CHAPTER-1  
INTRODUCTION

Today, a lot of information is being generated through print as well as other mediums. The phenomenon of growth in the number of publications created a number of problems in the administration and organization of libraries in the area of acquisition, collection, organization, maintenance, dissemination and retrieval of information.

1.1 Concept of digital library

Modern library contains materials in digital form and digital material. The important reason is that the material stored in such form that the computer system can disseminated and delivered, which is otherwise not possible in conventional form. An automated library may not be a digital library if there housed the material in printed form. But the digital library should be developed in its functions automated. Digital material means the material in automated readable material. In this information computer technology computer era reliability has more importance for information and medium used for recording. It does not matter whether it is in digitalized form or otherwise. There is two ways process of creation of digitalized information if created conventional material.

(1) Conversion of the physical medium into a digital representation. For example: scanning a page producing a computer readable (digital) image of the paper within the computer, as the digitalized picture of a page is recognized by the computer only.

(2) It is to have the computer extract information from the digitized image.

For text, it is done by Optical Character Recognition (OCR) software to
convert the text image into ASCII format for editing and manipulation of information and to store in textual format.

1.1.1 Collection Policy of Digitalized Material

- Collection available only in digital form.
- Deliver this material directly to the users’ desktops.
- User’s need to search in a non-conventional way for the material they need.
- Which material needs to the digitalized in the library needs?
- Other sources for searching and retrieving the material that the library needs to digitize.
- Is the material unique?
- When the users geographically widespread.

In case of library expansion, new material can be obtained in the digital form. In reference library, the cost on digitization and preservation will reduce. There should be the digitized material in its usage. In such library, improved search tools may be beneficial for both type of information”s i.e. internal and external be obtained through improved search tools for internal and external information rather than digitizing everything.

The users must accept the efforts of the library to digitize and organize materials. In case the digital library is preferred by the management authorities, it is more important to consider its suitability to the institution or organization and the uses.

1.1.2 Digitalization in Agriculture Universities

There are factors which could be judged:

(a) Whether the existing library needs any added digital service?
(b) Whether the information source and services have been added as complement to the existing services or do new services need to be developed?

(c) Are there resources to expand the new services?

(d) Will providing access and services generate income? The copyright and taxes payment becomes a considerable point, if income is generated.

Some libraries have common aim to have unique collection and promoting the widespread use of them. It is true when collection is rare, fragile and expensive; once the digitization process is completed the original can be sent to the preserved environment. This will promote use of the material to expand the library services in Agriculture University libraries.

If the library is providing good services and the users are happy with whatever is provided then there is need for automation. But one of the problems is assessing the best use of the materials and services. Sometimes users may not know the alternatives that could be available to them by the library. It is important to consider the needs of the users, the resources in the library, the requirements of the organization and the improvements in the overall services.

1.1.3 Digital Age

Traditional libraries were collecting materials of scholarly nature i.e. books, journals and manuscripts. These were presented for the consultation in cage, almirahs, and stacks. The users and the faculty members need immediate access to the material. Today there are few libraries who prefer traditional collection and capable to maintain because of its demerits of space, financial and time problems consuming. Today, Just-in-Time libraries are
preferred which can give immediate results and that can provide facilities to access the material at the point of your sitting and without changing the place of sitting. This could provide electronic access or express delivery. This is not possible in case of physical collection.

Digital libraries are the need of today. It is just one aspect of physical change brought about by the information revolution. On the other hand, the option of remote storage is significant. It gives a question of how and when, digital becomes the normal feature of the society. What will be the future library? It depends on the storage and instruments for shaping and the digital future. Everybody is optimistic and since never believe in past but future developments. New inventions whether may be a industry, education or libraries, forgotten collection of decaying print stock in remote intellectual wastelands? Migration of cultural memory stored in print, may take a longtime to newer form of storage material come into existence.

1.2 Role of Agriculture University library

The entire society is on the verge of translation due to rapid development of information communication technology. In the age of information explosion, it becomes difficult for a traditional library to acquire all published material at one place. Publication price are increasing. Once the materials selected and process for acquisition, more new materials is published to acquire. It means as soon as print materials is received in library, it becomes outdated because of new developments of knowledge in the same field or same interest. Information is dynamic in growth and infinite in quantum and advancement of information computer technology have opened new gates for generating, originating and dissemination information.
During the last two decades, the development of information technology have made it possible to overcome many of the problems with regard to selection, acquisition, processing, storage, retrieving and through right communication media. Agriculture Universities have taken one step further to develop their libraries as digital libraries. They have automated the library and making efforts to make available electronic resources including e-journals.

Libraries are the source of information which enhancing the level of information and computer literacy through the facilities of accessing, content and training programmes. Libraries are committed to freedom of access to information and promotion of life-long learning. It has played a significant role in society with its resources. The academic community enjoys the information and communication environment and reduce the digital device in order to utilize the ICT fully. In developing countries ICT could not be developed due to lack of facilities, specially economic problems that makes the objectives to be hardly achieved. The libraries play vital role in providing digital information. In India, majority of the people are not able to avail ICT facilities. Students are also not in a position to pay the subscription charges. Agriculture University libraries have made efforts to provide ICT based services to users. Libraries are the members of national and international network and also subscribe online journals and E-books and narrow the digit gap among users.

The Agriculture University libraries may make efforts in bridging digital device among users by providing the following facilities:

1.2.1 **Infrastructure**

There is a need of strong infrastructure for accessing the digital information resources:

1.2.1.1 **Hardware and Software**
It is a big problem in developing countries to purchase of costly hardware and software required for information access, in the absence of which the gap between information have and have not increases. The University library make it convenient to provide the software, hardware and allied items such as printer, UPS, cable network, furniture, cooling devices etc. the University library provide all these facilities free of cost in order to cater the need of users to the digital information needs. The users take full advantage of digital information through internet.

1.2.2 Internet Connectivity

It is the first priority of a Agriculture University library to generate interest connectivity to provide facilities for case of access information by the users. The users have limited time of spent on internet. There most of the activities are based on traditional approach through print media/documents, telephone or written communication. The University libraries provide free internet service to users. UGC, AICTE and ICAR and World Bank etc. provide funds for the internet connectivity and established internet workstation in campus. University libraries have also extended internet facilities to its users within the campus and outside campus to meet the needs of the users.

1.2.3 Access to E-resources

Agriculture University library and Information centre subscribe e-journals in all countries. There are publishers of e-journals who provide access to their e-journals on trial basis to evaluate the market requirement and users download their information and avail this facility timely. Libraries have joined networks and learned societies. Societies allow access facilities to their members. There is less consultation of E-books because of their limited reference in comparison with e-journals. Now the publishers offer their
attractive and effective schemes for the purchase of e-journals and databases on subscription basis.

1.2.4 Digital libraries

Digital libraries are the systems based on digital material/resources come alive. They make the collection usable and usefully accessible for the benefit of the community. The collection proved useful when it is valuable to the users and also surrounded by matrix of contents and useful interpretations. Digital libraries are established to make the maximum use and exploit the digital resources for the benefit of the society. Agriculture University libraries are coming forward in building a rich digital collection. These university libraries have been equipped with indigenous collection of E-resources and funded by the funding organizations and also international collaboration.

Agriculture University libraries spent their maximum time in identifying the resources and services regarded for users. These resources are acquired with the consultation of the subject experts. Digital libraries also interlink with each other where users can access information.

1.2.5 Making the use of freely available E-journals

Several Free e-journals are available on the web which can be access freely. University library can make use of freely available e-journals in providing information to the users and also for training them in getting the information out of these sources.
1.2.6 Consortia Arrangements

A library consortium consists of group of libraries, with some homogenous characteristics by subject, institutional affiliation, or funding authorities that join together with an objective work collectively. These cooperative efforts are:

- Subscribe electronic resources
- Resources sharing activities
- Shared cataloguing of resources
- Shared Technology Solution
- Sharing core/peripheral collection
- Sharing cataloguing in network environment

Consortia are useful because:

- Provide business opportunities to e-publishers.
- Libraries are facilitated due to the collective strength of consortia members for wider access to electronic resources at reasonable cost and at the best terms and conditions.
- It will improve the research productively of all universities with increased access to international databases and full-text resources.
- Increase in sharing of both print and e-resources amongst participating library.
- The rate of increase in subscription of consortia is less than 100 individual subscriptions of journals.
- Consortia provides better terms of agreement for use, archival access and preservation of subscribed electronic resources;
Since the subscribed resources are accessible online in electronic format, the University libraries are not serious to consider the space requirement for storing and managing print-based library resources. But also other problems relating to print media and their wear and tear, location, shelving, binding, organizing, etc. are not be an issue which have affected the electronic resources.

1.2.7 Subject Gateways

To attract and provide more information to the users, the University library may make use of subject gateways. These are subject-based resources discovery guides that provide links to information resources predominantly accessible via the Internet.

1.2.7.1 Training

Training is a process of learning, which is structured to impart and develop knowledge, skills and attitude in employees. In-service training can be defined as a process of acquiring and transmitting professional knowledge and practical skills during working life. It helps organizations and individuals to develop themselves in consonance with the changing needs of the environment in which they survive operate and progress. The standardized training programme should be introduced and undertake the advantage of audio, visual and multimedia aids. To share the idea with the staff of the library we cordially invited many experts from various professions, libraries, computer science, information technology, management, publications, engineering etc. Today the staff of the University library are training themselves in providing the digital information to its users. Various training programmes are being taken place for the library professionals by the leading University library Publishers and service providers. A number of short-term
courses, refresher courses, workshops, etc are being organized. The library staff are making themselves able to provide training to the end users.

During British period there were limited research projects and its infrastructure. Moreover, there was not acute food problem and production. The British did not pay attention and did not even try to increase the food production. But few incidents of famine and flood compelled the government to think over the development of agriculture expertization and development of agriculture crops. Same the facilitation of research, education, and extension in agriculture field in India, at both state and national levels.

1.2.8 The agriculture structure at State level before independance

In 1905, the Government of India marked a sum of 20 lac rupees annually, for the development of agriculture research and agriculture education and trainees in Indian states to assist the development of agriculture research, and education in the Indian States. Many agriculture farms were demonstrated and seed established in different parts of a state for demonstration and seed multiplications. Moreover, seed centres were also established, to supply seed and improve implements, other agriculture requirements. Some states have established training centres for imparting necessary training to field workers of all caders for a period of 2 years of training in agriculture for those that had been educated to the middle school level. During the first decade of 20th century, the first efforts was to establish of agriculture colleges for graduate programme in different states. State universities were given the authority to affiliate agriculture colleges offering a 4-year course and awarded a Bachelor of Science in Agriculture degree. The agriculture colleges were also authorized to conduct researches on Soil Science, Entomology, Plant Pathology and crop improvement under the
supervision of the experts of the departments. Few research centres were established on the locations where favourite cultivation conditions existed.

1.2.8.1 National Level

Government took many initiatives like establishment of imperial research institute at Pusa, Delhi, who offered 2 years training imparted to agriculture graduates. The ministry provided special founds for the development of its infrastructure. Other institutes were also started like state of Madras for sugarcane at Coimbatore, in 1908, at Shimla hills for potato in 1935. These institutes made significant developments and contributions. Government/Ministry encouraged the autonomous bodies and research centre to work on research projects for the development and improvement of same crops, such as cotton, jute, oilseeds and tobacco in coordination and finance research. The first autonomous body was created in 1921 known as the Indian Central Cotton Committee. In 1929 Royal Commission on agriculture recommended for imperial council of agriculture research, an apex central body to coordinate and promote agriculture research at regional and national level.

1.2.8.1 The post-independence period in agricultural development

The post independence period the partition of India also affected the development of agriculture due to diversification of the country and a major part of Punjab became a part of Pakistan. The condition prevailed and forced India to import food grains from USA under the PL-480 programme to meet the needs of the country. Although there made many efforts for nucleus agriculture infrastructure both at state and national level. But there was lack of skilled and trained manpower for research and development. Moreover, there was a lack of coordination among agriculture organizations and research
centres to carry on the research and educational activities. There was also not proper interaction among agriculture scientists. Government of India set up agriculture universities to achieve the objective and promote coordination among agriculture research and extension services among the farmers. It was also considered necessary to create a close link between research and the education to faster education based result of the research and to avoid more text took teaching.

Teaching and learning has relations. To learn is to teach is a saying. A teacher if learn, can be a good teacher. Similarly a researcher should have close link with farmers to provide first hand understanding and aware them with problems in the field. Farmers should also be aware about the institution and agriculture research centre and field extension agency to provide new technology. Extension education wing of Universities every agriculture university has established its extension education wing equipped with better trained field staff to provide technical knowhow to farmers about day to day problems. With this view first agricultural university was set up at Pant Nagar, Uttar Pradesh (now Uttarakhand), in 1960. Today, there are more than 38 agricultural universities. The number of agricultural universities in a state varies, depending on the size of the state and its regional requirements. State Government has taken responsibility for agricultural research and education, and agriculture Universities are research centers. However, State Universities started awarding degree and research oriented education. Further, some general universities and technological institutes with facilities in agriculture and related sciences continue to undertake teaching and research work in agriculture. There are a number of agricultural colleges are providing agriculture education also.
1.2.8.2 Restructuring of agricultural education and research at national level

The Indian Council of Agricultural Research (ICAR) is the apex body responsible for funding, promoting, and coordinating agricultural research in the country. It has now areas of crops, horticulture, soil, engineering, animal sciences, and fisheries. The Indian Agriculture Research Institute in New Delhi and the Indian Veterinary Research Institute at Izzatnagar in Uttar Pradesh offer postgraduate teaching programs and are declared to be deemed to be universities.

There are other efforts made. All India coordinated project was undertaken. It was started in 1957 as first coordinated project. There were other projects started for different crops and other field of agriculture.

1.2.9 Human Resource Development in Agriculture Universities

A large number of central and State University libraries conducting researches under assistance of skilled people at various levels. Agriculture Universities have engaged scientists and well qualified academicians in various fields of agriculture and technology. Soon after World War II, in 1946, when the transfer of power to India was being envisaged, the government appointed a good number of young scientists from all over the country to receive higher training in different disciplines of agriculture science and technology.

Transfer of Technology

It is a fact that inputs and green revolution could be possible only due to active cooperation of millions of farmers, who were handicapped by their small holdings and limited financial resources. The agriculture universities
organized village fairs or agriculture fair to brought together the farmers and the increase the cooperation between the extension workers and researchers. Farmers had a chance to explain their problem before experts for solution new seed varieties crops.

1.2.10 Inspiring Efforts

The progress of any nation depends on leadership for its economic policy. It was the efforts of the government to give priority to achieving self-sufficiency in food production within short period of time. Pundit Jawaharlal Nehru, who was the first prime minister of India and a man of vision, gave first priority to development of agriculture.

Shri. C. Subramanian, Minister of Agricultural in the Government of India granted decision in the late 1960s, regarding the import and spread of the improved seeds. India had a total food production to the mark of 55 million tones and to meet the shortage of food grains, the country had to borrow from the foreign countries. It was felt a need to develop new varieties of crops that may occupy more areas under cultivation and to develop infrastructure for agriculture research, education and extension activities.

The efforts of agriculture universities and ICAR institute resulted to production of a number of teachers and students increased in large number. Today, there are 34,000 scientists and teachers working in the Agricultural Research Sector in India with 17,200 undergraduate and postgraduate students in State Agriculture Universities. Under ICAR only four Institute namely: AEI, IVRI (Izzatnagar), NDRI (Karnal), CIFE (Bombay) are undertaking post-graduate teaching and enroll 1200 students every year.

1.3 Development of Agriculture Education
More than 62 percent population of India resides lives in villages and their main occupation is farming. It was the challenge before the Government to improve in the traditional agriculture technique to increase the food production. Government gave priority to meet the food needs of the country. Under the aegis of Indian Council of Agriculture Research (ICAR), commodity and problem based institutes were opened throughout the country to accelerate the research in agriculture, animal, veterinary, dairy and fishery sciences.

Agricultural education and extension activities were given emphasis in the second phase of development along with research work. UGC, accord the status of a deemed university to IARI in 1958 where education at Ph.D. level wads started and its earlier Degree of Associate ship was changed to M.Sc. Degree. Moreover, Education Commission had recommended minimum one Agric .Tech. University in each of the states of India. As a result, State Agriculture Universities were started. Govind Ballabh Pant University of Agricultural and Technology (Pant Nagar, 1960), Orissa University (Ludhiana, 1962), University of Agricultural Sciences (Bangalore, 1864), Andhra Pradesh Agricultural University (Hyderabad, 1964) were the first Universities in India.

The Green Revolution in 1966-67 brought about self-sufficiency in food grains. Under the third phase of agricultural development started to sustain the results of Green Revolution. Both ICAR and State Agriculture Universities started growing with a faster pace. Green Revolution has already fulfilled the needs of milk production in the country.
### Table 1: State wise SAUs in India (2010)

<table>
<thead>
<tr>
<th>States</th>
<th>Number of SAUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jammu &amp; Kashmir</td>
<td>1</td>
</tr>
<tr>
<td>Himachal Pradesh</td>
<td>2</td>
</tr>
<tr>
<td>Punjab</td>
<td>1</td>
</tr>
<tr>
<td>Haryana</td>
<td>1</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>2</td>
</tr>
<tr>
<td>Gujarat</td>
<td>2</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>3</td>
</tr>
<tr>
<td>Kerala</td>
<td>4</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>2</td>
</tr>
<tr>
<td>Karnataka</td>
<td>3</td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>3</td>
</tr>
<tr>
<td>Orissa</td>
<td>1</td>
</tr>
<tr>
<td>West Bengal</td>
<td>2</td>
</tr>
<tr>
<td>Assam</td>
<td>1</td>
</tr>
<tr>
<td>Bihar</td>
<td>3</td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td>4</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>2</td>
</tr>
<tr>
<td>NEH Region (Central Univ.)</td>
<td>1</td>
</tr>
<tr>
<td>Chhattisgarh</td>
<td>1</td>
</tr>
<tr>
<td>Uttarakhand</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>37</strong></td>
</tr>
</tbody>
</table>
Table 2: Scientific manpower engaged in Agricultural Research in India (2012)

<table>
<thead>
<tr>
<th>Educational Institutions</th>
<th>P.G.</th>
<th>Ph.D.</th>
<th>Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICAR System</td>
<td>8120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Agricultural Universities</td>
<td>28300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universities and Affiliated</td>
<td>2750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agriculture Colleges</td>
<td>338</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agro-based Industries</td>
<td>1960</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voluntary (Private) Organizations</td>
<td>392</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Govt. Departments</td>
<td>412</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All state Agriculture Universities annually enroll about 32,700 students at various level courses under HSDP (Human Resources Development Program).

Table 3: Students on Roll in Agricultural Education Institutions (2010)

<table>
<thead>
<tr>
<th>Educational Institutions</th>
<th>P.G.</th>
<th>Ph.D.</th>
<th>Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICAR Institutes</td>
<td>1990</td>
<td>7</td>
<td>NIL</td>
</tr>
<tr>
<td>State Agricultural Universities &amp; Colleges</td>
<td>980</td>
<td>380</td>
<td>17300</td>
</tr>
</tbody>
</table>

All Agriculture University libraries are equipped with a rich library having an appropriate collection consisting of journals, monographs, reports, bulletins and theses. The agricultural colleges are also having well equipped...
libraries and collection of 25,000 to 70,000 books. ICAR have developed their institutes and more libraries were opened. The SAU libraries played a vital role in the research and education programme in the field of Agriculture Technology.

1.3.1 Status of State Agriculture Universities and ICAR Institute Libraries

Government of India formed survey the status of art of ICAR libraries that has been assessed by the teams from time to time to review of the status of arts of Agriculture University libraries as under:

(1) Dr. M.S. Randhawa Committee (1957).
(2) Dr. Ralp R Shaw and Dr. Krishna Rao Committee (1956).
(3) The Indo American Agriculture Library Survey.
(4) Study Team.-Dr. Dorothy Parket Committee (1958).
(5) Dr. Ramaiaih Committee (1969).
(6) ICAR Survey Committee (Dr. Ramnathan).

All survey committees felt that the conditions of ICAR libraries were not satisfactory condition so far their collection, inadequate manpower and infrastructure facilities and inadequate financial resources which were managed to meet the information requirements for the scientists and students of their respective institutions. Every SAU have insufficient budget of their libraries. The librarians were appointed in the lower grades at semi-professional level and put to run the library under the supervision of some non-professional scientists. All these reasons have contributed for the slow pace of development SAU libraries. All commodities recommended for the improvement in the physical facilities of libraries, strengthening the collection, appointment of professional librarians and the status of library staff equal to the Heads of Department and scientists, but still these recommendations
awaits the action and implementation. In SAU many state Government have
given the grade of librarian at par with Sr. scientists.

1.3.4 ICAR Model Act for Agricultural Universities in India

The ICAR Model Act (under Section7, Subsection 10) has mentioned
the powers and functions of the University to maintain libraries as research
centre for teaching, research and extension services. It has a legal base to
the libraries of agricultural universities. The librarian has been given the status
as a member of the Academic Council and an officer of a university
responsible to the Vice-Chancellor for all matters regarding library activities.
i.e. Acquisition of collection cataloguing maintenance of books purchasing
journals and other functions of the library.

The act further provides various facilities incorporating the
recommendations of Cummings Committee Report of Dr. Ralph W Cummings
as Chairman and Sutton Committee Report of Dr. T.S. Sutton as Chairman
and these recommendations have affected the organization of agricultural
university libraries administration, duties and power of the librarians. The
ICAR Model act has been a boon to state Agriculture University libraries and
given the libraries and the librarian a rightful place in the administrative set-up
of agricultural universities.

ICAR organize workshops, seminars and conferences for agricultural
libraries for the improvement of skills of the librarians which are as under:

i. Workshop at G.B. Pant Agriculture University at Pantnagar.

ii. Conference on Agricultural Education relating to Libraries held on
    JNKVV, Jabalpur.

iii. Workshop on reprography at Agriculture University, Ludhiana.
iv. Seminar on Agriculture Librarians at Agriculture University, Hyderabad.

v. Seminar on Agricultural leadership and documentation at Pant Nagar, organized in university and colleges. There have been many seminars and workshops for the improvement and to aware with latest development in libraries.

1.4 APPLICATION OF INFORMATION TECHNOLOGY

IT has changed the information world but decreasing human efficiency. It has helped to central the constraints of libraries and increased to a greater extent the higher utilization of electronic resources and need based information more effectively. Information technology has made the facilities automatic in collection of information, storage processing and retrieval. The application of IT has been three dimensions in libraries, such as:

i) Automation of library resources.

ii) Establishing CD-ROM databases.

iii) Information Communication networking.

Computer technology has been applied in various activities for a long time in library science field, but in India, their use has been for two decades. There are majority of libraries which have computerized their functions totally while others are in process of computerization. State Agriculture Universities in Uttarakhand like GB Pant University have made their library automated.

Today a large number of CD-ROM databases are available on a variety of subjects including agro-biological sciences. There are few as under:

- CABI Abstracts since 1972 (CAB).
- AGERIS CDs 1975 (FAO)
AGRICOLA since 1950 (NALUSA)
Zoological Rewards since 1978.
Biological Abstracts since 1985.
Chemical Abstracts since 1994.
Daren"t Biotechnology Abstracts since 1982.
World List of Agricultural serials, etc.

There are large numbers of CDs on all disciplines of Agriculture Science and Technology produced and published by many organizations. These CD-ROMs cover abstracts and full text of journal articles, statistics, full text of books and monographs (Hickson, Carry Allin (2009). Leading publishers of scientific journals have started publishing of scientific journals on CD-ROMs. They are:

- Annual reviews Inc.
- Blackwell Scientific Publishers.
- Elseier Science, etc.
- Academic Press.

1.4.1 The Agricultural Research Information System

The system has many problems to solve:

i. The lack of systematic access to information is a serious constraint on both management and scientific decision-making in the India.

ii. That new technology has the potential information management.

iii. To improve the information management system.

1.4.2 Information for Managers
The biggest information problem for most state Agriculture Universities should be reported by the librarian. University libraries are continuously involved in research and organizing budget, expenditure, personnel and infrastructure for research and computerization of libraries and provide required information.

1.4.3 Actions

The establishment of a basic Management Information System at each SAU requires the following efforts:

i. Standard Computer Software.

ii. Standard formats for information exchange.

iii. Field-testing technology selected sites.

iv. Training Programmes.

v. Use of Software and their formats.

There is a great need of sophisticated and effective software with standardized formats. Such software are specified in commonly used, hardcopy “periodical” reports, monthly expenditure reports.

1.4.4 Information for Scientists

There are two important process of providing information to scientists i.e., identifying the Information and the access of resources.

1.4.5 Training and Programmes

There is a need of advance training regarding “scientific information” to library manpower:
i. Librarians and the patrons are trained for various processes of accessing e-resources, procedures for CD-ROM on-line searching and retrieving.

ii. Professional straining to library supporting staff.

1.5 Contribution

On the request of Government of India made a request to UNESCO in March 1966 formed a joint team of UNESCO and FAO to visit India in order to help the Agriculture Universities to formulate a program for the grant UNDP to assist the development of new agricultural universities and to standardize and improve the post-graduate studies conducted by universities (UNESCO, 2008).

1.5.1 Post-graduate studies and research in agricultural universities

The Ministry of Agriculture sanctioned the post of Professors of doctorate level to teach the post-graduate subject education programmes. It has selected few agricultural universities and/or research institutes as centers for graduate education and associated research programmes for the preparation of these professors. G.B. Pant Agriculture University, Pant Nagar and SBB Patel Agriculture university, Meerut for the purpose. The ICAR on the footing of UNESCO Charter submitted proposals on two points how appropriate research and education facilities need to be strengthened in terms of programs, personnel, equipment, fellowships and (2) purpose ways in which the UN Development Programme may assist in such development under the expanded Technical Assistance Programme of special fund.

1.5.2 Higher Education in Agricultural Field

Higher education includes agriculture, veterinary, dairy and agricultural engineering at university, colleges at post-graduate levels. Although
agricultural colleges in higher education existed since long but the post-
graduate teaching in agricultural could be organized only about 1930. This
was after some of these post-graduate colleges obtained university
recognition for imparting training at M.Sc. and Ph.D. level. In the beginning
the Universities offered specialized post-graduate courses in agriculture and
animal sciences respectively leading to the award of diplomas or certificates.
When India attained independence in 1947, there were 17 institutions of
higher education in agriculture offering degrees and diplomas.

Agriculture education in India was organized and colleges fall into two
categories:

(i) Privately endowed and supported
(ii) The Government controlled.

All colleges are however, affiliated either to a university or function as
constituent units of a residential, teaching university or management
controlled colleges affiliated to Universities or autonomous institutes as
Deemed Universities but receive government financial assistant as grant in
aid.

The new agricultural universities have received a large measure of
support almost all along from the USAID in the form of expert advice; training
of local staff in the universities in the U.S.A. to enhance their professional
competence equipment and books necessary for efficient teaching and
research in such universities. This support is likely to be extended to other
agricultural universities also that come up in other states and need such
assistance. Organizations like the Rockefeller and fond functions have also
helped IARI and some of these universities in relation to specific projects.
The planning commission (1958) appointed a committee which recommended that one post-graduate institute should be developed in each state. It further recommend that the post-graduate education is extremely costly and more institutions were needed it without any comprise with quality. This rapid demand of post-graduate institutions has led to the lowering of standards of education. The second joint Indo-American team appointed in 1959 took note of this deterioration in standards and suggested measure to arrest it. Since Indian Universities are autonomous bodies, it has not been possible for the Indian Council of Agricultural Research to enforce the measures.

(1) Growth of Post-graduate education.
(2) Each discipline should be developed.
(3) Maintaining and improving quality of P.G. courses.

1.5.3 Disciplines in Agriculture

(1) Agriculture Engineering

Special attention would be given to mechanization, irrigation and drainage.

(2) Agricultural Economics

The two main areas of emphasis would be institution and policy and production economics.

(3) Soil and Water Management

Crop production, irrigation and salinity control.

(4) Plant Protection

Chemical and biochemical control of pests and diseases of principal crops. Emphasis would be given to physiological and bio-chemical studies
and related to crop quality and the effect of agricultural chemicals on crop plants.

(5) Poultry and dairy production

Nutrition and disease control of poultry and dairy animals.

(6) Other disciplines depending upon future needs for accelerating agricultural production.

1.6 Development of All in Uttarakhand and U.P.

1.6.1 The Chandra Shekhar Azad University of Agriculture & Technology, Kanpur

The first beginning of the Institute was started in 1893 when it started a training programme of agriculture officers. Step by step, it rose to the full-fledged Government Agriculture College (1906). The Institute of Agricultural Sciences (1969), and finally to the C.S. Azad University of Agriculture & Technology in 1975. The University was created with the merger of its two constituent colleges and later Government Agriculture College, Kanpur and U.P. College Science & Animal Husbandry, Mathura.

The present status of the University was attained through phases of growth of its constituent colleges. At present, there are three faculties in the University, viz., Faculties of Agriculture, Faculty of Home Science (at Kanpur) and Faculty of Agricultural Engineering & Technology (at Etawah). The University also support and cater the needs of the farming community of more than 29 districts of Uttar Pradesh.

Central Library

The Library of university is very old founded and initially established as the College of Agriculture Library in 1907. It was later renamed as the Institute
of Agriculture Library in 1967. In 1975, it was established as the University Central Library of Chandra Shekhar Azad Agriculture University.

The library has a good collection of literature, compromising 72,750 books, 3721 research periodicals, 519 Ph.D. Thesis, 2471 Post Graduate dissertations and other reference materials. The library provides reading facilities to approximately 3,700 students and faculties including teachers/scientist, staff, visitors and outsiders etc. It has been computerized and the library has been equipped with computers, printers. Moreover, photocopying facilities has been extended by installing a Xerox machine by own or an agreement. It has started abstracting services and content page service electronically. Library has internet connectivity of V-SAT in the central library and the university campus.

Reference Section

The library has acquired reference source like encyclopedia, lingual and bi-lingual dictionaries, statistical record an agriculture, reports and records of various agriculture committees and commissions. The library is providing reference service at reference desk to its members.

<table>
<thead>
<tr>
<th>Working Hours</th>
<th>09:00AM to 07:00 PM</th>
</tr>
</thead>
</table>
| Library Membership | Teachers & Scientist 539  
                     Supporting Staff 310  
                     Students 1242  
                     Others 146 |
<p>| Photocopy Facility | Available |
| Acquisition Programme | Next text books and periodicals are being entered in TLSS software along manual accessioning. |
| CD-ROM work station | Free consultancy available on CAB, AGRIS, VET, BIOTECH and current contents on Agricultural Biology &amp; |</p>
<table>
<thead>
<tr>
<th><strong>Environmental science etc.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ORPAC creation</strong></td>
</tr>
<tr>
<td>Digitization Process</td>
</tr>
</tbody>
</table>
2. Staff – 84 |
| Search and Retrieve facility | Internet enabled library with 30 clients computer |
| General collection up to 2007-08 | Books and Periodicals 76771  
Thesis 5112  
Others  
CD-ROM 174  
HRD Books 3171  
MBA Books 1270 |

### 1.6.2 Dr. Sam Higginbottom Institute of Agriculture, Technology and Sciences, Lucknow (Deemed University)

**Dr. Sam higginbottom (1874-1958) (Founder)**

It was founded by under his chairmanship in 1910. It was being an electronic scientist Mr. Higginbottom started teaching electronic science in Allahabad Christian College, now famous as Ewing Christian College. During this period became a familiar among the village community, basically he belonged to farmer family. He observed living conditions of Indian farmers and travelled in villages and deeply understood the condition and the traditional system of agriculture which was responsible for low productivity. He found this as reason of poverty. For several months he par sued the Christians to serve the villages. He taught his students about the Indian economy. As the school
was established at Ganga Jamuna basin, it was the main travelling area of pilgrims in the month of January and February, which gave an impression to the village travelers about the development and improvement of agriculture methods applied for the scientists in farms.

The first phase of Institute was it’s establishment, development of appropriate training courses and training pogrammes. Informal classes began in the fall of 1912 and it was during this period from 1912 to 1919 that the Institute faced many difficulties financially and technologically. The institute under its scares budget and source developed. The institute also started a diploma course in farm machinery and dairying in 1923 which was further extended to Degree course in Agriculture in 1932, followed by a Degree in Agricultural Engineering in 1943. This became the pioneer Institute to offer Agricultural Engineering degree in the whole of Asia.

The Department of Agricultural Engineering was the efforts of Prof. Mason Vaugh who was known as father of Agriculture Engineering in India. The most famous agriculture Extension Project “Jamuna Par Punar Yojna”, in which the “Gaon Saathi”, (recruitment of village level workers) was introduced into the extension system.

Dr. J.B. Chitamber, a famous extension scientist, made academic expansion programme took place during 1950 to 1980. Dr. Chitamber started many attractive programmes for farmers in the field of extension. The State Govt. of U.P. had certified that the Allahabad Agriculture Institute is a Minority Educational Institution.

In October 1947, the Institute was brought under an independent Board of Directors at the same time. The Institute faced financial and administrative crisis the worst in it’s history and suffered the bankruptcy, due to some land of
the institute was sold for the payment of staff salary. Although all fixed deposits dried out but the vision of the founder was praised by the public, which had changed the environment and by the end of the year 1996 the Institute faced this problem and come out of the crisis. The institute made further efforts to achieve academic autonomy. It started new programmes and started new specialized programmes and submitted to the ministry of HRD, Indian Government in August, 1994. Government considered the programme and granted autonomy and declared the institute as Deemed University to this institute in 1997.

In view of the above, Ministry of Human Resource Development (MHRD), Govt. of India, New Delhi vide communication bearing reference No. F.13-7/2008-U.3.A, dated September 22, 2009 has permitted Re-Christening of the Allahabad Agricultural Institute-Deemed University as: “Sam Higginbottom Institute of Agriculture Technology & Sciences” (Formally Allahabad Agricultural Institute), (Deemed-to-be University).

Sam Higginbottom Institute of Agriculture, Technology & Sciences (SHIATS), is currently striving to acquire a place in the arena of international science and technology while holding a pioneering status in India. The University offers thirty nine (39) Undergraduate Programmes, Hundred and one (101) Post-graduate Programmes, eighteen (18) Diploma programmes and Doctoral programme in various disciplines students joined these programmes and undertook various training in agriculture technology in order to develop their technical knowhow and skills in their respective field of agriculture. The university also aware the students about potential job opportunities in agriculture for their future career.

It maintains and promotes close linkages and active contact with potential employers both National and Multinational, while evolving their
executives and facilities their interaction with the students through lectures, discussions and classroom participation. The University also strives to prepare students to take their place as farm managers, agricultural scientists, agricultural officers, extension workers, managers, educationists, agricultural administrators, bio-technologists, microbiologists, engineers, software professionals, dairy technologists, nutritionists, textile designers, theologians and pharmacists.

Central Library

SHIATS is the oldest university with a large central library with all facilities. Being a minority university the library has a special collection on Christianity. The library for the first time established in 1932 as a agriculture department library. In fact more attention was paid towards library in 1954 onward when it took a position of college library. In 1994 the university because a deemed university and sufficient finding was gives to central library.

T-03: Library Collection: (2011-12)

<table>
<thead>
<tr>
<th>Books</th>
<th>145000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thesis</td>
<td>6700</td>
</tr>
<tr>
<td>CD-ROM</td>
<td>387</td>
</tr>
<tr>
<td>HRD Books</td>
<td>5270</td>
</tr>
<tr>
<td>MBA Books</td>
<td>1270</td>
</tr>
</tbody>
</table>

ODAC Creation

More than 1 lakh documents created and rest are process. All these have been digitalized.

Members: Students – 2342, Teachers – 135 and Scientists.
T-04: E-Resources

<table>
<thead>
<tr>
<th>CD-ROM</th>
<th>CAB, AGRIS, BIOTECH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software</td>
<td>TLSS</td>
</tr>
<tr>
<td>X-Ray</td>
<td>Facilities available on charge to students and free to faculty</td>
</tr>
<tr>
<td>Library membership</td>
<td>Teachers 135, Scientists 670.</td>
</tr>
<tr>
<td></td>
<td>Supporting staff- 367</td>
</tr>
<tr>
<td></td>
<td>Students-2342</td>
</tr>
<tr>
<td>E-Journals – 3250</td>
<td></td>
</tr>
<tr>
<td>Print Journals – 1700</td>
<td></td>
</tr>
<tr>
<td>Magazines – 21</td>
<td></td>
</tr>
</tbody>
</table>

1.6.3 Narendra Dev University of Agriculture and Technology, Faizabad

Narendra Dev University of Agriculture and Technology is an Agricultural University at Kumarganj, Faizabad district in Uttar Pradesh. The foundation stone of Narendra Dev University of Agriculture & Technology was led by Hon"ble Prime Minister of India Late. Smt. Indra Gandhi at Mashodha near Faizabad on January 15, 1974. An APCS officer of Agriculture Department, U.P. was deputed as officer on special duty. Later Dr. A.S. Srivastava took over as intereme caretaker of the university in 1974, which was replaced by Sri A.D. Pandey, IAS officer (Retired) as the first vice chancellor of the university in 1975. The university campus was shifted from Mashodha to Kumarganj, Faizabad. A committee was formed to design a plan of the site building of the teaching, administration and hostels. The committee submitted its report on Jan 22, 1976. The committee recommended the shifting of paddy research stations of mashodha, Gaghara Ghat. He also recommended to shift two schemes EC fund NDS to university campus to make the university The other development was the development of the Mahamaya College of Agricultural Engineering and Technology,
Ambedkarnagar, which was made constituent college of the agriculture university. Its departments were upgraded to meet the needs of the farmers and aware them with the latest development of the agriculture technology to eastern region and solve their problems of user lands, poor power supply, small holdings, low purchasing power and poor rural infrastructure. The new building foundation stone was inaugurated by Smt. Indira Gandhi the P.M. of India on Oct. 10th, 1975. The university was named after the renounced national leader, educationist, philosopher and great socialist Acharya Narendra Dev and declared as Narendra Dev University of Agriculture and Technology, Narendra Nagar, Kumarganj, Faizabad.

The university offered several academic programmes like undergraduate programme, post graduate programme and researches in agriculture discipline of Home Science, Agriculture Science, Veterinary Science, Agricultural engineering, Biotechnology, Horticulture, Fisheries and Forestry. The university established a central university, which made the university as centre of excellence. The university has hostel facilities, libraries and laboratories in departments. The central library is well equipped with all modern facilities of books, journals, internet connectivity etc.

**FACULTIES / DEPARTMENTS**

<table>
<thead>
<tr>
<th>Agricultural Economics</th>
<th>Forestry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Engineering</td>
<td>Food Technology</td>
</tr>
<tr>
<td>Agricultural Statistics</td>
<td>Genetics and Plant Breeding</td>
</tr>
<tr>
<td>Agronomy</td>
<td>Horticulture</td>
</tr>
<tr>
<td>Animal Science</td>
<td>Languages</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>Microbiology</td>
</tr>
<tr>
<td>Crop Physiology</td>
<td>Hematology</td>
</tr>
<tr>
<td>Entomology</td>
<td>Plant pathology</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Extension Education</td>
<td>Soil Science</td>
</tr>
<tr>
<td>Fisheries</td>
<td>Vegetable Science</td>
</tr>
</tbody>
</table>

**CENTRAL LIBRARY**

The library was founded in 1975 in the university building. Its new building was constructed in 1978 and housed there and started functions properly the library has rich a collection. It is a computerized library. It has facility of Internet through V-SAT. It has good collection of agriculture reference books.

Working hours - 09:00 a.m.-06:00 p.m.

Photocopy Facilities - available

Software -

CD-ROM work station - Free Consultancy on AGRIS, Biotech and current contents on Agriculture and environmental Science 50 computers with Internet facilities.

**1.6.4 SARDAR VALLABH BHAI PATEL UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, MEERUT**

It was established as a full-fledged University called “First Agriculture University of the third millennium and the 21st century.” It was inaugurated on 28th March 2002 by the Honorable Chief Minister of Uttar Pradesh. It is recognized and funded by U.P. Govt. & ICAR, Govt. of India. It is included in the list of recognized universities maintained by the university grants commission (UGC), Govt. of India.
The total area of the university is 262 hectare in which crop research center is in 42.5 hectare, HRC in 21.25 hectare and LRC in 6.5 hectare and in rest area under buildings and roads. The university has 03 zonal research stations via Nagina (Bijnore), Bulandshahr and Ujhani (Baduan) under different agroclimatic conditions.

Central library

It has a separate building. The library has a staff of 11 persons out of which 5 are technical persons with 2 Assistant librarians. The library is in computerization process.

<table>
<thead>
<tr>
<th>Books</th>
<th>7320</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thesis</td>
<td>61</td>
</tr>
<tr>
<td>E-journals, Database, AGRICOLA, AGRIS, CAB, Biotech</td>
<td>-</td>
</tr>
<tr>
<td>Print Journals</td>
<td>31</td>
</tr>
<tr>
<td>News papers</td>
<td>10</td>
</tr>
<tr>
<td>Magazines</td>
<td>22</td>
</tr>
<tr>
<td>CD-ROM</td>
<td>3</td>
</tr>
<tr>
<td>Software</td>
<td>Libraries</td>
</tr>
<tr>
<td>Photo state facilities</td>
<td>On Documents</td>
</tr>
</tbody>
</table>

1.7 Objectives of the Study

The purpose of this study has been concentrated on investigation to investigate and collection of digital resources and services in State Agriculture University libraries of U.P. and Uttarakhand.

The objectives of the university are:
➢ To investigate the present e-resources provided by university.
➢ To identify sources of information and their need.
➢ To identify problems faced by users.
➢ To determine the satisfaction level of users regarding infrastructure facilities.
➢ To discover user satisfaction with the library services provided.

1.8 Scope of the University

There are only four Agriculture Universities in U.P. and one in Uttarakhand. All universities of U.P. and Uttarakhand have been included in study. These are:

1. Pt. Govind Ballabh Pant Agriculture University, Pantnagar (Uttarakhand).
4. Dr. Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad (1980).

1.9 Research Methodology

Research is a systematic, planned and refined method of Reflective thinking employing specialized tools, instruments, and procedure in order to obtain a move adequate solute airs of a problem than would be possible under ordinary means. It status with a problem, collect data or facts, analyses them critically, and draw conclusions, based on the actual evidence.
1. It involves original works, instead of more exercise of personal opinion.
2. It involves from genuine desire to know not only. What but how much, and measurement is, therefore, a central features of it.

Research is an intellectual process whereby a problem is perceived, divided into its continent element, and analyzed in the light of certain basic assumptions; valid and relevant data are collected, hypotheses, are through objective testing rejected, amended, or proved. In other words, research is an intellectual, careful, ordered, reflective and a systematic attempt to discover new facts and sets off acts or new relationship among factor through the information of preliminary explanation or hypothesis which is subjected to an appropriate investigation of validation or disproof.

1.9.1 This research is the survey research

The problem will be studied through a survey method in which a reasonable amount of samples will be taken on the basis of a structured questionnaire. The questions will cover all aspects of the problems. It will be in two ways – Questionnaire and Interview schedule. Questionnaire has been duly filled up by the main authority and interview will be taken of the users, the respondent. The survey method is suitable method for my study of research.

1.9.2 Questionnaire

Data could be collected through mailed questionnaires which are fairly a way to collect information.

Questionnaire contained a sufficient number of question based on various problems and aspects of the topic of research. But we may get
answers which are conventional, stereotyped, deceptive and useless for the purposes of analysis and evaluation for arriving at true opinion.

1.9.3 Data Analysis and Interface

The analysis and interpretation of data have been presented. The collected data are clarified and arranged on the basis of similarities, variations, activities, processes, causes, results, etc. distinction is also made between essential and superficial characteristics.

In this research work the data collected with the help of questionnaire and interview schedule have been analyzed and presented in the form of chart, tables, diagram etc. These data had interpretation in view of the research problems.

1.10 Hypothesis

A hypothesis is conjectural statement of the relation between two or more variable. Hypotheses are always in declarative sentence from and they relate either generally or specifically variables to variables. It is a preposition, condition or principle which is assumed perhaps, without a belief, in order to draw out its logical consequences and by this method to test its agreement with facts which are known and may be determined. There are two criteria of good hypothesis statement (a) Hypothesis are statements about the relation between the variable, (b) Hypothesis carry clear implication for testing the stated relations.

The following hypothesis was observed in this study:

(1) SAU of Uttar Pradesh and Uttarakhand have adopted information technology?

(2) State Agriculture University have sufficient infrastructure?
(3) Library services are sufficient to the satisfaction of users?

References


[http://www.esu.edu.au/special/online05/proceedings05/30b.htm]


[www.Manage.govt.in/NATP/IT.htm]