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# A Selected Annotated Bibliography of Agricultural Information

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## ABSTRACT

THE LITERATURE OF AGRICULTURE and its related fields has proliferated as nations throughout the world have become engaged in major agricultural activities and research. Today's expanding information technology has an increasing impact on the management, control, and dissemination of this agricultural information. As in all disciplines, key documents have helped to shape and define the boundaries of discussion. These documents, although static in nature, form a foundation which allows the discipline to grow in the future. The authors of the twelve articles in this publication have discussed major issues and trends in agricultural information and agricultural libraries and, in doing so, have relied upon the diverse and expanding literature on agricultural information.

In the selective annotated bibliography that follows, emphasis has been placed on resources which discuss current and future trends in agricultural information and libraries, user needs, issues facing developing countries, technology advances, and special problems. These documents provide a framework for understanding the current and future status of agricultural information and agricultural libraries. By no means do they exhaust the wealth of publications that cover the various agricultural information topics and issues discussed in this volume.

This bibliography is divided into twelve sections. The first eleven reflect the topics discussed in this volume. The concluding section includes documents that are either very broad in scope or do not conveniently fit into a specific subject section. Within each section, documents are listed alphabetically by first author.

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Documents were identified for inclusion in this annotated bibliography through discussions with the issue's editors, by examining the literature cited by other article authors, by conducting both manual and online searches of the library and agricultural literature, and by checking both published and unpublished bibliographies. An attempt has been made to give equal treatment to all subject areas covered in this issue. It should be noted that in some areas there is overlap and annotations placed in one section could conceivably be placed in others as well. The section on lesser developed countries does, however, contain more citations than other areas. This was necessary because topics in this area include all phases of agricultural information, not just discrete areas such as collection management or document delivery.

All of the documents included in this annotated bibliography were examined at either the National Agricultural Library (NAL) or the libraries of the University of Maryland at College Park and Eastern Shore campuses.

### HISTORICAL PERSPECTIVE

Blanchard, J. R. (1977). The history of agricultural libraries in the United States. In A. Fusonie & L. Moran (Eds.), *Agricultural literature: Proud heritage, future promise (a bicentennial symposium)* (pp. 219-35). Washington, DC: Associates of the National Agricultural Library.

Blanchard traces the development of agricultural libraries in the United States from the small agricultural library collections at the Philadelphia and New York societies for the promotion of agriculture in the late eighteenth century to the twentieth century. A history of the development of various types of agricultural libraries is presented, including U.S. government, land-grant college, and experiment station libraries. A detailed look at the history of the National Agricultural Library is presented. The extensive list of references cited provides an excellent reading list for information on the history of agricultural libraries in the United States.

Farley, R. A. (1977). The development of agricultural libraries in the United States: A commentary. In A. Fusonie & L. Moran (Eds.), *Agricultural literature: Proud heritage future promise (a bicentennial symposium)* (pp. 237-42). Washington, DC: Associates of the National Agricultural Library.

Farley expands upon various points discussed by Blanchard (see above) in his history of agricultural libraries in the United States and focuses on the centralization of the U.S. Department of Agriculture's (USDA) library system in the late nineteenth century. A letter from William P. Cutter, the first librarian of the USDA, to the Secretary of Agriculture concerning the recall of books from various divisions within the USDA to the main library is reprinted in full. The letter provides a fascinating look at the USDA's library system during this time period.

Greathouse, C. H. (1899). Development of agricultural libraries. In *Yearbook of*

*the United States Department of Agriculture* (pp. 491-512). Washington, DC: USGPO.

Greathouse traces the history of U.S. agricultural libraries from the founding of the Philadelphia Society for the Promotion of Agriculture in 1785 through the late nineteenth century. Although there is some overlap in coverage with Blanchard (see above), Greathouse provides greater detail on the status and types of agricultural libraries in the nineteenth century and examines society and state board libraries, traveling libraries of agricultural books, grange libraries, public and U.S. government library collections, and agricultural college libraries. Examples of each type of library are given.

Overfield, R. A. (1981). State agricultural experiment stations and the development of the West, 1887-1920: A look at the sources. *Government Publications Review*, 8A(6), 463-472.

Overfield considers sources of information on agricultural experiment stations, showing the scientific role played by these stations, with a focus on the records of the Office of Experiment Stations. These records can be divided into three major sections: (1) office files; (2) records on the insular stations; and (3) the general records of the office. Of the three, the last is the largest and most varied collection, consisting of letters from the public seeking information and publications as well as the correspondence among the Office of Experiment Stations, state stations, and agricultural colleges. Overfield's paper provides the first step in the bibliographic control of any research material, identifying its availability and content.

Thurber, E. (1945). American agricultural college libraries, 1862-1900. *College and Research Libraries*, 4(4,pt.#1), 346-352.

Thurber offers a history of the formation and establishment of state agricultural colleges and their libraries and the role of federal financing of these institutions. Agricultural library collections were built through donations, exchanges, collection transfers, and the government depository system. Budgetary considerations played a major role in collection development but, with the advent of increased appropriations for state agricultural colleges and the formation of agricultural experiment stations in 1887, collections grew. Thurber also briefly discusses the development of library policy statements and patron access to library material. This is an important historical examination of the development of agricultural college libraries.

## USER NEEDS AND LIBRARY SERVICES

Begum, K. J., & Sami, L. K. (1988). Research collaboration in agricultural science. *International Library Review*, 20(1), 57-63.

The authors conducted a study of agricultural research paper authorship patterns based on records taken from *Indian Science*

*Abstracts.* The increasingly interdisciplinary nature of agricultural science has resulted in papers authored by two or more individuals. Although over the years of the study (late 1970s to early 1980s) most papers were authored by two or more authors, there was no noticeable decline in single author papers. In this type of authorship research, it would have been useful to have a statistical analysis of the trends. Nevertheless, the baseline data provided will help agricultural librarians and documentalists better understand the cross-disciplinary nature of agricultural research which does and will continue to affect user services and collection management practices. The authors' research "indicates that the extent of collaboration is decided by the nature of the discipline" (p. 63).

Colle, R. D. (1989). Communicating scientific knowledge. In J. L. Compton (Ed.), *The transformation of international agricultural research and development* (pp. 59-83). Boulder, CO: Lynne Rienner Publishers.

This article examines how scientific knowledge is communicated in the field of agriculture. Knowing how agricultural knowledge is communicated can have important implications for the organization and operation of agricultural libraries. Colle examines the diffusion of agricultural information and the adoption of this information by researchers, discussing the extension workers' role in this process as a link in the agricultural information communication system. The function of communication planning is examined, including the development and spread of communication media. Colle's discussion provides useful insights for agricultural public service and collection development officers.

