesis, dissertations, compact disks, audio-visual materials etc, it is difficult to trace the relevant information in a limited time.

Lancaster and Beecher (1981) have discussed four characteristics that make agricultural information unique and different from other scientific literature. These are the interdisciplinary nature of agricultural research, the fugitive nature of the literature produced in agricultural scholarship, the universal applicability of agriculture and its literature and the diversity of treatment and presentation of this literature. Each has a unique impact on agricultural information work in developing countries¹.

Agricultural information played an important role as input to and output of agricultural research. Agricultural information is the base for teaching, education and development. Agricultural information is also basis for maximizing the agricultural production and improving the agricultural productivity.

Universities of Agricultural Sciences were established considering three functions: first is education that imparts training; Secondly, research evolves techniques and methods to solve the problems encountered by agriculturists and
farmers in maximizing the agricultural production; and finally, Extension that takes care of the transfer of technology evolved by research and pass the same to farmers in language and manner intelligible to him, who puts the knowledge to immediate practical use.

With the constant flow of agricultural information the above said functions will be performed. Agricultural Science University Libraries plays an important role in functioning of agricultural science universities. The libraries collect, acquire, retrieve, store, communicate and disseminate the agricultural information. Keeping in view the role, the libraries are known as ‘Key to Knowledge’.

Agricultural development in India is faced with new challenges and opportunities on food, nutrition, population and environment fronts. Agricultural libraries of India have to play a vital role to face these challenges by providing quick access to information. The Government of India is conscious of improving the conditions of agricultural libraries. In the past, many Committees were appointed to meet the challenges of providing agricultural information. These were headed by Damle (1955), Ralph R. Shaw and D.B. Krishna Rao (1957), Randhawa (1960), Dorothy Parker (1969) and Edith Hesse (1997). Most of the recommendations made have since been accepted by the Indian Council of Agricultural Research (ICAR), though only a few implemented so far. A large number of workshops, seminars and conferences for agricultural libraries were held at different places from time to time. These workshops, seminars and conferences formulated a number of recommendations for the development of agricultural libraries and their services and passed various resolutions for consideration.

4.2 Role of Libraries in Agricultural Education and Research

The various objectives of library in an agricultural science university as stated by Perumalsamy and Karunanithi are as under:
- To improve the quality of education, research and extension activities of the agricultural institute.

- To increase the use of agricultural information resources.

- To increase the quantum of information.

- To increase the value of information

- To make access to the technical information.

- To process information

- To provide personalized database system with the agricultural scientists, students, researchers and farmers.

- To increase the level of cooperation with other agricultural universities to use the information resources.

As already discussed, agricultural science university library support the agricultural science university at these three levels namely, education, research and extension.

The agricultural science university libraries collect, process and then make available the documents to its users guiding them in getting the relevant information. The agricultural science university library serves the needs of teachers, students and practitioners in any or all of the branches of knowledge pertinent to the profession of agriculture. In agricultural science universities, the users are the teachers, students and researchers, whose courses include, general biology, botany, zoology, genetics, plant breeding, animal breeding, anatomy, physiology, plant pathology, animal pathology, taxonomy, mycology, entomology, chemistry, chemical engineering, chemical technology, food science, technology, home science, agronomy, soil
science, horticulture, farm management, agricultural economics, veterinary science, sericulture, fisheries science, marine science and agricultural engineering. The users of agricultural science university libraries also include farmers and extension workers. Thus library have to serve diverse user group from highly specialized user group like teachers & scientists to illiterate farmers community. Hence the agricultural science university library works as Special Library in the field of Agricultural Science.

By acquiring, accumulating and organizing the information sources in various forms the agricultural science university library serve as an invaluable aid in conservation of agricultural knowledge and ideas and as an active force in teaching, research and extension programmes.

Through direct assistance to the members of the faculty and research staff and through the service of members of the library staff as instructional guides, it would participate in the interpretive function of the related agricultural science university. Through its bibliographical and other reference services, it would aid individuals of the instructional and research staff who are engaged in the research and in the preparation of materials for publication.

