Drainage Bibliography from Computer Based Data Sources

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THE literature search is a key step in beginning new research. Manual methods for finding as many related references as conveniently possible can be time consuming and useful papers can still be overlooked. In the past, many works have been published, like Drainage of Agricultural Land, An Annotated Bibliography of Selected References, 1956-1964. These require a major effort to keep up to date.

Recently, computers have become widely used in literature searching. Many indexes and abstracts are converted into machine-readable form as part of the publication process. The resulting files, known as "data bases", may be searched rapidly and comprehensively by computer. Researchers gain access to these data bases through government, university, or commercial information services.

Searches of data bases are generally performed by search specialists or intermediaries who are acquainted with system requirements and terminology. The usual result of a search is a printed bibliography, sometimes including abstracts.

Our purpose here is to list the data bases with possible references to drainage and to describe a procedure for compiling an individually tailored bibliography to cover any specific aspect of drainage from computer-based data sources or retrieval systems.

In the following section, we list data bases that include information on drainage topics. Only acronyms and name are included. For information on subject content, sources covered, cost and other details, see Williams and Rouse (1976) or consult an information specialist at a university library or other information service.

DATA BASES THAT INCLUDE REFERENCES RELATED TO DRAINAGE

Starred items are particularly important sources for information on the drainage of agricultural lands.

ABS	(Automated Bibliographic Services)
ATA	(Abstracts on Tropical Agriculture)
AECM	(Agricultural Economics)
*AGRICOLA (formerly CAIN)	(Agricultural On Line Access)
*AGRIS	(Agricultural Information System, FAO)
Asher's Guide	
ASI	(American Statistics Index)
BEIC	(Battelle Energy Information Center)
Biosis Previews	(Biological Abstracts)
*CAB Abstracts	(Commonwealth Agricultural Bureaux)
CDI	(Comprehensive Dissertation Index)
*Compendex	(Computerized Engineering Index)
*CRIS	(Current Research Information System)
Current Programs	
Environmental Information Retrieval On Line	
Field Crop Abstracts	
Fruits	
Horticultural Abstracts	
The Information Bank	(New York Times)
International Environment	(EPA)
MARC Books	(Monographic Literature)
NTIS Bibliographic Data File	(National Technical Information Service)
PASCAL 380—Agronomy	
Pollution Abstracts	
Review of Plant Pathology	
SCI	(Science Citation Index)
Science Data Base	
Soils and Fertilizers	
*SWRA	(Selected Water Resources Abstracts)
Weed Abstracts	
World Agricultural Economics	

THE SEARCHING PROCESS

1 Clearly define in writing the topic to be searched. This is usually the most critical step. (See Fig. 1 for our suggested format.)

2 Choose appropriate data base(s).

3 Analyze the search topic into its component concepts, and express these in terms appropriate to the data base(s) selected.

4 Make administrative and financial arrangements to gain access to the data base(s).

5 Enter the search terms and combinations selected. The computer system responds by giving the number of citations retrieved by each term or combination.

6 Request the system to print sample citations. Inspect these to determine if the citations being retrieved are relevant.

7 Request that the entire set of citations be printed off-line and mailed to the requester. If time is critical, however, the citations may be printed on-line at much higher cost.

Both the requester and the search specialist are involved in steps 1 to 4, and good communication between them is essential. In on-line searching (see definition below), both may also participate in steps 5 to 7.

The steps listed above are not always discrete, not do they always occur in the order given. Step No. 4, for example, may be handled by a standing arrangement with the information service used. Steps 2 and 3 may occur in reverse order or concurrently.

On-Line vs. Off-Line Searching:

In **off-line searching,** the search strategy or profile is prepared entirely in advance, and no change can be made in terms or combinations of terms while the com-

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puter is performing the search. **On-line searching** allows the requester and/or searcher to interact with the computer system during the search, and to modify the search strategy if initial results are unsatisfactory. Best results are often obtained when both the requester and the searcher are present during an on-line search to evaluate results and modify search terms.

Current Awareness vs. Retrospective Searching:

A **retrospective search** literature on a topic for a specific period, often the last 3 to 10 yr. It is generally used at the beginning of a research project to compile a working bibliography. A **current awareness** of **SDI** (selective dissemination of information) search is performed at regular intervals, often monthly, and each time covers the literature added to the data base since the preceding search. Its principal purpose is to keep the requester up to date with currently published materials in his area of interest.

COMPUTER SEARCH REQUEST

Name: JOSEPH BORNSTEIN Appointment Date: January 24, 1978 Time: 0815

Telephone No: 581-2216 Address: N. E. Plant, Soil and Water Laboratory

Completing this form prior to your appointment will increase the efficiency of the service during your appointment and will probably lower the cost of service to you.

1. Please give in your own words a narrative description of the topic to be searched. Be specific; define phrases with special meaning. Append a list to your narrative of any synonyms, closely-related phrases, and alternate spellings. Please indicate if any words or phrases have a special use that you wish to exclude. Use scientific and technical as well as common vocabulary.

   I would like to develop a bibliography of articles on subsurface drainage of clay or hardpan (fragipan) soils using shallow drains. The references should also report on related surface drainage treatment, materials used for the drain tubing, moling procedures if no tubing is used, backfill materials to maintain a blanket, envelope or filter around the drain tubing, or wrapping of tubing to maintain efficient flow to the drain. The system of drainage has been called by various names including secondary or two-level drainage.

   The attached list of keywords includes some of the known authors on the subject. We are particularly interested in research or application work in humid climates, crop production related to the drainage and an indicator of drain effectiveness including alfalfa, corn, and soybeans.

2. Unless already stated, please indicate any models, end uses, or applications that would be helpful in retrieving useful references for your problem.

3. Please state any topics related to (or applications of, or views of, or approaches to) your specific problem that are not of interest if you wish to exclude retrieving citations to any documents on such topics.

4. What is the title of your specific topic?

   Subsurface drainage of clay soil in a cool climate to increase production of forage crops

5. Do you wish either to retrieve or not retrieve references to documents written in a particular language? ____ No limit XX** ____ Retrieve English only ____ Retrieve only in ____ Do not retrieve in ____

6. Do you wish to limit the search to a particular time span? 1969-present
   No limits ____ Retrieve 1976 only ____ Retrieve 1974-1976 ____ Other ____

7. Please list complete citations to two or three of the most useful articles on your search topic. (It may be helpful to bring these articles to your appointment.)

** As a first review of references available.

FIG. 1 Sample Computer Search Request, completed with sample inquiry.

GENERAL OBSERVATIONS ON THE SAMPLE SEARCH

1 Only the 1975-1977 section of the AGRICOLA (or CAIN) date base was searched. Seventeen additional references would have been retrieved had we searched 1970-1977.

2 Search statement 4 is actually the most precise formulation of the topic, but it resulted in so few references (3) that we decided to broaden the search to include any items on drainage of clay soils. The additional nine references, though they did not include the terms "subsurface", "tile", or "mole", might nevertheless contain useful information on the topic.

3 Some of the references came from journals not otherwise readily available to us. Both domestic and foreign journals were searched. Not all the references found were pertinent, but several were good ones.

References

1 Maynard, J. 1975. Dictionary of data processing. Newnes-Butterworths Publ., London.

2 Sippl, C. J., and C. P. Sippl. 1972. Computer dictionary and handbook. Howard W. Sams and Company, Inc., Publ., Indianapolis.

3 Sondak, N., and E. Sondak. 1973. The layman's dictionary of computer terminology. Hawthorn Books, Inc., New York.

4 USDA, ARS, Data Systems Application Division. 1976. Current awareness literature service, users guide. 3rd Edition.


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ENTER DATA BASE NAME
_:    CAIN

◆SIGN-ON   08.53.55

BRS - SEARCH MODE  -  ENTER QUERY
    1_:    DRAINAGE DRAINS DRAINING

    RESULT    945
    2_:    SUBSURFACE TILE MOLE

    RESULT    204
    3_:    CLAY CLAYS HARDPAN FRAGIPAN

HARDPAN                    KEYWORD NOT IN DICTIONARY

    RESULT    714
    4_:    1 AND 2 AND 3

    RESULT      3
    5_:    1 AND 3

    RESULT     12
    6_:    ..PRINT 5 TI/DOC=1.5
                1
TI THE EFFECT OF DIFFERENT DRAINAGE SYSTEMS ON SOIL CONDITIONS AND CROP
   YIELD OF A HEAVY CLAY SOIL.
                2
TI DRAINAGE AND VERTICAL HYDRAULIC CONDUCTIVITY OF SOME DUTCH "KNIK"
   CLAY SOILS.