Lendvay, O. (1980). *Primer for agricultural libraries* (2nd ed. rev. and enl.). Wageningen, the Netherlands: Centre for Agricultural Publishing and Documentation.

This book is a primer for the organization and development of an agricultural library. Although probably not useful for large-scale operations, the book nevertheless discusses basic elements that should be considered when starting a general agricultural library. Topics include reader or public services, collection development and acquisition processes, instruction in the use of the library, and the administration and management of the library. Appendixes include lists of agricultural indexes and abstracts, bibliographies, serial titles, and other agricultural literature sources.

Olsen, J. K.; Lippincott, J. K.; & Coons, B. (1985). *Cornell University Libraries. A final report from the public research services research projects. Appropriate public services for agricultural research faculty. One of a series of self-studies and research projects.* Washington, DC: Association of Research Libraries, Office of Management Studies (ERIC Document Reproduction Service No. ED 255 220) 60 p.

This report is of a study done at Cornell University's Albert R.

Mann Library (the largest academic agricultural library in the United States) to determine appropriate levels of public services to agricultural research faculty. The study was divided into parts: (1) a survey of faculty library use; (2) a period of expanded and accessible library services to the agricultural research faculty; and (3) a resurvey of the faculty to determine changes in library use patterns because of expanded public services. The overall objectives of the study were to determine the library's role in both the scientific communication process and the academic scientist's process of research and information acquisition. The study's hypothesis, that if services were more accessible and convenient the information resource pattern use of faculty members would be changed was not proven, possibly because of the short time frame of the study and the initial favorable responses to the first survey as noted by one of the study's consultants. However, based on individual responses to the resurvey, the new and expanded services, including free computer literature searches and photocopying, provided impetus for change in use patterns. The faculty ratings of library services and the methods faculty use to keep current on information in their fields provide very useful information in the planning of academic library services. Based on the project's results "the ties between librarians and faculty are being strengthened through implementation of a collection development/liaison model" (p. 20).

Russell, H. M. (1983). Agricultural user populations and their information needs in the industrialized world. *IAALD Quarterly Bulletin*, 28(2), 40-52.

There is an information gap in the knowledge of agricultural user needs. Russell divides the user population into eight categories, discussing in some detail the information needs of each. The categories of users identified are: policy makers and administrators; research scientists; diagnostic, analytical, and industrial scientists; specialist advisors; general advisors; educators and students; agricultural service industries; and farmers and rural people. Russell states that studies to determine user needs should include surveys but should also include direct observation of the various user populations. One such study is discussed where minimum standards of staffing and library collections were determined for various types of agricultural institutions, stations, and organizations.

## SOURCES OF AGRICULTURAL INFORMATION

Advisory Committee for the Co-ordination of Information Systems (ACCIS). (1987). *ACCIS guide to United Nations information sources on food and agriculture* (ACCIS Guides to United Nations Information Sources No. 1). Geneva: ACCIS. 124 p.

This is a guide to sources of information on food and agriculture that are available from the United Nations (U.N.) system. It is divided into ten subject areas: Food and agriculture—general; plant production and protection; animal production and health; food and nutrition; land

and water development; economic and social development; trade and commodities; agro-industries and industrial development; fisheries and aquaculture; and statistics. In each section, organizations in the U.N. system are listed as sources of information. For each organization, a brief summary of purpose is given with a list of relevant publications. Annexes give addresses of international organizations and database hosts and a country by country list of addresses of U.N. depository libraries and agricultural information organizations. This is a very useful guide to the myriad agricultural information sources available in the U.N. system.

CAB International. (1988). *CAB thesaurus* (2nd ed.) (vols. 1-2). Wallingford, Oxon, United Kingdom: CABI.

The purpose of the two-volume *CAB Thesaurus* is to enable users of the CABI (CAB International) online database to formulate effective search strategies. However, as the introduction to the thesaurus states, it can be very useful in setting up subject indexing for any collection of agriculturally related documents. The National Agricultural Library adopted the thesaurus in 1985 for subject indexing of the AGRICOLA database. Some 1,500 of the 56,000 terms included in the thesaurus are only used by AGRICOLA indexers and are so indicated. The thesaurus is set up alphabetically with a broader term (BT), narrower term (NT), and related term (RT) coding system. Both BTs and NTs are given in a hierarchical order under each word or phrase in the thesaurus. This thesaurus is of prime importance in searching two of the world's most important agricultural databases, and it is also useful for determining free-text search terms for these and other databases and for providing subject headings and indexing terms for special and departmental agriculturally related libraries.

CAB International. (1988). *CAB International serials checklist*. Wallingford, Oxon, United Kingdom: CABI.

This book includes serials, annual reports, and proceedings of congresses, symposia, seminars, workshops, and other meetings that are examined by CABI specialists to identify material for inclusion in the numerous indexes and abstracts published by CABI. The checklist is divided into five sections, including coverage of the three types of publications noted earlier, an ISBN index, and a list of publishers (with addresses). The 1988 checklist is a precursor to the soon to be published *World List of Agricultural Serials* (a cooperative project between NAL and CABI) which will not only include CABI material but serial publications indexed in AGRICOLA and AGRIS as well.

Frank, R. C. (1984). *Directory of food and nutrition information services and resources*. [Phoenix, AZ]: Oryx Press.

This directory emphasizes U.S. information resources on nutrition education, food service, food service management, and related aspects of

applied nutrition. Food and nutrition studies are vital components of agricultural science and this directory offers a variety of information sources in these areas. The nine chapters include: organizations; databases; microcomputer software; journals and newsletters; abstracts, indexes, and current awareness publications; producers of food and nutrition materials; key reference materials; regional, state, and area agencies; and nutrient tables. Almost half of the volume is devoted to organizations, with very detailed annotations, including information on their purpose, services, audience, geographic area served, educational programs, and eligible clientele. Indexes provide rapid access by subject, geographic area, and organization type. There also is an index of training programs approved by the American Dietetic Association.

Harvey, N. (Consulting Ed.). (1986). *Agricultural research centres [:] A world directory of organizations and programmes* (8th ed.) (vols. 1-2). Harlow, Essex, United Kingdom: Longman Group UK Limited.

This two-volume directory of 8,000 agricultural research organizations is essential for agricultural reference work, collection development activities, interlibrary loan, and for facilitating the transfer of information among nations. The arrangement is by country and, within country, alphabetical by organization. Organizations include government research centers, independent and industrial research centers, and educational organizations "which conduct or finance substantial research and development programmes into agriculture..." (introduction) and related sciences. The following information (where available) is presented for each organization—i.e., address, communication links, status, affiliation, directors, sections (organizational), number of graduate research staff, annual expenditures, activities, and publications. Organization title, acronym, and subject indexes facilitate access. This is an essential resource for any agricultural library or document collection.