Considering the developments in information explosion, Raina suggests the agricultural research library may keep its researchers abreast of the latest information by issuing:

1. Research reports on various research problems in the form and language familiar with the researchers.
2. Bibliographies of latest publications on various fields of agricultural sciences.
3. Current Contents of journals on various specialities of agricultural sciences.
4. A monthly or quarterly agriculture research newsletter reporting briefly various research projects at hand.
5. A quarterly research bulletin intimating the results of research conducted during that period.
In order to inform the researcher about the problems faced, experiences gained and observations made by the farmers in practicing the research results, the library may compile data obtained from extension workers and farmers and distribute among the researchers.

4.3 Role of Agricultural Science University Libraries in serving General Community

Agricultural research conducted in agricultural science universities and research institutes is aimed at improving methods, techniques, processes, equipments and procedures related to agriculture. Agricultural research proved to be useful only if results of which are communicated to the farmers and extension workers in right time. Agricultural science university libraries act as a media for communication of information between agricultural science researcher and ultimate user (such as farmers).

India felt necessity to establish and organize specialized organization to provide vocational education in agriculture and allied fields in 1959. Indian Council of Agricultural Research (ICAR) established Krishi Vigyan Kendra’s, (KVK- Farmers Science Centre) as innovative institutions for vocational training of villagers, farmers and field level extension functionaries. Besides ICAR, Agricultural Science Universities and NGOs (Non Governmental Organizations) have also established KVKs to transfer technologies to the rural community. At present there are 262 KVKs in India and government has planned to establish one KVK in each one of 520 districts.

Visakhi and Srivastava\(^{5}\) identified information needs of farmers as under:

1. Field Acquisition:

   Farmers are required to know the different types of schemes, subsidies available, their policies, procedure for purchasing of agricultural land.
2. **Agricultural Inputs:**

   Farmers are needed information about improved variety of seeds, pesticides, agricultural equipments, weather conditions, harvest and post harvesting technology etc.

3. **Agricultural Technology :**

   Farmers should be fed with innovative technology in their farming.

4. **Agricultural Credit:**

   Farmers need information about credit facilities, source (of finance), how to utilize, loanable amount, terms of loans etc.

5. **Agricultural Marketing :**

   Day to day market trend on price of different variety of crops are necessary for the farmers.

6. **Food Technology :**

   Information in post harvest, food technology is needed for farmers to get optimum benefit out of their crop.

   Agricultural Science university libraries acts as community information centre in providing information needed by general community including farmers. In India, unfortunately majority of the farmers’ community is illiterate and negligent to get information requirements from any library. On the other side, if effectively function the agricultural science university libraries can meet the information needs of the farming community as under:

1. Library may act as meeting place for farmers and scientists in agriculture. Here farmers may get cleared of their practical problems discussing with agricultural
scientists. Libraries here also provide relevant literature for solving their problems.

2. The libraries are the media, which may help to give knowledge about various schemes, policies, subsidies and procedures of acquiring the agricultural land.

3. Like other inputs, information is also an input to agriculture. Information about the fertility of the soil, seed varieties, suitability of the soil, choice of proper yield, details of crop diseases and their remedies, weather conditions (Forecasts) etc., are needed for agriculture. Hence, agricultural science university libraries play an important role in providing such information.

4. Farmers should know about the new technology developed on agriculture. Agricultural science university libraries are effective media through which farmers may get new methods of cultivating, pest control, fertilizing, harvesting etc.

5. The agricultural science university library may also provide information on various sources of finances for agriculture, details on government schemes, credit facilities, etc.

6. The agricultural science university libraries also provide information about market trends for agricultural products, such as current prices, sales time, group marketing etc.

7. The agricultural science university libraries may also help the farmers by providing information on processing of food grains, their storage methods, processing the food crops to make ready made food items like pickles, delicious food items, etc, so that farmers get better prices after processing their products.

8. The agricultural science university libraries also provide legal, political and economical information needed for the farmers.
4.4 Role of Agricultural Science University Libraries in providing various Information Services:

The various Experts, Committees, Study Teams and Commissions emphasized the role of library in agricultural science universities and the services of the library.