                3
TI SUBSURFACE DRAINAGE, TILLAGE LAYER COMPACTABILITY AND COTTON RESPONSE
   TO SEEDBED COMPACTION IN A CLAY SOIL.

                4
TI SUBSURFACE DRAINAGE, TILLAGE LAYER COMPACTABILITY AND COTTON RESPONSE
   TO SEEDBED COMPACTION IN A CLAY SOIL.

                5
TI DRAINAGE SYSTEM EFFECTS ON PHYSICAL PROPERTIES OF A LAKEBED CLAY SOIL

              END OF DOCUMENTS

..PRINTOFF, P (D), DOC (ALL), ID(BORNSTEIN/CLAY.SOIL.DRAINAGE)
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FIG. 2 Sample Keyword Input and On-line Response. In search statements 1-3, the searcher typed in keywords, and the computer system responded with the number of citations retrieved, e.g. "Result 945". In search statements 4 and 5, the searcher tried two different combinations of the keywords, resulting in 3 and 12 citations, respectively. The searcher then called for sample titles, which were printed at the terminal. The sample titles appeared relevant, so we requested an off-line printout of the entire set of references.

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01/24/78                                                BORNSTEIN/CLAY.

                OFF-LINE PRINTOUT OF REFERENCES LISTED
                  IN FIGURE II IN ABBREVIATED FORM

              THIS OFFLINE PRINTOUT HAS BEEN GENERATED
                              F O R ,

                             BORNSTEIN
                        CLAY-SOIL-DRAINAGE

                                BY

              BIBLIOGRAPHIC RETRIEVAL SERVICES, INC.
                     1462 ERIE BLVD
                     SCHENECTADY, NEW YORK    12305

01/24/78                                                BORNSTEIN/CLAY.
PAGE      1                                             QUERY 0320
                                                        DATABASE,  CAIN

AN      77092503.
AU      TRAFFORD, B D.  OLIPHANT, J M.
TI      THE EFFECT OF DIFFERENT DRAINAGE SYSTEMS ON SOIL CONDITIONS AND CROP
        YIELD OF A HEAVY CLAY SOIL.
SO      EXP HUSB. 32, 75-85. REF. 1977.
YR      77.

AN      77087987.
AU      BOUMA, J. DEKKER, L W. VERLINDEN, H L.
TI      DRAINAGE AND VERTICAL HYDRAULIC CONDUCTIVITY OF SOME DUTCH "KNIK"
        CLAY SOILS.
SO      AGRIC WATER MANAGE. 1 (1), 67-78. REF.  DEC 1976.
YR      76

AN      76117910.
AU      STEINHARDT, R.
TI      SUBSURFACE DRAINAGE, TILLAGE LAYER COMPACTABILITY AND COTTON RESPONSE
        TO SEEDBED COMPACTION IN A CLAY SOIL.
SO      RAPP JORDBEARBETNINGSAVD LANTBRUKSHOGSK. 45, 41,1-41-6. REF.  1976.
YR      76.

        __________

        __________

        __________

AN      75025646.
AU      DENNIS, C W.  TRAFFORD, B D.
TI      THE EFFECT OF PERMEABLE SURROUNDS ON THE PERFORMANCE OF CLAY FIELD
        DRAINAGE PIPES.
SO      J HYDROL. 24 (3/4),  239-249.  REF.  1975.
YR      75.

AN      75002803.
AU      BOEKEL, P.
TI      THE SIGNIFICANCE OF DRAINAGE ON THE SOIL STRUCTURE OF LOAM AND LIGHT
        CLAY SOIL AND THE FINANCIAL CONSEQUENCES OF IT.
SO      BEDRIJFSONTWIKKELING. 5 (10),  875-880.  OCT 1974.
YR      74.

                                   CITATIONS              12
                                   PAGES                   2

                                         TOTALS FOR 0320

                                   CITATIONS              12
                                   PAGES                   2

                                         TOTALS FOR BORNSTEIN/CLAY.

                                   CITATIONS              12
                                   PAGES                   2
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FIG. 3 Off-line Printout of References retrieved in the on-line search.

5 Williams, M. E. 1977. Networks for on-line data base access. Jr. of Am. Soc. of Inf. Sci., 28:247-253.

6 Williams, M. E., and S. H. Rouse. 1976. Computer readable bibliographic data bases. A directory and source book. Am. Soc. of Inf. Sci., publisher. Updated by loose-leaf inserts every six months.