Johnson, J. S. (1985). *Annotated bibliography on development and transfer of agricultural technology* (Vol. 1). Urbana, IL: INTERPAKS, University of Illinois, Office of International Agriculture. Volume 2. Sfeir, L. (1986). Same title and issuing agency.

These two annotated bibliographies form a valuable compendium of information on the development and transfer of agricultural technology in both developed and developing countries. Volume 1 is presented in five parts: agricultural development—general; policy and planning; technology development; technology transfer; and technology utilization. Volume 2 keeps these subdivisions but adds a sixth—sources of technical reference materials. Annotations in both volumes are descriptive and informative. Each volume has an author, title, and subject index with volume 2 containing cumulative indexes for both volumes. These bibliographies should prove essential for those involved with agricultural technology transfer and development.

Morgan, B. (1985). *Keyguide to information sources in agricultural engineering*. London: Mansell Publishing Limited.

This reference work will be of importance to those involved in collection development in agricultural engineering and to reference personnel. The guide is divided into three parts. Part one describes agricultural engineering literature as a whole, examining its history, organization, and classification. Part two is an annotated bibliography of information sources including journals, handbooks, directories, and bibliographic sources; it includes a large section devoted to important monographs and texts arranged by broad subject areas. Part three covers organizational sources of agricultural engineering information, first listing international sources and then covering individual countries.

### COLLECTION DEVELOPMENT

Blanchard, J. R., & Farrell, L. (Eds.). (1981). *Guide to sources for agricultural and biological research*. Berkeley, CA: University of California Press.

This book is of considerable value to those involved in collection development for an agricultural library as well as to public service staff seeking reference works to respond to agriculturally related inquiries. Material is arranged by broad subject areas such as plant sciences, crop protection, social sciences, and animal sciences. Areas such as animal sciences are broken down into narrower topics such as veterinary medicine and poultry husbandry. Each subject area is divided into types of information sources available (e.g., literature guides, abstracting and indexing services, dictionaries, and encyclopedic sources). Sources before 1958 were not included unless deemed very important for retrospective searching. Each entry contains standard bibliographic information and a brief but knowledgeable annotation. Although somewhat dated, especially concerning nonserial titles, this is an indispensable resource for agricultural collection development, reference work, and research.

Jensen, R. D.; Lamb, C.; & Smith, N. M. (Comps.). (1986). *Agricultural and animal sciences journals and serials[:] An analytical guide* (Annotated bibliographies of serials: A subject approach series). Westport, CT: Greenwood Press.

This compilation of English language agriculturally related serials and journals is intended for collection development activities. Agricultural and animal sciences are divided into subject areas such as agricultural economics, agronomy, horticulture, and veterinary science. There is also a section devoted to indexes and abstracts. Journals and serials were included if, in the compilers' determination, they are major titles that are research oriented. The entries are organized alphabetically under each subject category. Information for each entry includes date started, publication frequency, price, publisher, printed indexes/abstracts and online databases in which the serial or journal is indexed,



target audience, and ISSN. Narrative annotations include a synopsis of the subject area covered by the journal or serial and the number and type of papers found in a typical issue. This is a very useful reference work for collection development activities in agricultural and related sciences.

U.S. Department of Agriculture. National Agricultural Library. (1988). *Collection development policy of the National Agricultural Library*. Beltsville, MD: National Agricultural Library.

Collection development policies are important documents for any library. They define the scope of the collection, and, within the scope, the levels of collection intensity for each subject area. They are a guide for both collection development personnel and for users of the collection who need to know the scope and level of the collection. The National Agricultural Library's collection development policy includes a detailed description of the format types of material collected, both print and nonprint, and the definitions of the five levels of collection intensity (from minimum to comprehensive). The main section of the policy is arranged by Library of Congress call number ranges. For each range there is a brief scope statement and one of five levels of collection intensity. There is also an index to words and phrases appearing in the scope statements. This document is indispensable not only to National Agricultural Library personnel but also to those who depend on this library for information and guidance.

Stubban, V. L. (1988). Use of the RLG conspectus as a tool for analyzing and evaluating agricultural collections. *IAALD Quarterly Bulletin*, 33(3), 105-110.

This paper discusses Kansas State University Library's project to evaluate and analyze its agricultural sciences collection using the Research Libraries Group (RLG) conspectus. The RLG conspectus directs that collections be categorized by five collection levels ranging from minimum to comprehensive. The entire project took two months to complete. Conducting an analysis using the RLG conspectus has aided in collection development activities at Kansas State University and has helped identify areas of the collection that need strengthening. The most important point in completing the conspectus was maintaining both a timetable and consistency in the data collected.

## BIBLIOGRAPHIC CONTROL

Bailey, M. J. (1988). Microfilming state agricultural and forestry documents: Program of the National Agricultural Library. *Microform Review*, 17(2), 72-75.

A discussion of the microfilming of state agricultural experiment station and cooperative extension service and forestry documents, a program initiated by the National Agricultural Library in 1974. Bailey provides an overview of microfilming procedures and looks at the three-point proposal agreed upon by NAL and forty states regarding the

indexing of these documents. There is a brief discussion of some new technologies being examined as alternatives to microfilming. An appendix lists the states that have cooperative agreements with NAL for microfilming these documents as well as the vendors doing the actual microfilming. Microfilming these documents not only provides better access to these important but underutilized documents but also assists in preservation.

Chillag, J. (1982). Nonconventional literature in agriculture—An overview. *IAALD Quarterly Bulletin*, 27(1), 2-7.

Grey literature—which includes unpublished reports, theses, and conference proceedings—is a rapidly growing component of agricultural literature. Chillag believes that access to grey or nonconventional literature is important because much valuable literature is produced only in this form. Various reports describing this type of literature in the field of agriculture and related disciplines are examined. The formation of SIGLE (The System for Information on Grey Literature in Europe), a European cooperative project started in 1981, is discussed. The aim of this project is to provide bibliographic control of and increased access to nonconventional literature.

Mathews, E. (1987). Bibliographic access to state agricultural experiment station publications. *IAALD Quarterly Bulletin*, 32(4), 193-199.

State agricultural experiment station documents are a valuable resource for a wide range of users, including agricultural historians, scientists, farmers, students, and sociologists. Such publications are not fully utilized because of inadequate bibliographic access. Mathews notes that only one source is devoted entirely to these documents: *List of Bulletins of the Agricultural Experiment Stations in the United States from their Establishment to the End of 1920 and Supplements, 1875-1942*. The NAL's AGRICOLA database indexes these documents from 1970 to present, but a number of sources must be consulted to cover the years from 1943 to 1969. Mathews makes the case for a retrospective index with updating supplements to index the entire collection of these important but underutilized documents.

Thomas, S. E. (1988). A coordinated program for state agricultural publications. *College and Research Libraries*, 49(7), 425-430.

Thomas describes a program initiated by NAL in 1984 to catalog and provide access to state agricultural documents. Land-grant university libraries in each state collect and catalog their state's agricultural publications. A copy of each publication with its cataloging is sent to NAL. NAL adds AGRICOLA category codes and other information, such as the NAL call number, and inputs the record into the AGRICOLA database. Records also are sent by NAL to FAO's (Food and Agriculture Organization of the United Nations) AGRIS (the International Information System for the Agricultural Sciences and Technol-

ogy) database. Patron requests for this material are directed to the land-grant university. This cooperative project has resulted in other state agricultural document projects. Thomas briefly describes some of these projects including the University of Illinois Agriculture Library's retrospective analytics project for USDA documents dating from 1862.

## REFERENCE SERVICE TRENDS

André, P. Q. J. (1989). Optical disk applications in libraries. *Library Trends*, 37(3), 326-342.

André discusses the application of three major types of optical media that are in use in U.S. libraries today: CD-ROM, digital video-disc, and WORM (Write Once Read Many). The use of these technologies in the three national libraries and various academic and public libraries is highlighted. These three optical disc technologies will continue to play an increasingly important role in the way libraries deliver information. This is a detailed current examination of the use of these technologies in selected U.S. libraries.

Frank, R. C. (1987). Agricultural information systems and services. *Annual Review of Information Science and Technology*, 22, 293-334.

Frank covers most aspects of agricultural information systems and services in this concise but wide-ranging examination. Provides a brief history of agricultural information in the United States and background information. Various agricultural information user populations are identified, with a table showing individual information needs and information sources to meet those needs. Among the numerous topics covered, Frank reviews bibliographic databases and cites studies that compare and contrast agricultural information in these online databases. Agricultural research project databases such as the USDA's (U.S. Department of Agriculture) Current Research Information System (CRIS) are discussed as well as numeric databases such as the USDA's Feed Composition Data Bank (FCDB). Microcomputer software packages emphasizing food and nutrition and farm applications are examined. A fourteen-page up-to-date bibliography adds to the usefulness of this review.

Hanfman, D. (1989). AquaRef: An expert advisory system for reference support. *The Reference Librarian*, 23, 113-133.

This paper provides the basic planning and design considerations of an important emerging automated reference tool for agricultural libraries and information centers: the expert system. Hanfman discusses the selection criteria used to select the software shell (1stCLASS, produced by Programs in Motion, Inc., 10 Sycamore Rd., Wayland, MA 01778) on which AquaRef, an expert system used for finding aquaculture information sources, was developed. To determine what information was to be included in the expert system, patron requests at the

Aquaculture Information Center, National Agricultural Library, were reviewed for a two-year period. Topics for inclusion were chosen on a frequency basis. An online user evaluation, written in BASIC, was included for users to respond to following an AquaRef session. The current status and future considerations for expanding and updating the AquaRef expert advisory system are discussed.

Von Seggern, M. (1987). Assessment of reference services. *RQ*, 26(4), 487-496.

This annotated bibliography of publications describes methods and instruments for evaluating library reference services in a variety of settings. The bibliography is divided into three parts: reviews of reference evaluation literature; assessment components, including sections on answering success, accuracy, and quality; cost and task analysis; interview and communication; classification of reference questions; reference collections; staff availability; and the use and nonuse of reference services. Von Seggern's focus is on literature up to 1986. This document should prove useful in determining ways to assess the reference departments of agricultural libraries and information centers.

Waters, S. T. (1986). Answerman, the expert information specialist: An expert system for retrieval of information from library reference books. *Information Technology and Libraries*, 5(3), 204-212.

Waters discusses the criteria that were used for choosing the expert system shell, 1st CLASS, for development of Answerman, the National Agricultural Library's demonstration expert system. With 1st CLASS, the system developer uses four screens in defining the system—filing system, definitions, examples, and solutions. To expand the system's capabilities, Answerman was linked to Superindex in BRS, the AGRICOLA database (using either Dialog or BRS), "a BRS database containing the full-text of eighteen American Chemical Society journals" (p. 209), and to a CD-ROM bibliographic reference file. Waters offers thoughts on the future development of expert systems and the linking of these systems to mass-storage devices as well as offering insights into the use of these systems by reference librarians and information specialists.

## DOCUMENT DELIVERY

Bellamy, M. (1988). Bridging the information gap in African agriculture: CABI's African Agricultural Literature Service. *Interlending & Document Supply*, 16(2), 46-50.

Access to source documents is very important for agricultural research scientists. Bellamy describes a two-year pilot project, begun in 1987, to supply documents to CAB International member countries in Africa. Bellamy provides background information on the development of this pilot project, noting that the East African Literature Service—a table of contents and photocopying service—was the inspiration behind the initiation of this project. Each of the twelve participating countries

could select institutions to take part in the project. The thirty institutions chosen were requested to choose four current research topics of interest. SDI (selective dissemination of information) profiles were set up based on these topics and monthly reference printouts were sent to the institutions. Participating institutions could request thirty documents per year for each research profile. The initial evaluation of the pilot project showed that there was little feedback on the document service and on the SDI profiles. Bellamy discusses the future of the pilot project in light of this evaluation.

Brown, S. A. (1986). *Final report of the National Agricultural Library telefacsimile evaluation project*. Beltsville, MD: National Agricultural Library. 117p.

This study, which took place from September 1985 to January 1986, was sponsored by the National Agricultural Library. It involved five Agricultural Research Service libraries, seven land-grant university libraries, and the NAL. Four main areas of document telefacsimile were examined: equipment used, speed of delivery, print quality, and cost. The results showed that print quality was the most significant problem in the use of current (1985) telefacsimile equipment. The overall recommendation from the study was "that the option of text supply over telefacsimile equipment be available when requested by the researcher, but in normal cases the documents be delivered by traditional delivery mechanisms..." (p. 54). This work is an important study of document delivery using telefacsimile not only for the resulting evaluation but for the evaluation methodology employed.

Currie, J. (1985). Document delivery: A study of different sources. In *Information for food* [8 microfiche] (proceedings of the VI World Congress of the International Association of Agricultural Librarians and Documentalists, Ottawa, June 2-6) (pp. 1-13). Ottawa: International Development Research Centre.

This study, done at the Albert Mann Library, Cornell University, from September 1984 to March 1985, examined various document delivery systems in relation to time of delivery and handling costs. The two objectives of the study were "to test whether commercial document services can provide documents more quickly and/or more inexpensively than traditional library sources" (p. 3). "To provide a basis for reviewing the internal procedures in verifying and submitting requests for off campus documents" (p. 3). Each of 124 interlibrary loan periodical requests (publication date after 1975) were sent to three document sources: a publication-specific source, a commercial brokering source, and a traditional library source (using an RLIN or ALA form). The overall results showed that "the use of RLIN and other library sources is about as fast as, and less expensive than commercial suppliers" (p. 11). Based on the results of the study, a proposed model was recommended for obtaining documents from various sources.

Eswara Reddy, D. B. (1987). Information services and document delivery in food and agriculture, in India. *IAALD Quarterly Bulletin*, 32(1), 31-37.

Reddy offers an overview of India's agricultural university and research institute libraries with a focus on document delivery statistics. Data are presented on document delivery orders that were registered and serviced in Delhi during 1983-1984. Information includes time to deliver, procurement sources, and requested document types analyzed by broad subject area and publication year. The collection of, and access to, such data is of importance to agricultural library personnel charged with planning and coordinating document delivery activities in both the developing and the developed world.

Wood, D. N. (1988). Document supply with particular reference to agriculture. *IAALD Quarterly Bulletin*, 33(4), 145-153.

Wood provides a broad overview of the worldwide document delivery services in the field of agriculture, focusing on various national, international, and private sector services, including AGLINET, the British Library Document Supply Centre (BLDSC); UMI (University Microfilms International); and CABI. Wood then examines major areas of importance to document delivery services—new technology, postal services, payment, copyright, and grey literature. A table shows the percentage of total agricultural grey literature records present in seven major online databases. This document will prove useful in alerting agricultural information personnel to the wide range of document delivery services available and current issues facing these services.

### ISSUES FOR DEVELOPING COUNTRIES

Broadbent, K. P. (1977). Agricultural information services in developed countries and their contribution to agricultural research. In *Proceedings [of] scientific literature service workshop* (11-13 April 1977) (pp. 8-23). Paranaque, Rizal, Philippines: Philippine Council for Agriculture and Resources Research with the Agricultural Libraries Association of the Philippines.

Broadbent reviews the development of existing agricultural information services in developed countries, examining the role that agricultural information will play in the future "in the context of the total international research effort" (p. 8). Agricultural user populations are identified as well as the mechanisms currently in place to meet their information needs. Broadbent concludes that there is a continuing need for the coordination and cooperation of national information systems if the agricultural information needs of developing countries are to be met.

Cooney, S.; Kaiyare, D. N.; Mbwana, S. S.; Lumande, E.; Cunada, D. S.; Thompson, D.; & Harris, S. C. (1988). Information for agricultural development: The role of literature services. *IAALD Quarterly Bulletin*, 33(2), 79-86.

A literature service, as defined here, makes periodical literature in a main library available to "geographically dispersed user centers" (p.

79). The authors point out that, for developing countries, it is very important for trained technologists to meet and exchange information with colleagues abroad. It is also important for these technologists to have ready access to scientific journal literature. Cooney et al. characterize a good literature service as one which maintains a high level of quality and a wide-ranging literature base and makes this literature accessible to users in a cost-effective and timely manner. The article includes a brief discussion on some successful literature services.

Durrani, S. (1987). Agricultural information services in Kenya and Third World needs. *Journal of Librarianship*, 19, 108-120.

Durrani examines the present status of agricultural information in the developing world with a focus on Kenya and offers solutions to the many problems which still exist. Based on this analysis, relevant usable information currently is not reaching the people that can best benefit from it—i.e., rural people and urban farmers. What is needed is an agricultural information system that addresses the needs of these people. To accomplish this, agricultural information personnel need appropriate training, including a basic agricultural course as well as a course on the social conditions facing the people they will serve. Educational admission requirements for those who want to become agricultural information officers should not exclude individuals who are committed, hardworking, and have practical experience but who do not have the requisite academic background. Collection management practices should reflect the needs of the target population and information should be in the target population's own language. Information should be disseminated through communication, connoting an exchange of information rather than a transmission which usually means one-way communication. The importance of both oral and nonprint forms of information delivery must be recognized. Durrani makes the point that advanced information technology does not always work to the benefit of the people that it is to serve. This is an important document both in terms of stating the problem of information service in developing countries and in offering concrete solutions.

Griffiths, J. M., & Kinney, J. (1985). *Agricultural information needs and services to developing countries*. Rockville, MD: King Research, Inc.

This is a background document used in the development of a memorandum of understanding between the U.S. Agency for International Development (USAID) and the National Agricultural Library (NAL) to explore ways of improving agricultural information services to scientists in developing countries and to the staff of USAID missions. Currently available sources of agricultural information are reviewed with an emphasis on U.S. government services. Coverage includes databases, current awareness and document delivery services, and reference and other information services. Five main recommendations are

made: (1) creation of an international agricultural liaison for information systems positions; (2) closer integration of USAID project services with NAL's existing and planned services; (3) investigation of new document delivery systems; (4) exploration of laser disc technology for the distribution of agricultural information; and (5) investigation of the use of telefacsimile for transmitting documents from microfiche to optimize delivery and storage as well as evaluating microfiche versus electronic storage systems.

Kaniki, A. M. (1988). Agricultural information services in less developed countries. *International Library Review*, 20(3), 321-336.

The article provides an in-depth literature review of the development of agricultural information services in developing countries over the last twenty years and discusses recurrent problems and issues. Based on this extensive review, Kaniki determines that there is a lack of literature in this subject area that is based on empirical studies. Because agriculture is such an integral part of developing countries, there is a great need for agricultural information for use in planning and implementing agricultural projects. Problems and issues in agricultural information services facing developing countries include: shortages of qualified personnel; training and status of these personnel; bibliographic control, retrieval, and storage of information; language and illiteracy barriers; and budgetary constraints. Solutions to some of these problems include marketing the information that is available and strengthening the position of agricultural information services in a country's infrastructure.

Kaungamno, E. E. (1979). Information for agricultural development (paper presented at the Agricultural [Crop and Livestock] Research Workshop, Arusha, Tanzania, February 26 to March 3, 1979) (Occasional Papers [Tanzania Library Services] No. 6) 35p. 33 leaves. (ERIC Document Reproduction Service No. ED 220 076).

This paper is a blueprint for the agricultural information needs of developing countries. Although presented eleven years ago, the agricultural information concerns and problems faced by developing countries as expressed by Kaungamno are still valid. Coordination at all levels is still the key for solving these problems. A detailed checklist of the information infrastructure is presented to allow those concerned with agricultural information planning to assess their performance and needs.

Namponya, C. R. (1986). Agricultural development and library services. *International Library Review*, 18, 267-274.

This paper emphasizes the role of the extension worker in the dissemination of information in developing countries. The delivery of information to the extension worker must be improved if these workers are to communicate information to those who need it. Library staff



should determine how extension workers currently collect information for dissemination and identify extension worker information needs and problems they encounter in fulfilling their job requirements. One library should be designated as a depository for agriculturally related documents, and information should be disseminated in the form of summaries or abstracts. Because of the major problem of illiteracy in the developing world, information must be disseminated in both print and nonprint form. Namponya notes that the services that libraries develop for the dissemination of information should be coordinated with functional literacy projects.

Schenck-Hamlin, D., & George, P. F. (1986). Using special libraries to interface with developing country clientele. *Special Libraries*, 77(2), 80-89.

Schenck-Hamlin and George first examine the information needs of developing countries with examples from Egypt, Honduras, and Pakistan. Their main focus is on two special libraries in the United States and how these libraries service the information needs of clientele in developing countries. The Postharvest Documentation Service (PHDS) at Kansas State University, Manhattan, was founded in 1979. As a component of the Food and Feed Grain Institute, the PHDS works closely with overseas projects and training programs that determine and respond to information needs. Documents are acquired by PHDS and their availability is made known to clients through a bi-monthly acquisitions list. The PHDS maintains SDI profiles to inform clients of relevant materials. The Postharvest Institute for Perishables Information Center (PIPIC) at the University of Idaho, Moscow, relies heavily on clients to define their information needs. Clients are queried annually by PIPIC to determine satisfaction levels and to solicit suggestions on service improvements. Both of these services offer innovative methods of making documents available to developing countries via specialized libraries in developed countries.

Thorpe, P. (1982). Agricultural information services for the Third World: Problems, developments and prospects. *International Information, Communication and Education*, 1(2), 159-169.

Thorpe discusses agricultural information problems that face developing countries, including lack of trained personnel, poor communication, lack of physical and financial resources, and organizational structures that lead to duplication of effort in providing services. Although the paper is eight years old, the problems that Thorpe discusses are still inherent in the delivery of agricultural information within developing countries. The role of information services in developing countries is discussed with numerous examples cited. An important feature of this paper is an extensive literature-cited section that provides access to other publications concerning the problems that Thorpe discusses.

## TECHNOLOGY

André, P. Q. J., & Eaton, N. L. (1988). National Agricultural Text Digitizing Project. *Library Hi Tech*, 6(3), 61-66.

André and Eaton describe a project initiated by NAL in conjunction with forty-two U.S. land-grant college libraries to test full-text and image digitization of selected databases using CD-ROM as the medium. The purpose of the project was "to determine whether it is now possible to provide in-depth access to the literature of agriculture while at the same time preserving it from rapid deterioration by utilizing the latest in scanning and recognition technology" (p. 62). This project has three phases: the pilot project test of three (possibly four) CD-ROM databases utilizing different software retrieval packages; the evaluation of the pilot project and testing of a CD-ROM database on acid rain literature using the most effective search software from phase one; and an assessment of state-of-the-art transmission of full text via telecommunications. Issues in project implementation are examined. This project will have far reaching implications for the storage and retrieval of agricultural information.

Congressional Research Service. (1983). *Information technology for agricultural America* (prepared for the Subcommittee on Department Operations, Research, and Foreign Agriculture of the Committee on Agriculture, U.S. House of Representatives). Washington, DC: USGPO. 358p.

This report reviews the utilization of computer and telecommunications technology in relation to agricultural information. It identifies the information requirements in the U.S. agricultural community and examines both public and private information systems that are in place to meet these needs. The report examines the role of information technology in agriculture, looking at the past and the present, and assesses information options for the future. Testimony is given from both the public and private sector on present-day needs and priorities for agricultural information handling in the future. Various computerized agricultural information systems are discussed. A brief but useful bibliography is appended. This report is invaluable for those planning computerized information systems and delivering this information to the agricultural community.

Demas, S.; Chiang, K. S.; Ochs, M. A.; & Curtis, H. (1985). Developing and organizing collections of computer-readable information in an agriculture library. In *Information for food* [8 microfiche] (proceedings of the VI World Conference of the International Association of Agricultural Librarians and Documentalists, Ottawa, June 2-6) (pp. 1-16). Ottawa: International Development Research Centre.

This is a detailed overview of policy issues and other considerations for establishing microcomputer centers in agricultural libraries. Although the focus is on one such center—the Microcomputer Center and Software Library at the Albert Mann Library, Cornell University—the detailed outline of collection development and cataloging policies

and user services make this document an important blueprint for the development of other such centers. Topics discussed include identifying the library's user populations and the integration of software (computer-readable formats) catalog records into the main library catalog. Related instructional activities at the Cornell center are also covered.

Treitz, W. (1987). *Transfer of agricultural technologies by new forms of conveying information*. Wageningen: Technical Centre for Agricultural and Rural Cooperation. 18p. + 2 tables.

Treitz examines agricultural technology transfer in developing countries, focusing on various electronic technologies for dissemination of professional literature and other information. Technologies discussed include online data banks and optical discs with a detailed examination of the use of CD-ROM technology. Treitz notes that CD-ROM "should have the most promising future for the transmission of scientific information of all kinds in and between developing countries" (p. 12). CD-ROM technology can be used in building data banks of both bibliographic information and nonbibliographic data. The joint CTA/CIMMYT project (Technical Centre for Agricultural and Rural Cooperation, Wageningen and International Maize and Wheat Improvement Center, Mexico) to disseminate plant breeding data on CD-ROM is discussed. Throughout this document Treitz details issues facing developing countries in adopting electronic information transfer.

Van Hartevelt, J. H. W. (1987). Advantages of CD-ROM for local access to computerized databases in developing countries, in comparison with traditional bibliographic services: Suggested pilot projects. *IAALD Quarterly Bulletin*, 32(3), 161-168.

Van Hartevelt notes that developing countries, in many cases, lack facilities to access agricultural information that could be of significant use to them. An overview of current telecommunications facilities in developing countries is presented. Because of (in many cases) limited telecommunications facilities and the prohibitive costs involved in using these facilities for information retrieval, CD-ROM technology could be effectively utilized to increase the accessibility of needed literature and increase the "information self-sufficiency" (p. 162) of these countries. Van Hartevelt suggests CD-ROM pilot projects in sub-Saharan Africa using the *Abstracts of Tropical Agriculture* produced by the Royal Tropical Institute, The Netherlands. CD-ROM technology has the advantage of packaging a large amount of information on a single disc and the use of CD-ROMs eliminates online charges, thus allowing a searcher to be concerned with the search rather than the time spent online. These CD-ROM pilot projects, which would cost less than \$1 million (U.S.) to initiate, would include discs with citations, abstracts, and the full text of papers from journals produced in the developing countries. Overcoming copyright restrictions for inclusion of full-text papers is discussed.

Williams, M. E., & Robins, C. G. (1985). *Agricultural databases directory* (Bibliographies and literature of agriculture no. 42). Beltsville, MD: United States Department of Agriculture. National Agricultural Library, 229p.

This worldwide directory of agricultural databases, containing 428 entries, is divided into two sections: word-oriented databases (such as bibliographic, full text, and directories) and numeric databases. The criteria for inclusion of a database in this directory were that the database be computer-readable, publicly available, and related to agriculture. Entries are listed alphabetically within the two sections. Each database record has five elements: (1) basic information including, but not limited to, producer, update frequency, time period covered, language, online vendor, and corresponding print equivalent; (2) subject matter and scope; (3) how the individual database records are indexed, coded, and/or classified; (4) the field elements usually present in an individual database record; and (5) user aids. Indexes to database name, subject, producer, processor, and commercial database name are included. Although five years old, this is still an excellent and useful directory for the agricultural information specialist to use to find information about the variety of databases available for the agricultural community.

## MANAGEMENT

Busch, L., & Lacy, W. B. (1983). *Science, agriculture, and the politics of research* (Westview special studies in agriculture science and policy, rural studies series of the Rural Sociological Society). Boulder, CO: Westview Press, 303p.

This is an important volume for those involved in collection development activities in an agricultural library. The 1983 Cornell University study of public service and agricultural faculty focused on the importance of knowing how agricultural scientists use the library for their research. This book covers the research element in detail, describing the U.S. agricultural research system, its structure, and "the many factors that influence the choices of research problems by agricultural scientists working within it" (preface). Chapters include discussions on disciplinary, organizational, and extra-organizational influences on agricultural research, scientific communication, and policy implications. A twenty-five page reference list provides the reader with further information on the subjects discussed.

Deshmukh, G. R. (1987). I.C.A.R. Institute libraries: A survey. *Annals of Library Science and Documentation*, 34(4), 131-148.

A questionnaire was sent to the Indian Council of Agricultural Research (ICAR) Institute libraries concerning their resources, facilities, services, staffing levels, and material acquisitions. Of the thirty-eight questionnaires sent, twenty-nine research institutes responded to the survey (76.3 percent). The complete questionnaire is published along with all responses received, with each library's response identified. This could be a useful management survey instrument for other national agricultural library systems. Based on the results of the survey, Deshmukh recommends that: (1) ICAR develop a written statement of

its function, administration, objectives, and policies; (2) lending policies of institute libraries should be liberalized; (3) the Indian Agricultural Research Institute Library in New Delhi should become a depository for Indian agricultural publications and a clearinghouse for dissertations, bibliographies, translations, and agricultural publications; and (4) librarians have a major role in collection development activities.

Olsen, W. C. (1979). Management in agricultural research libraries: The next thirty years. In A. Fusonie & L. Moran (Eds.), *International agricultural librarianship [:] Continuity and change* (proceedings of an international symposium held at the National Agricultural Library, 4 November 1977) (pp. 113-19). Westport, CT: Greenwood Press.

Olsen identifies six factors that continue to influence the management of agricultural research libraries: (1) the trend toward centralization of college and university departmental libraries with the result that agricultural libraries are becoming part of general science libraries; (2) budgetary considerations; (3) lower level administrators becoming more involved in decision-making; (4) information becoming a marketable commodity; (5) technological advances in automation; and (6) clientele needs. Olsen sees the growth of those commercial services that are involved in providing access to and dissemination of agricultural information. With the disappearance of labor-intensive tasks brought about by automation, agricultural research library personnel will become more specialized. The decentralization of specialized libraries will initiate a growth in small agricultural information centers. The use of scientific management techniques will increase, along with the use of evaluations using quantitative measures to assess library effectiveness.

Sattar, A. (1984). Information-seeking behavior of agricultural extension specialists: Its impact on the management of information services. In A. Van Der Laan & A. A. Winters (Eds.), *The use of information in a changing world* (proceedings of the forty-second FID congress, The Hague, Netherlands, 24-27 September) (FID Publication 631) (pp. 299-310). Amsterdam: North-Holland. 469p.

Knowing how patrons search for information is important in library management decision-making. Sattar conducted a study of Illinois extension specialists "to investigate how extension workers search for information, what channels of communication they prefer, what information sources they use, and what their informal communication patterns are" (p. 299). After an extensive analysis of the literature on information use by extension workers, Sattar determined that past studies have focused on opinion rather than actual data about information sources used to answer a specific question. This study uses a methodology based on a critical incident technique where extension workers were asked to describe their last information search. Results show dramatic differences between those sources believed by extension workers to be most useful and those they actually consult. Sattar recommends in-service education for extension workers focusing on library

use and familiarizing extension workers with useful and available indexes, abstracts, databases, and literature search options and personal literature filing systems.

### AGRICULTURAL INFORMATION NETWORKS

Broadbent, K. P. (1989). *Networking in agricultural information: Needs, possibilities and methodologies—a donors' view* (paper presented at the Second CGIAR Documentation and Information Services Meeting, 16-20 January 1989). ICRISAT, Patancheru, AP, India. 19p.

Broadbent discusses agricultural information networks, focusing on specific networks and reasons for their success. Principles are defined which contribute to a network's success, including many of the same principles outlined by Plucknett and Smith (see later citation). This document is important because it presents a methodological framework for creating and sustaining an agricultural information network which includes the use of indigenous knowledge and the creation of an effective infrastructure.

Eres, B. K., & Bivins Noerr, K. T. (1985). Access to primary and secondary literature from peripheral or less developed countries. *Journal of the American Society for Information Science*, 36(3), 184-191.

The authors performed a regression analysis on journals, abstracting and indexing subscriptions, scientific population size, and number of libraries in developing countries. The resulting analysis showed that there is "a strong relationship...between subscriptions and the size of the scientific population and number of libraries..." (p. 184). The article continues with a discussion of the difficulties that are faced by scientists in developing countries in becoming aware of and using agricultural literature (both primary and secondary sources): the authors offer two networking proposals—proposals that are not meant to be solutions to the problems encountered by scientists but are meant to lay a groundwork for discussion. One network is for regions that have reasonable telecommunications and computer capabilities and is built around a central host computer. The second network is for those regions with less developed telecommunications and computing capabilities and "consists of one or more microcomputers..." (p. 189). This network emphasizes both formal and informal channels of communication. The design and implementation of these networks is examined.

Hoey, P. O'N. (1985). In-house database services to widespread users over a network. In [Proceedings of the] Ninth international online information meeting (London, 3-5 December) (pp. 211-19). Oxford: Learned Information Ltd. 486p.

Hoey provides a brief description of the United Kingdom's agricultural industry and a detailed examination of the information technology infrastructure at the Ministry of Agriculture, Fisheries and Food. Hardware and software systems as well as in-house database manage-

ment system services utilized in that infrastructure are discussed. This is an in-depth look at the use of computer technology to meet the agricultural information needs of a large and complex organization.

Mann, E. J. (1986). Past, present, and future developments in the transfer and dissemination of agricultural information: The case for a single, coordinated, world agricultural information system. *IAALD Quarterly Bulletin*, 31(1), 5-9.

In this paper, Mann outlines possible steps to be taken in coordinating the transfer and dissemination of agricultural information. Focusing on the information systems of AGRIS, CABI, and NAL, Mann calls for greater cooperation in the areas of data input, indexing, material selection and abstracting, and organization and management. Mann points out that, in the recent past, efforts at coordination among the three major agricultural information organizations has taken place in such areas as a common thesaurus and nonoverlapping information coverage. However, greater cooperation and coordination of effort are necessary due to economic and marketplace considerations. Advances in information technology should be used "to reach a wider user population in all parts of the world..." (p. 5).

Plucknett, D. L., & Smith, N. J. H. (1984). Networking in international agricultural research. *Science*, 225(4666), 989-993.

Plucknett and Smith provide a brief history of agricultural information networks. They note that, to be successful, a network must adhere to seven principles: a research agenda that is realistic and addresses a clearly defined problem; the problem addressed must be widely shared among participants in the network; network participants must have a strong self-interest; resources should be willingly committed; outside financing for the network must be available; participants should have necessary training and expertise; and the leadership of the network should be strong and effective. The focus of this paper is on two well-known agricultural networks: The International Rice Research Institute (IRRI) in the Philippines and The International Maize and Wheat Improvement Center (CIMMYT) in Mexico.

## OTHER IMPORTANT DOCUMENTS

Deshmukh, P. P. (Ed.). (1987). *Information systems for agricultural sciences and technology*. New Delhi: Metropolitan Book Co. 193p.

Although this volume of papers delivered at the first ICAR Summer Institute held in Akola, India, in 1985 is to some extent focused on India and has ramifications for agricultural libraries in the developing world, this document is not listed under the developing world category since it addresses so many topics applicable to agricultural libraries and literature worldwide. Topics covered range from a discussion of agricultural review literature and available abstracts and indexes to computer-based information retrieval systems and the use of computers in agricultural

libraries. These papers, all by Indian authors, offer a national perspective on the use, bibliographic control, and dissemination of worldwide agricultural information.

Fusonie, A., & Moran, L. (Eds.). (1979). *International agricultural librarianship [:] Continuity and change* (Proceedings of an international symposium held at the National Agricultural Library, 4 November 1977). Westport, CT: Greenwood Press. 127p.

This book is a result of a symposium on international agricultural librarianship held at the National Agricultural Library in 1977. Topics include the changing nature of agricultural librarianship; the future of international cooperation; and information, research, and innovations in agricultural libraries. One of the most interesting chapters is entitled "Agricultural Libraries and the Spirit of Cooperation: A Continuing Process" by Ana Maria Paz de Erickson. The author discusses the Latin American and Caribbean libraries and national information centers from the late 1960s to the late 1970s. Regional and international cooperation programs, such as the Inter-American Information System for Agricultural Services (AGRINTER) and the Agricultural Information Program for the Central America Isthmus (PIADIC), are discussed in some detail. The papers take the issues of international agricultural librarianship up to the mid- to late 1970s and provide a worthwhile backdrop to the discussion of the present and future status of international agricultural librarianship.

Lancaster, F. W., & Beecher, J. W. (1981). *Agricultural librarianship and documentation as a profession* (Proceedings of the VI World Congress of the International Association of Agricultural Librarians and Documentalists. Manila, 3-7 March 1980) (pp. 197-210). Los Banos, Laguna, Philippines: Agricultural Libraries Association of the Philippines and Agricultural Information Bank for Asia.

Lancaster and Beecher note that agriculture is very much an interdisciplinary science with a diverse literature base. This literature comes in a wide variety of formats and treatments and must be disseminated to a diverse clientele. Focusing on the United States, the authors give a brief overview of the development of agricultural libraries and cooperative ventures in agricultural information sharing. The new and developing information technologies which provide access to the worldwide agricultural literature are changing the nature of both agricultural libraries and the work of librarians. The future will see a de-institutionalization of libraries and a concurrent re-institutionalization of librarians working directly with clientele. Library school curricula will be required to address this changing role of the agricultural librarian.

Liyai, H. A.; Ayaka, B. N.; & Thomas, R. (Eds.). (1984). *Education and training for agricultural library and information work* (proceedings of the International Conference on Education and Training for Agricultural Library and Information Work. Nairobi, Kenya. 7-12 March 1983). 353p. Organized by the



International Association of Agricultural Librarians and Documentalists, Kenya Library Association, Kenya National Academy for the Advancement of Arts and Sciences.

This document is an international overview of education and training for agricultural library and information work. Twenty-five countries from the developing and the developed world were represented at the conference. Taken together, these papers, along with their literature cited sections, form a database of information on education and training for agricultural library and information work that is unequalled in the agricultural information literature. Session topics at the conference included the current status of education and training, special training programs, the availability and delivery of documents, and user populations and their information needs. Individual papers are on topics ranging from evaluation principles for training programs and training needs to the role of aid organizations and the acquisition of materials.

Swanson, B. E. (Ed.). (1984). *Agricultural extension[:] A reference manual* (2nd ed.). Rome: United Nations, Food and Agriculture Organization. 262p.

This is a basic sourcebook on all phases of worldwide agricultural extension, its history and development, function, and structure. The paper by Lancaster and Sattar, "Information Sources to Strengthen Agricultural Extension and Training," presents a brief review of information sources for agriculture and includes a list of forty important agricultural research centers worldwide. A detailed diagram presents the information transfer cycle in agriculture. The book as a whole, although not directly related to agricultural libraries and information centers, provides the agricultural librarian and information specialist with a wealth of literature on global agricultural extension that could be useful in planning, developing, and implementing an agricultural information center.