One of the objectives of the ICAR was to "render library and information services to the interested people of India".\(^6\)

University Education Commission (1948-49) headed by S. Radhakrishnan attached greater importance to the library and recognized it as the 'heart' of the institution. One of the most important recommendations of the commission was that "bibliographical and documentation work has to be developed in order to make the libraries proper centres of learning".\(^7\)

The report of the Second Indo-American Team on Agricultural Education, Research and Extension also recommended 'improved services for agricultural libraries' and stated:

"Every possible step should be taken to improve library facilities, which are often inadequate...(the librarian's)functions are ... to safeguard the literature keeping it freely available to the scientific staff... by proper indexing and in other ways to help the scientists make the best use of it".\(^8\)

Regarding the services of the agricultural science university libraries, the report of Indo-American Agricultural Library Survey and Study Team (1969) stated: "The services of information, reference and documentation are embryonic. At the present time, there is no activity in documentation in the university libraries, with the exception of the Punjab Agricultural University (PAU), where a limited documentation program is now offered".\(^9\).
To promote information services in the agricultural libraries, the ICAR had sponsored a number of workshops and seminars at different places from time to time. Important among these were: Workshop on Reprography at Ludhiana (1972); Seminar on Agricultural Librarianship and Documentation at Ludhiana (1977); All India Seminar on Agricultural Library and Information Services at Hyderabad (1980-81); All India seminar on Agricultural Library and Information Services at Palampur (1983); All India Seminar on Agricultural Library and Information Services at Mohanpur (1985); and All India Seminar on Agricultural Libraries and Information Services at Pantnagar (1988). These workshops and seminars formulated a number of recommendations for the developments of agricultural science university libraries and their services.

The Information Services are the channels through which the agricultural information is disseminated and communicated to different users. The agricultural science university libraries are providing various information services according to the needs of the users, library infrastructure, facilities available and technology.

Subbaiah identified and explained the agricultural science university library services under the following heads:

1. Reference Services.
2. Loan Services (i.e. interlibrary loan facilities).
3. Documentation Services. These include:
   a) Abstracting
   b) Information concerning newly arrived literature
   c) Current awareness service
   d) Indexing
   e) Retrospective Information file
   f) Union lists.

The services provided by agricultural science university library, according to Shrimali include:
General Services: These will include the longest possible of opening hours and the maximum of opening days; open shelves; classified cataloguing; departmental collections; reserved book, i.e., textbook collections, hostel libraries, browsing rooms etc.

Orientation Services: These would comprise of, issuing to guide book for students and manuals for faculty and research workers; tour programmes for new comers and individual guidance in use of library tools for others; News bulletins, exhibits and displays; class instruction in use of library tools; new arrival lists etc.

Special Services: These would be, reference service; readers advisory service; routing of periodicals; reading lists; preparation of bibliographies; indexing, abstracting, translations, supply of microfilm and Photostat copies, inter library loans; audio-visual services, provision of more copies of text books etc.

Group Services: These would be, conference with faculty to keep in touch with the curriculum; contacts with research workers to know about their research programmes etc.

Extension (Mobile) Services: One of the important functions of an Agricultural Library is to bring the benefits of the scientific research to the masses particularly to the agriculturists in the rural areas. The agricultural library has a definite role to play in this field. For this, the Agricultural library must organize a Mobile- library service to cater book needs of the village communities. A Librachine (Library Van) shall carry books on basic knowledge of agriculture, dairy, animal science, community development, social work etc and shall also be equipped with a projector to show films on agriculture, animal science, public hygiene, rural health and sanitation and community development etc. The mobile van shall have a regular programme of visiting places at appointed time when the village people shall borrow books and deposit them back.

In a latest survey conducted by Jain and Goria (2001) the Agricultural Science University libraries along with other services, providing Electronic Mail, Internet, developing Database and Multimedia. The study stated that 36.84% of Agricultural Science University Libraries are developing their own bibliographic databases. E-Mail service is given by 42.10%, Internet Search Service is provided by 26.31% and Multimedia Service is provided by 26.31% of the Agricultural Science University Libraries.

4.5 Role of Agricultural Research Information System (ARIS) in developing Agricultural Libraries

To promote the Education, Training, Extension and Research in the field of Agricultural Science and other related disciplines, the following Institutes are functioning in India:

1. State Agricultural Universities (SAUs) 27
2. Agricultural Deemed Universities & Institutes 9
3. ICAR Research Institutes 42
4. National Research Centre (NRC) 30
5. National Bureau 4
6. Project Directorate 10
7. Agricultural Colleges affiliated to SAUs 172
8. Krishi Vigyan Kendra’s (KVKs) 262

The development of Information and Communication Technology becomes a boon for libraries to develop information systems and networks in a specialized...
subject discipline like Agricultural Science. Through the development of Information Systems, the information can be accessed, stored, retrieved and communicated easily. The Networks made it easy to communicate, disseminate and share the information across the world.

The various institutes like ICAR and Universities in Agricultural Science are keen to develop Agricultural Information Systems in India. Its proposed objectives are:

- Improved research and planning;
- Checking the duplication of research and extension projects and programming;
- Dissemination of research findings;
- Improving in feedback mechanism;
- Better Coordination and linkage between and among different rural development agencies and banking institutions like Department of Agriculture, Department of Rural Development, NABARD, Lead Banks, NGOs and Private Sectors;
- Evolving effective information sharing mechanisms;
- Electronic interface among scientists, development agents and farmers.

To exploit the potential of modern computing power in planning and management of agricultural research and scientific communication, ICAR started an Agricultural Research Information System (ARIS). Basic guidelines to implement this project were provided by a team of experts from ICAR and International Service for National Agricultural Research (ISNAR). The system aimed to cover Infrastructural Development of Agricultural Libraries, Development of Databases and Application Software, Networking of Agricultural Science Libraries and Train the Library Personnel working in agricultural science libraries.

So far, the ARIS contributed the following to serve its purpose:

1. Every campus of Agricultural Science Universities, ICAR institutes and Project Directorates have been provided with LAN servers and three or four PC workstations with associated LAN cabling. The infrastructural equipments
like Air Conditioning, Uninterrupted Power Supply are provided. Software for networking, e-mail as well as office automation have also been provided.

2. Agricultural Research Personnel Information System (ARPIS): The Information about all the ICAR Scientists (including Designation, specialization, cadre strength, institute, discipline, awards etc) numbering about 4500 has already been added in database. This can help the management in planning the personnel policies, recruitment, manpower planning and such other purpose. This will further be expanded for all staff at Krishi Vigyan Kendras (KVKs) and scientists working in State Agricultural Universities.

3. Agricultural Research Financial Information System (ARFIS): It will maintain computerized monthly accounts of all ICAR institutes and ICAR headquarters, grants to SAUs etc.

4. Agricultural Research Library Information System (ARLIS): the ARIS is modernizing the libraries and putting the library information on the ARIS network. All libraries of ICAR and SAUs will be computerized and linked to IARI library which has been identified as National Agricultural Library. This will provide scientists an opportunity to access information in India or abroad electronically. Thus library automation and their networking will form a significant part of the ARIS.

5. Agricultural Research Management Information System (ARMIS): It will provide access to research managers and administrators, the computerized management tools using software packages to information on different resources maintained under various databases. For SAUs, a package called AGRIUNIS was developed by NAARM to store and retrieve the information. Training was also given to all the SAUs to utilize this package.

6. In order to develop trained manpower in computer applications in agriculture, training programmes on use of computers and application software packages
are being organized by ARIS. To keep the ARIS network up and running people from each campus of ICAR institutes and SAUs will be provided adequate training for managing various information servers and online databases and administration of LAN and UNIX networks.

7. Under ARIS programme, most of the ICAR institutes and SAUs were provided with suitable servers and nodes. Many of these institutes connected through Internet either by VSAT or by dial-up facility.

8. The Agricultural Research Information Centre at ICAR headquarters collected various agricultural databases such as AGRIS, Research Project Files, Annual Reports, Directories, Database of Agricultural Periodicals in India, Database of SDI service provided to Agricultural Scientists, Database of FAO Statistics and others.

9. Agricultural Research Information Centre also publishes:
   (i) Directory of Research workers in India;
   (ii) Directory of Conferences, Seminars, Symposia, Workshops in Agriculture;
   (iii) Indian National Agricultural Bibliography;
   (iv) ICAR Research, Education and Extension Institutions Projects in India;
   (v) Lists of Research Projects of ICAR.

   Through its network, ARIC disseminates Agricultural Information databases and publications to SAUs and member institutes.

10. SAARC Agricultural Information Centre (SAIC) is working as the source of agricultural information about the seven members countries of South Asian Association for Regional Co-operation (SAARC). ARIC has been identified as focal point for India by the Governing Body of SAIC in its meeting held at Dhaka from 4th-5th Dec 1988. ARIC is responsible for collecting,
compiling, processing and updating the Indian Information at national level. Similarly the information from remaining six member countries also reaches to SAIC headquarters at Dhaka. 

4.5 References:


