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USING THE MINNESOTA FARM
RECORDS DATA BASE: 1977-82 DATA

A User's Guide for:

"Utility Program (DRSDS) for Data Retrieval
of Specialized Data System Computer Tape
for Southeastern/Southwestern Minnesota Farm
Management Association Records Data, 1977-1982"

by

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I. BACKGROUND ON THE MINNESOTA FARM MANAGEMENT ASSOCIATIONS

The Department of Agricultural and Applied Economics of the University of Minnesota possesses a potentially valuable data resource in a set of data on a small number of Minnesota farms, starting in 1929 and continuing to the present. The value is only potential, however, because of data storage and retrieval problems. The purpose of this paper is to provide a description and instructions for use of a data retrieval program designed to partially solve these problems.

The University of Minnesota had been actively involved in farm management and collection of farm level data through the use of farm records since the turn of the century. Two current departments of the College -- Agronomy and Plant Genetics, and Agricultural and Applied Economics -- existed at that time as one joint Department of Agriculture. Time and motion studies started about 1910. They led to the cost accounting routes of the '20s which, in turn, led in 1929 to the founding of the Southeast Minnesota Farm Management Association, as a cooperative project between a group of farmers and the University. The farmers agreed to keep farm records, to let the University use the data from the records for education and research, and to cooperate in various other ways, the chief of which was to test new record keeping materials and systems. The University agreed to analyze the records at the end of the year, to provide the farmers with the resulting farm business and enterprise analyses, to maintain privacy, confidentiality, and security of the record data, and to provide the farmers with training and assistance in farm management decision making through provision of a fieldman. In 1939, a group of farmers in the southwestern part of the state followed suit and formed the Southwest Minnesota Farm Management Association.

The Associations exist today in much the same form as when they were started. The farms of some of the charter members are still in the Association, now being operated by the second or third generation. Farm accounting systems developed by the University still are the basic method used by the members. The University continues to perform the farm business and enterprise analysis each year for each member, and to retain a copy of the input data and the analysis output for each member in its files. The files constitute the farm records data base. The input data are all collected by hand. The analyses were performed by hand from the start of the Associations through 1966. In 1967, the analysis was computerized and processed at the St. Paul Campus computer Center. In 1977, the computer processing was shifted to Specialized Data System (SDS), a private computer service vendor in Madison, Wisconsin.

B. DESCRIPTION OF THE SDS RAW DATA TAPE

The SDS computer tape for one year consists of millions of pieces of data, stored in the form of farm records which are identified by individual farm ID's. In January, each year, farm records for the previous year are collected from each farm. The main purpose of the data collection is for preparation of an annual farm business and enterprise analysis for each farm and an annual report for each association. Four pages of computer data input sheets (see appendix C) are filled in from each farm account book. The fieldmen or the staff of the Department of Agricultural and Applied Economics or both then

inspect the forms for errors. If any data item is suspected of being incorrect, the farmer will be telephoned about the question so that correction can be made. The input data sheets are then sent to SDS for data processing and computation. After the computer analysis has been completed another error check is performed. Then the Department of Agricultural and Applied Economics compiles the final outputs which are copies of the farm business and enterprise analysis for each individual farmer and also an association annual report which summarizes the performance of each association by presenting averages of all farmers and of the most and least profitable 20 percent. Besides preparing the annual reports for each farmer, the Department also makes a two-page summary report for each farmer to compare his/her performance over the four previous years.

The annual report for each of the associations also serves as a basic document for comparative analysis of farm businesses in southeastern and southwestern Minnesota. The data also have the potential to be valuable and useful for agricultural economists, especially for conducting research on farm business analysis.

Each year approximately 250 (varies year by year) farmers provide the associations and the University with tens of thousands of pieces of data about farming in Minnesota. These data are stored as follows. First, both the raw (uncomputed) input data from the farmer's input sheets for each farm and the analysis (or "computed" data) for each farm from the start (1929) to present are stored in hard copy by the Department. Second, raw data for the period 1967-1976 are stored on magnetic computer tapes by the St. Paul Campus Computer Center. The Center still owns the program

which can be used to process (compute) farm business analyses from the data for the last several years of the 1967-1976 period. Third, raw data for the period 1977-1982 are stored on magnetic computer tapes by the Department. There is no program available locally for computing farm business analyses from the data on the SDS raw data tapes.

Four categories of data are stored on the SDS raw tapes. They are: inventory data; livestock enterprise data; income and expense data (whole farm); and crop enterprise data. The top portion of page one of Form 1A (see Appendix C) contains the inventory data for those assets and liabilities that are not allocated specifically to enterprises, i.e., "whole farm". The assets include current assets such as crop, seed, and feed on hand; business assets with a life of more than one year such as machinery and equipment; real estate such as dwelling and land; and liabilities. Both the whole farm and the landlord's share are listed, with operator's share determined by subtraction.

Livestock enterprise data are listed on the bottom portion of page one of Form 1A and on all of page two of Form 1A. Beginning and ending inventories, and all acquisition and disposal activities as well as transfers to and from other enterprises are listed for each livestock enterprise. Whole farm and landlord's share of value are given as well as physical quantities. The remainder of page one lists the quantities and values of livestock products sold or used in the home. Page two of Form 1A contains information on the numbers of head of each enterprise involved in each of the acquisition and disposal activities. Livestock expense that can be assigned directly to the enterprise is also listed on page two of Form 1A. In some cases, this consists of dollar values only, such as veterinary expense, and in other cases it lists quantities and values, such as of feed fed.

The income and expense data on Form 2 are not allocated to specific enterprises, i.e., they can be considered "whole farm" data. Data on total transactions with financial institutions are also listed, such as borrowings, payments on principle, and interest payments. Data on personal and family living are also included on Form 2 as well as information on labor by the farmer and family and by hired labor.

Form 3 contains crop data allocated by each enterprise. Data include acres owned and rented, total production on each, crop sales, and all items of crop expense that can be allocated directly to each crop.

Because of the many different types of data involved, we are not in a position to explain the detailed meaning of every variable here. Users may refer to Edgar Persons, "Instructions for Completing Computer Data Forms", Division of Agricultural Education, University of Minnesota, St. Paul, 1978, and Edgar Persons, "Documentation for Farm Business Analysis", Fourth Edition, Division of Agricultural Education, University of Minnesota, St. Paul, 1977. The use of these data is limited only by the scope of the user's imagination. As mentioned earlier, because of the complexity of format used in storing these information, they have not been used as much as they could have been. To make these data more accessible to users, a special program, DRSDS, is designed for retrieving data from the SDS tapes in a matter of minutes, instead of weeks or months. The program was originally written on September 1981, and was revised on August 1983. The next section is devoted to explain the use of the DRSDS program.

III. THE USER'S GUIDE FOR DRSDS PROGRAM

A. Identification

Title: Utility Program of Data Retrieval for Specialized Data
System Computer Tape.

Program Calling Name: DRSDS

Language: Minnesota FORTRAN Time Sharing,
CDC NOS CYBER 172 Operating System

Computers: CDC 6000/7000/Cyber Series Machines

Memory Requirement: 60,000 Words

Programmer: Lung-Fai Wong, September 1981

Revised: Lai-Chun Kan, August 1983

Department of Agricultural and Applied Economics

B. General Description

This program is designed to ease the access to SDS generated farm accounting raw data tapes by potential users who do not have a knowledge of FORTRAN language. The SDS (Specialized Data System, Inc.) data tapes contain all of the raw data of the Southeastern and Southwestern Minnesota Farm Management Associations. Each farm record may have up to 1,600 variables, thus, a typical data tape may consist of up to 3 million characters.

It has been a very difficult process to retrieve information from the SDS tapes. Although using the tapes requires a fairly large amount of knowledge in computer programming, the most difficult part is to understand the format that is used in storing the data on the tape. Sometimes it takes a researcher weeks or even months to study the format and programming before he/she can retrieve any data out from the tapes.

The merit of this DRSDS utility program is that it can enable us to retrieve any part or all of the data from the SDS data tape in a matter of minutes.

C. Capacity and Limitations

1. Capacity of the DRSDS utility program:

No. of farm records in one run: unlimited

No. of years in one run: unlimited

No. of files that can be read in one run: one file

No. of variables that can be retrieved in one run: maximum

100 variables for each Form 1A, 2, 3 (total 300 variables)

No. of format cards (lines) that can be used: 5 cards

2. Limitations of the DRSDS utility program:

All of the input files and output files must be direct access files (files that have more than 196 PRUS).

All of the data must be in INTEGER format

Neither the year nor the farm identification number will be released. However, researchers can identify the year and associations by tape (file) identification.

All missing values will be assigned as zeros.

The minimum number of variables that can be retrieved in each run is 2.

It will not compute the analysis from the raw data

D. Procedures for Using the DRSDS Program

In order to avoid computer errors, certain procedures should be followed in using the DRSDS.

- Step 1: Use the timesharing computer system to log on the MERITSS/MEEC computer through any computer terminal or microcomputer.
- Step 2: Use the command CATLIST to check if the raw data SDS direct file is stored in the user's disk. If not, consult the project leader and load it from tape.
- Step 3: Name the new file. The name of the new file must not be the same as any file name that appears in the CATLIST command.
- Step 4: Fetch the FORTRAN function library by typing in:
X,FETCH,MINNLIB/V = MNF
If you have the farm management procedure file PROCFIL in your disk, you can accomplish this by typing in -MNF.
- Step 5: Get and run the DRSDS program by:
GET, DRSDS/UN = 4530325
X,DRSDS
- Step 6: Respond to the computer and enter following information: the raw data SDS file name, the new file name, number of format cards, the format statement(s), and the matrix locations of the variables that you intend to retrieve from each FORM. (Detailed explanation of this step will be discussed in the next section.)
- Step 7: Use the command CATLIST again to check if the new file is stored in user's disk. If yes, it is ready to be used for statistical analysis.

E. Explanation of the DRSDS Program

When the program is running, the computer will respond:

ENTER SDS-TAPE DIRECT FILE NAME

? XYZ1234

ENTER NEW DIRECT FILE NAME TO BE STORED

? NEWXXXX

Explanation: XYZ1234 is the file name that consists of all the data. It should be one of the file names that appears in CATLIST in step 2. The file name should not be more than seven characters long.

NEWXXXX is the new file name that will be used to store the data retrieved from XYZ1234. Make sure NEWXXXX is a new file name that did not appear in CATLIST (step 3).

ENTER NO. OF FORMAT CARDS FOR OUTPUT FILE. MAX. 5 CARDS

? N

ENTER N LINES OF FORMAT STATEMENTS. WITH OPEN AND CLOSED PARENTHESIS

? (5(1X,I10)/2(1X,I9)/2I5)

Explanation: N can be any number from 1 to 5. It tells the computer how many lines of format statement(s) that will follow. In this example, N is 1. Notice that 1 line of format statement does not necessarily mean one line per each record. Here, the format statement means 3 lines for each record.

The first line consists of 5 variables, 2 variables for the second and third line. Because all of the data are stored as INTEGERS, only the I-field and the X-field can be used in the Format statement(s). If F-field is used, then mixed mode problem will occur, and all data will be lost. Also notice that no more than 72 characters should be used on one line of format statement.

ENTER THE VARIABLES IN FORM 1A:

ROW NO., COLUMN NO., FORM 1A SET NO.

? I1, J1, K1

? I2, J2, K2

? (CR)

Explanation: I, J, K's are the matrix locations for variables in computer worksheet Form 1A. Each Form 1A has 101 rows and nine columns. Each livestock enterprise uses three columns; thus, each Form 1A can contain data for three or less livestock enterprises. Because some farmers have more than 3 livestock enterprises, they can have more than one Form 1A. None of the farmers in the associations thus far have had more than nine livestock enterprises, so in practice, three Form 1A's is the limit. Therefore, unlike Form 2 and Form 3, Form 1A is a three-dimensional matrix (101 x 9 x 3). All the data in Form 1A will be converted into a three-dimensional matrix. The user has to instruct the computer of the matrix locations of all the variables that he wants to retrieve. For example, 1, 1, 1 means line 1, column A of the first Form 1A; 101, 8, 2 means line 101, column H of the second Form 1A for this farmer. Notice that there are only 101 lines and 9 columns in Form 1A; therefore, I1 should be less or equal to 101, J1 should be less or equal to 9. After you finish entering the variables in Form 1A, hit the carriage return (CR) key, which tells the computer to proceed to Form 2.

ENTER THE VARIABLES IN FORM 2:

ROW NO., Column NO.

? I1, J1

? I2, J2

? I3, J3

? (CR)

Explanation: I's and J's are also the matrix locations for variables in the computer worksheet Form 2. Since there is only one answer for each cell, only the row number and column number are relevant. Thus, the matrix in Form 2 is a 47 x 4 matrix. Notice that the line numbers shown in Form 2 start from 11 and increase with an increment of 10. In order to reduce the size of the matrix, the computer will chop off the last digit of each line number. Thus, location (1, 1) means first line, column A, which is the veterinary expense for the whole farm; location (11, 2) means eleventh line, column B, which is the landlord's labor share. Again, the values for the I's should be less or equal to 47, and the values for the J's should be less than or equal to 4.

ENTER THE VARIABLES IN FORM 3:

CROP CODE NO., COLUMN NO.

? I1, J1

? I2, J2

? (CR)

Explanation: Because the format in Form 3 is different from others, researchers should pay special attention to the following notes:

- a) There is no line number in Form 3, it uses the crop code number instead. For the list of crop code numbers, refer to Appendix D.
- b) There are two sets of column numbers. The first set is on the left side, the second set is on the right side.
- c) Some of the data entries are in decimal values, but the computer will not distinguish the decimal points, i.e., 2.00 will be read as 200.

Determination for the I's and J's values:

- a) Look up the crop code number from the appendix, i.e., 0172 stands for spring wheat.

b) Find out if the variable is in left hand side or right hand side of Form 3. If it is left hand side, attach a "1" at the end of the code number, if it is at the right hand side, attach a "2" at the end of the code number.

For example, value per unit of spring wheat is located at the left side; thus, the code number becomes 01721; the code number for chemical expense for spring wheat will be 01722. The crop code numbers have 4 digits, therefore, the I values have 5 digits, but cannot be larger than 99992.

For the J values, use 1 for column A, 2 for column B,....., 11 for column K, 12 for column L. For example, the matrix location for the variable of "value per unit of spring wheat" is (01721, 3); matrix location for the chemical expense of spring wheat is (01722, 2).

After all the variable locations have been entered, the computer will verify:

NO. OF VARIABLES IN FORM 1A: X; IN FORM 2: Y;
IN FORM 3: Z

O.K. (Y/N)?

If the above information is correct, then enter Y, and the computer will start retrieving data. If the above information is incorrect, enter N, and re-enter all of the variable locations. When retrieving large numbers of variables, user may use a batch submit procedure instead of interactive procedure (see example 2).

After the computer has finished retrieving the data from the SDS tape, it will print out the following information:

THERE ARE n FARM RECORDS WITH m VARIABLES STORED IN DIRECT FILE
NAME: NEWXXXX

* END *

F Error Messages

When running DRSDS, eight kinds of errors may occur. Although the purpose of this section is to help users to deal with these errors, users are advised to read this user's guide carefully. When errors occur, users may use <back space> or <control H> to correct errors on the current line, or enter STOP to terminate the execution of the program.

- ERROR A : DRSDS - NOT IN SYSTEM
User forgot to GET the program.
Check step no. 5.
- ERROR B : UNSATISFIED EXTERNAL REF -- ATTACH
OR : UNSATISFIED EXTERNAL REF -- DEFINE
User forgot to fetch the MNF library.
Check step no. 4.
- ERROR C : ERROR NUMBER 52 FOUND IN ATTACH
A non-existing file name was entered for
the SDS data file.
Check step no. 2.
- ERROR D : TAPE4 ALREADY PERMANENT
An already existing file name was used
for storing the would be retrieved data.
Check step no. 3, assign another file name.
- ERROR E : ILLEGAL FORMAT CHARACTER
The format statement(s) consist(s) of some
illegal character(s), such as F-field, or the
parenthesis is missing. Notice that only the I-
field and the X-field can be used in the format
statement(s).
- ERROR F : INVALID MATRIX LOCATION, RE-ENTER THE LAST LINE
This is a run time error message. It happens
when user enters a wrong matrix location. Recall
that the max. size for FORM 1A is 101 x 9 x 3;
FORM 2 is 47 x 4; FORM 3 is "99992" x 2.
Refer to appendix and re-check the matrix location.
- ERROR G : ID ERROR IN FARMER XXXXXXXXXX, PROGRAM CONTINUE
A run time error caused by error(s) in the SDS
data tape. Users are not allowed to access
the original data tape. DRSDS ignores the
current record and continues to the next record.

ERROR H : *TIME LIMIT* ENTER T TO CONTINUE
A run time message. Because of length of the
data file, it takes too much time for the computer
to retrieve all the data.
Enter "T" to continue.

IV. REMAINING PROBLEMS WITH PRESENT SYSTEM AND FUTURE SOLUTION

Even with the DRSDS program, because of the complexity, size, and structure of the data, there are still some problems with the present system. Currently, data are being stored in different files for each year. When researchers want to get data for different purposes, they have to run the DRSDS program many times in order to retrieve data from different files, as shown in figure 1. Generally, this procedure creates the following problems.

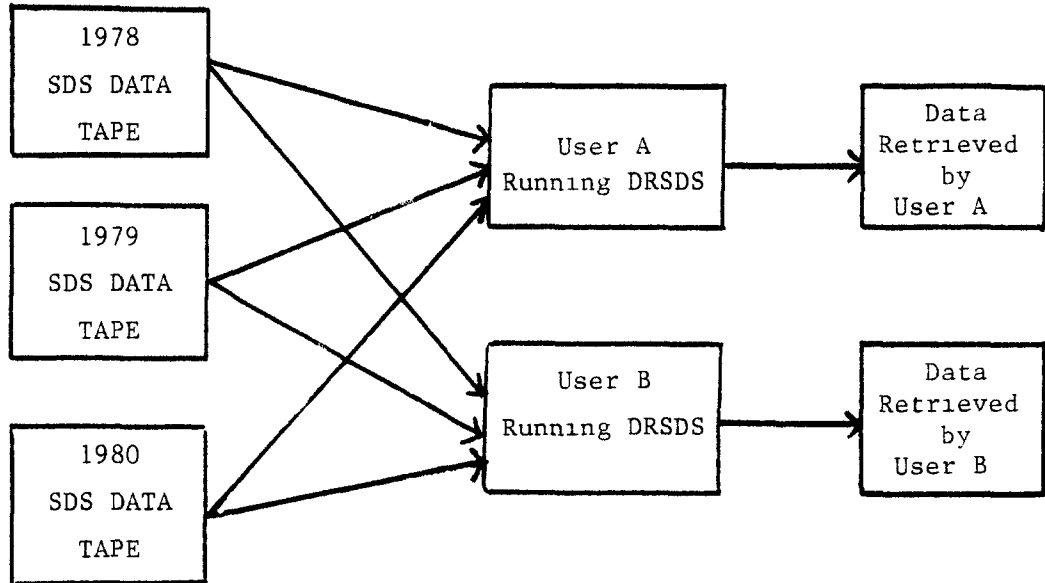


Figure 1: Current Data Retrieval System

Need for Computer Training.

The current method of accessing the raw data that is stored on magnetic tapes requires users to use the specially designed FORTRAN program, DRSDS, to retrieve the formatted data and create their own data file. Due to the complexity of the data format, it is not uncommon for users to make small mistakes and have to repeat the retrieval process all over again. Hence, users have to be very familiar with the storage location before they can use the DRSDS program to retrieve the raw data from the storage tapes. In addition, they need to decide the format of the newly created data file for further uses.

Cost of Accessing the Data.

Users often would either copy from the computer output or retrieve from the tapes without knowing what other users have done previously. Each of these users spends a lot of time and computing cost to create their own data files. Many of these data files are probably duplicated. This means money and time have been wasted.

Cost of Error Searching.

Much time and effort has sometimes been spent just searching for the sources of recording mistakes made by the farmers. For example, an obvious error was spotted in the alfalfa category in the averages contained in the annual report. The method for correcting the error was first to find out which farmers had the crop alfalfa, examine each of their records, and then make the correction. It was a tedious job just to identify the farms which had alfalfa.

Difficulty in Aggregation.

Each file consists of a single year's data for all the farms in a single association. Therefore, studying a group of farms, such as a special farm type, over several years is extremely complex and difficult.

Inflexibility of Data Structure.

Since the algorithm of the DRSDS retrieval program depends on the structure of the data, any changes in data structure requires major modification of the retrieval programs. Thus, as the data structure changes due to change in farm analysis, it is becoming an exhaustive job for researchers to dig out any information.

Presently, faculty, researchers, and graduate students are frustrated in using this valuable data source because of its complex storage format. They are also discouraged by the requirement of extensive computer knowledge and high retrieval cost. But agricultural economists rely very much on computer technology for their quantitative analysis, which indirectly requires the availability of accurate data. Yet, it is surprising that there are not too many who have used a data base management system for retrieval of computerized information.

We at Minnesota are not unique in our problems. For example, the University of Illinois in Urbana has a much larger farm record data collection system which consists of about 3,000 farmers in their program. This huge amount of information, raw data and computed information, is being stored in their computer in a fixed format, similar to our system. Their users also have to write special programs for each retrieval attempt. Hence, their researchers have to understand very well about the

data storage system and FORTRAN computer language. Without taking advantage of a data base management system (DBMS), they have the same problems as we have in Minnesota.

As a solution for the future, it is therefore necessary to start searching for alternative solutions to the problems which exist in our current storage system. We should first start to investigate the possibility of adopting the concept of Management Information System (MIS) with special emphasis on Data Base Management Systems (DBMS) software in order to improve and encourage the use of the existing farm management data. We should then adopt a set of criteria for the selection of a DBMS for Minnesota farm records. After selecting the most appropriate DBMS, we should reorganize the present Minnesota farm records into a data base.

A small experimental Minnesota Farm Records Data Base was recently developed by Lai Chun Kan as part of her Master's Plan B Project. In that project, the SIR (Scientific Information Retrieval) system was used as the DBMS and 30 variables for four years (1978-81) were inputted into the data base system. For further information on that project, the reader may refer to Lai Chun Kan, "Creation and Management of a Farm Records Data Base," Department of Agricultural and Applied Economics, University of Minnesota, St. Paul: July 1983.

APPENDIX A

Two Examples of Using DRSDS

Example 1 = Interactive Procedure

```
X, FETCH, MINNLIB/V=MNF
:GET, DRSDS/UN=4530325
:X, DRSDS
ENTER SDS-TAPE DIRECT FILE NAME
? SDS1980
ENTER NEW DIRECT FILE NAME TO BE STORED
? LAI2
ENTER NO. OF FORMAT CARDS FOR OUTPUT FILE. MAX.5 CARDS
? 1
ENTER 1 LINE(S) OF FORMAT STATEMENT. WITH OPEN AND CLOSING PARENTHESIS.
? (10I9)
ENTER THE VARIABLES IN FORM 1A: ROW NO., COLUMN NO., FORM 1A SET NO.
? 1 1 1
? 1 2 1
? 1 3 1
?
ENTER THE VARIABLES IN FORM 2: ROW NO., COLUMN NO.
? 1 1
? 1 2
? 13 2
? 1 4
?
ENTER THE VARIABLES IN FORM 3: CROP CODE NO., COLUMN NO.
? 1721,3
? 3401,2
?
NO. OF VARIABLES IN FORM 1A: 3; IN FORM 2: 4; IN FORM 3: 2
OK. (Y/N) ?
? Y
RETRIEVING DATA FROM SDS1980 PLEASE WAIT '
◆TIME LIMIT◆
ENTER T TO CONTINUE OR CR KEY TO STOP:
T
THERE ARE 276 FARM RECORDS WITH 9 VARIABLES STORED IN DIRECT FILE NAME: LAI2
:
```

Example 2 = Batch Submit Procedure

The interactive procedure used in example 1 is convenient only if several variables are to be retrieved. In the case of retrieving a large number of variables, it is very easy to make mistakes in the interactive procedure. To avoid mistakes, the user may use XEDIT (or any text editor) to create a job file and submit it to the computer as batch image.

```

KAN,T90.
ACCOUNT,XXXXXXX,YYYYY.
GET,DRSDS/UN=GQM6087.
FETCH,MINNLIB/V=MNF.
DRSDS.
RETAIN,OUTPUT=SOUT.
COST.
--EOR--
SDS1980
LAI2
1
(10I9)
1 1 1
1 2 1
1 3 1
--EOR--
1 1
1 2
13 2
1 4
--EOR--
1721 3
3401 2
--EOR--
Y
--EOR--
--EOF--
```

APPENDIX B

PROGRAM LISTING OF DRSDS

```
00100C *****
00110C THIS PROGRAM READS VARIABLES FROM SDS TAPE AND
00120C REFORMATS DATA BACK TO ORIGINAL TABLE FORMATS
00130C THAT USED BY THE MINNESOTA FARM MANAGEMENT ASSOCIATION.
00140C PROGRAMMER: LUNG-FAI WONG; SEPTEMBER, 1981.
00150C REVISED : LAI-CHUN KAN; AUGUST, 1983.
00160C THIS PROGRAM USES SOME ROUTINES THAT WERE
00170C ORIGINALLY WRITTEN BY HENRY HWANG AND GREG HANSON
00180C FOR FURTHER INFORMATION, CONTACT PROF. DELANE WELSCH
00190C DEPT. OF AGRICULTURAL AND APPLIED ECON.
00200C UNIVERSITY OF MINNESOTA, ST. PAUL
00210C VARIABLES: A=DATA IN FORM 1A;
00220C B=DATA IN FORM 2;
00230C C=DATA IN FORM 3;
00240C Y=DATA FROM TAPE FOR EACH RECORD;
00250C IA,IB,IC=INDICES FOR PARAMETERS IN FORMS 1A,2,3
00260C D=THE SPECIFIED DATA TO BE RETRIEVE;
00270C F=FORMAT CARD INFORMATION
00280C *****
00290C
00300C
00310 PROGRAM SDSTAPE (INPUT,OUTPUT,TAPE1=INPUT,
00320+TAPE2=OUTPUT,TAPE3,TAPE4)
00330 INTEGER OUTFILE,A,B,C,D,Y,F,NFARM
00340 DIMENSION A(101,9,3),B(47,4),C(60,12),Y(11),
00350+ IA1(100),IA2(100),IA3(100),IB1(100),IB2(100),
00360+ IC1(100),IC2(100),D(300),F(400)
00370 DATA A/2727*0/ B/188*0/ C/720*0/ D/150*0/Y/11*0/
00380 WRITE (2,10)
00390C READING IN FILE NAMES
00400 READ (1,20) INFILE
00410 WRITE (2,12)
00420 READ (1,20) OUTFILE
00430 CALL ATTACH(5HTAPE3,INFILE,0,0,0,0)
00440 CALL DEFINE(5HTAPE4,OUTFILE,0,0,0,0)
00450C READING IN FORMAT CARDS
00460 WRITE (2,30)
00470 READ (1,32) NFORM
00480 WRITE (2,34) NFORM
00490 NB=1
00500 NE=8
00510 DO 90 IFM=1,NFORM
00520 READ (1,36) (F(J),J=NB,NE)
00530 NB=NE+1
00540 NE=NE+8
00550 90 CONTINUE
00560C READING IN PARAMETERS FOR VARIABLES AND THEIR LOCATIONS
00570 92 WRITE (2,14)
00580 IA=1
00590 110 READ (END=120,1,*) IA1(IA),IA2(IA),IA3(IA)
00600 IF (IA1(IA).GT.101.OR.IA2(IA).GT.9.OR.IA3(IA).GT.3) GOTO 112
00610 IA=IA+1
00620 GO TO 110
00630 112 WRITE (2,54)
00640 GO TO 110
00650 120 IA=IA-1
```

```
00660 IB=1
00670 WRITE (2,16)
00680 122 READ (END=130,1,*) IB1(IB),IB2(IB)
00690 IF (IB1(IB).GT.47 .OR. IB2(IB).GT.4) GOTO 126
00700 IB=IB+1
00710 GO TO 122
00720 126 WRITE (2,54)
00730 GOTO 122
00740 130 IB=IB-1
00750 IC=1

00760 WRITE (2,18)
00770 132 READ (END=140,1,*) IC1(IC),IC2(IC)
00780 IF (IC1(IC).GT.99992 .OR. IC2(IC).GT.12) GOTO 134
00790 IC= IC+1
00800 GO TO 132
00810 134 WRITE (2,54)
00820 GOTO 132
00830 140 IC=IC-1
00840 IIC=1
00850 WRITE (2,58) IA,IB,IC
00860 READ (1,21) IANSWER
00870 IF (IANSWER .EQ. 1HY) GO TO 142
00880 WRITE (2,60)
00890 GOTO 92
00900 142 WRITE (2,62) INFILE
00910C READING IN DATAS FROM SDS TAPES
00920 REWIND 3
00930 REWIND 4
00940 IDOLD=23010102
00950 NFARM= 1
00960 1000 READ (3,50) ID1, ID2, LN, Y
00970 JCHECK = 0
00980 IF (ID1 .EQ. 99999999) GOTO 2000
00990 IF (ID1 .LT. 23010000 .OR. ID1 .GT. 23030000) WRITE (2,56) ID1
01000 IF (EOF(3) .NE. 0.0 ) GO TO 2000
01010 JCHECK = 1
01020 IF (LN .GT. 101) JCHECK = 0
01030 IF ( ID1 .NE. IDOLD ) GO TO 2000
01040 5000 IF ( ID2 .EQ. 1HA ) K=1
01050 IF ( ID2 .EQ. 1HB ) K=2
01060 IF ( ID2 .EQ. 1HC ) K=3
01070 IF ( ID2 .EQ. 1H2 ) GO TO 1002
01080 IF ( ID2 .EQ. 1H3 ) GO TO 1004
01090 DO 1001 L = 1,9
01100 1001 A(LN,L,K)=Y(L)
01110 GO TO 1000
01120 1002 LN1=LN/10
01130 DO 1003 L=1,4
01140 1003 B(LN1,L)=Y(L)
01150 GO TO 1000
01160 1004 C(IIC,1)=LN
01170 DO 1005 L=1,11
01180 1005 C(IIC,L+1)=Y(L)
01190 IIC=IIC+1
01200 GO TO 1000
01210C WRITE DATA ON NEW FILE NAME
01220 2000 NFARM=NFARM+1
01230 IF ( IA .EQ. 0 ) GO TO 2110
01240 DO 2100 KK=1, IA
01250 2100 D(KK)=A(IA1(KK), IA2(KK), IA3(KK))
```

```
01260 2110 IF ( IB .EQ. 0 ) GO TO 2120
01270 DO 2200 KK= 1A+1, 1A+1B
01280 2200 D(KK)=B(1B1(KK-1A),1B2(KK-1A))
01290 2120 IF ( 1C .EQ. 0 ) GO TO 3000
01300 1KK= 1A+1B+1
01310 DO 2310 MN = 1,1C
01320 DO 2300 M = 1,60
01330 IF( C(M,1) .EQ. 1C1(MN)) GO TO 2320
01340 2300 CONTINUE
01350 D(1KK)=0
01360 1KK=1KK+1
01370 GO TO 2310
01380 2320 D(1KK)=C(M,1C2(MN)+1)
01390 1KK=1KK+1
01400 2310 CONTINUE
01410 3000 WRITE (4,F) (D(NN),NN=1,1A+1B+1C)
01420 1DOLD=1D1
01430C RESET ALL VALUES TO ZERO
01440 DO 710 K1=1,101
01450 DO 710 K2=1,9
01460 DO 710 K3=1,3
01470 710 A(K1,K2,K3)=0
01480 DO 720 K4=1,47
01490 DO 720 K5=1,4
01500 720 B(K4,K5)=0
01510 DO 730 K6=1,60
01520 DO 730 K7=1,12
01530 730 C(K6,K7)=0
01540 11C=1
01550 IF ( JCHECK .EQ. 1 ) GO TO 5000
01560 WRITE (2,40) NFARM-1,1A+1B+1C,OUTFILE
0157C 10 FORMAT (*ENTER SDS-TAPE DIRECT FILE NAME*)
01580 12 FORMAT (*ENTER NEW DIRECT FILE NAME TO BE STORED*)
01590 14 FORMAT (*ENTER THE VARIABLES IN FORM 1A: *,1X,
01600+ * ROW NO., COLUMN NO., FORM/A SET NO.
01610 16 FORMAT (*ENTER THE VARIABLES IN FORM 2: *,1X,
01620+ * ROW NO., COLUMN NO. *)
01630 18 FORMAT (*ENTER THE VARIABLES IN FORM 3: *,1X,
01640+ * CROP CODE NO., COLUMN NO.*)
01650 20 FORMAT (A7)
01660 21 FORMAT (A1)
01670 30 FORMAT (*ENTER NO. OF FORMAT CARDS FOR OUTPUT FILE. MAX.5 CARDS*)
01680 32 FORMAT (11)
01690 34 FORMAT (*ENTER *,11,* LINE(S) OF FORMAT STATEMENT. *,1X,
01700+ *WITH OPEN AND CLOSING PARENTHESIS. *)
01710 36 FORMAT (8A10)
01720 40 FORMAT (*THERE ARE *,14,* FARM RECORDS WITH *,14,
01730+* VARIABLES STORED IN DIRECT FILE NAME: *,A7)
01740 50 FORMAT (18,A1,15,1217)
01750 54 FORMAT (*INVALID MATRIX LOCATION, RE-ENTER THE LAST LINE*)
01760 56 FORMAT(*ID ERROR IN FARMER *,18,* PROGRAM CONTINUES*)
01770 58 FORMAT (*NO. OF VARIABLES IN FORM 1A: *,13,
01780+*; IN FORM 2: *,13,*; IN FORM 3: *,13,/,*OK. (Y/N) ?*)
01790 60 FORMAT (*RE-ENTER ALL VARIABLE LOCATIONS AGAIN !*)
01800 62 FORMAT(* RETRIEVING DATA FROM *,A7,* PLEASE WAIT !*)
01810 STOP
01820 END
```




FARM BUSINESS MANAGEMENT
EDUCATION PROGRAM

MINNESOTA 10-AG
COMPUTER DATA SHEET
FORM IA
OCTOBER 1982

INVENTORY DATA

Form ___ of ___

LINE NO	DESCRIPTION	BEGINNING INVENTORY			ENDING INVENTORY			STATE CODES		
		WHOLE FARM	OPER. SHARE	L L SHARE	WHOLE FARM	OPER. SHARE	L L SHARE			
1	CROP, SEED, & FEED	\$ (1,1)	\$ (1,2)	\$ (1,3)	\$	\$	\$ (1,6)	01 AL	26 VT	
2	AUTO & TRUCK FARM SHARE							02 AK	27 NB	
3	POWER CROP & GEN MACH							03 AZ	28 WV	
4	IRRIGATION EQUIPMENT							04 AR	29 NH	
5	CUSTOM WORK EQUIPMENT							05 CA	30 NJ	
6	LIVESTOCK EQUIPMENT							06 CO	31 NM	
7	BARE LAND							07 CT	32 NY	
8	BLDGS, FENCES & TILING							08 DE	33 NC	
9*	TOTAL NON-FARM ASSETS							09 FL	34 ND	
10	DWELLING							10 GA	35 OH	
11	REAL ESTATE MTGE							11 HI	36 OK	
12	CHattel & CROP LOANS							12 ID	37 OR	
13	NOTES							13 IL	38 PA	
14	ACCOUNTS PAYABLE							14 IN	39 RI	
15*	CASH ON HAND & IN BANK	(15,1)					(15,6)	15 IA	40 SC	
16*	NON FARM REAL ESTATE							16 KS	41 SD	

LIVESTOCK ENTERPRISES

LINE NO	DESCRIPTION	CODE NO DESCRIPTION			CODE NO DESCRIPTION			CODE NO DESCRIPTION		
		QUANTITY	WHOLE FARM	L L SHARE	QUANTITY	WHOLE FARM	L L SHARE	QUANTITY	WHOLE FARM	L L SHARE
19	BEGINNING INVENTORY	(20,1)	\$	\$		\$	\$		\$	\$
20	ENDING INVENTORY									
21	TRANSFERS IN									
22	TRANSFERS OUT									
23	BUTCHERED									
24	SALES									
25	PURCHASES									
PRODUCT INFORMATION										
26	WHOLE MILK USED/HOUSE	QTS			QTS			QTS		
27	SKIM MILK USED/HOUSE	QTS			QTS			QTS		
28	CREAM USED/HOUSE	QTS			QTS			QTS		
29	CREAM SOLD	LBS			LBS			LBS		
30	WHOLE MILK SOLD	LBS			LBS			LBS		
31	BUTTERFAT IN MILK SOLD	LBS			LBS			LBS		
32	NO. SHEEP/GOATS SHEARED	NO			NO			NO		
33	WOOL/HAIR SOLD	LBS			LBS			LBS		
34	INCL INCENTIVE PYT	NO			NO			NO		
35	PELTS SOLD	DOZ			DOZ			DOZ		
36	EGGS SOLD	DOZ			DOZ			DOZ		
37	EGGS USED IN HOUSE	DOZ			DOZ			DOZ		
38	CROPS USED IN HOUSE									
39	HONEY USED IN HOUSE	LBS			LBS			LBS		
40	WAX SOLD	LBS			LBS			LBS		
41	QUEENS & PKGS SOLD	NO			NO			NO		
42	MISC LVSTK INCOME									(45,9)

Use Whole Number Only Unless A Decimal Is Specified
 Round All Cents To The Closest Dollar
 Decimal Number Must Be Complete If Called For
 For Example, 10 Tons of Complete Ration Must Be
 Reported As 10.0 Tons

* Line 15 and 16 should NOT be included in the total at line 9



Form _____ of _____

LINE NO	DESCRIPTION	CODE NO DESCRIPTION			CODE NO DESCRIPTION			CODE NO DESCRIPTION		
		A QUANTITY	B WHOLE FARM	C L L SHARE	D QUANTITY	E WHOLE FARM	F L L SHARE	G QUANTITY	H WHOLE FARM	I L L SHARE
	LIVESTOCK NUMBERS									
50	BEGINNING INVENTORY	(50,1)	NO		NO		NO		NO	
51	PURCHASED		NO		NO		NO		NO	
52	TRANSFERRED IN		NO		NO		NO		NO	
53	BORN		NO		NO		NO		NO	
54	SOLD		NO		NO		NO		NO	
55	YOUNG DIED		NO		NO		NO		NO	
56	OLD DIED		NO		NO		NO		NO	
57	TRANSFERRED OUT		NO		NO		NO		NO	
58	BUTCHERED (Acres Pollinated)		NO		NO		NO		NO	
59	ENDING INVENTORY		NO		NO		NO		NO	
60	FEMALES BEARING YOUNG		NO		NO		NO		NO	
61	FEM SUPPOSED TO BEAR YG		NO		NO		NO		NO	
62	AVERAGE NO ADULTS x		NO		NO		NO		NO	
63	AVERAGE NO OTHERS x		NO		NO		NO		NO	
64	WORK UNITS/UNITS OTHER PROD LVSTK ONLY xx		NO		NO		NO		NO	
	MISC LIVESTOCK INFO									
70	MISC LIVESTOCK EXP		\$		\$		\$		\$	
71	VETERINARY EXPENSE									
72	CUSTOM WORK HIRED									
73	NO SOLD OR TRANSFERRED		NO		NO		NO		NO	
74	SOLD OR TRANSFERRED		LBS		LBS		LBS		LBS	
75	SPECIAL HIRED LABOR									
76	PCAF xx									
77	ECAF									
78	BCAF									
	FEED FED									
80	CORN 56#BuWt		BU \$		BU \$		BU \$		BU \$	
81	OATS 32#BuWt		BU		BU		BU		BU	
82	BARLEY, MILLET, BUCKWHEAT		BU		BU		BU		BU	
83	RYE, FLAX 56#BuWt		BU		BU		BU		BU	
84	WHEAT, SOYBEANS, PEAS 60# BuWt		BU		BU		BU		BU	
85	PROT, SALT, MIN & VIT (FISH FERT)		CWT		CWT		CWT		CWT	
86	COMPLETE RATIONS (WORM BED)		TON		TON		TON		TON	
87	LEGUME HAY (PEAT MOSS)		TON		TON		TON		TON	
88	OTHER DRY HAY (COW MANURE)		TON		TON		TON		TON	
89	CORN SILAGE (OTHER MANURE)		TON		TON		TON		TON	
90	GRASS SILAGE		TON		TON		TON		TON	
91	FODDER & STOVER		DAY		DAY		DAY		DAY	
92	PASTURE		LBS		LBS		LBS		LBS	
93	WHOLE MILK FED		LBS		LBS		LBS		LBS	
94	FARM SKIM MILK FED		LBS		LBS		LBS		LBS	
95	HONEY		LBS		LBS		LBS		LBS	
96	SUGAR		LBS		LBS		LBS		LBS	
97	CHEMICALS & OTHER		LBS		LBS		LBS		LBS	
98	---LAGE ***		TON		LBS		LBS		LBS	
99	RED MEATS & BY-PRODUCTS		LBS		LBS		LBS		LBS	
100	POULTRY MEATS & BY-PROD		LBS		LBS		LBS		LBS	
101	FISH PRODUCTS	(101,1)	LBS		LBS		LBS		LBS (101,8)	

Use whole number only unless a decimal is specified.
Round all cents to the closest dollar
Decimal number must be complete if called for
For example, 10 tons of complete ration must be reported as 10.0 tons.

COMPUTER WORK SHEET
 FORM 2
 REVISED OCTOBER, 1977

MINNESOTA VO-AC FARM BUSINESSES
 MANAGEMENT EDUCATION PROGRAM



INCOME AND EXPENSE DATA

CODE _____ NAME _____
 AREA CENTER _____ SCHOOL _____
 DATE _____ CITY _____ STATE _____

LINE	DESCRIPTION	A			B			C			RECORD TOTALS
		PAGE	WHOLE FARM	OPERATOR'S SHARE	LANDLORD'S SHARE	HOUSEHOLD & PARTNERS, ETC.	PAGE	WHOLE FARM	LANDLORD'S SHARE	HOUSEHOLD & PARTNERS, ETC.	
11	VETERINARY EXPENSE	24-25	(1,1)		(1,2)					55	
21	MISCELLANEOUS LIVESTOCK EXPENSE	24-25								56	
31	FEED BOUGHT	28-31								56	
41	FERTILIZERS	38								58	
51	CROP CHEMICALS	38								58	
61	OTHER CROP EXPENSES (EXCL. IRRIG. OPERATING COSTS)	39								58	
71	CUSTOM WORK HIRED	40								58	
81	FOR TRUCK SHARE	40								58	
91	FOR POWER AND CROP MACHINERY	40								58	
101	FOR LIVESTOCK EQUIPMENT SHARE	40								59	
111	LABOR SHARE	40								60-61	
121	REPAIR OF REAL ESTATE	41								61	
131	TRUCK AND AUTO BOUGHT	42								62	
141	POWER AND CROP MACHINERY BOUGHT	42								62	
151	LIVESTOCK EQUIPMENT BOUGHT	42								63	
161	BUILDINGS AND FENCES BOUGHT	42								63	
171	LAND BOUGHT	42								64	
181	DWELLING BOUGHT	42								64	
191	TRUCK AND AUTO SOLD	43	(19,1)							(19,4)	
201	POWER AND CROP MACHINERY SOLD	43									
211	LIVESTOCK EQUIPMENT SOLD	43									
221	BUILDINGS AND FENCES SOLD	43									
231	LAND SOLD	43									
241	DWELLING SOLD	43									
251	PROPERTY TAXES - REAL AND PERSONAL	43									
261	CASH RENT EXPENSE	43									
271	CAS TAX REFUND	44									
281	CAS, OIL, GREASE BOUGHT TOTAL	44-45									
291	FOR TRACTOR AND CROP MACHINERY	44-45									
301	FOR TRUCK	44-45									
311	FOR AUTO	44-45									
321	REPAIR & OPERATION OF POWER & EACH TOTAL	46-51									
331	FOR TRACTOR & CROP MACHINERY	46-51									
341	FOR TRUCK	46-51									
351	FOR AUTO	46-51									
361	REPAIR of LIVESTOCK EQUIPMENT	46-51									
371	LABOR FOR HIRED LABOR	52-53									
381	UTILITY EXPENSE	53									
391	TELEPHONE EXPENSE	53									
401	CERIAL FARM EXPENSE	54									
411	INCOME FROM WORK OFF THE FARM										
421	FOR TRUCK	54									
431	FOR POWER & CROP MACHINERY	54									
441	FOR LIVESTOCK EQUIPMENT	54									
451	LABOR SHARE	55									
461	CO-OP PATRONAGE REFUNDS	55									
471	MISCELLANEOUS FARM INCOME	55	(47,1)		(47,2)						

Base line number only unless specified. Round all cents to the closest dollar. Decimal numbers must be complete if called for.

CROPS MASTER LIST

Code Number	Crop Description	Production Unit	Work Unit	Rank
0023	Barley	Bu.	.30	D
0048	Flax Market	cwt.	.30	C
0072	Oats - Feed	Bu	.30	D
0172	Spring Wheat	Bu.	.30	C
0181	Winter Wheat	Bu.	.30	C
0091	Rye	Bu.	.30	D
0205	Beans, Navy	cwt.	.50	C
0206	Beans, Pinto	cwt.	.50	C
0213	Canning Corn	Ton	.50	B
0220	Corn for Seed	Bu.	.60	A
0222	Corn - Grain	Bu.	.55	A
0281	Sorghum - Grain	cwt.	.50	C
0291	Soybeans	Bu.	.45	A
0300	Sugar Beets	Tons	2.00	A
0311	Sunflowers	Pounds	.40	B
0340	Canning Peas	\$	.40	B
0401	Alfalfa Hay	Tons	.60	B
0491	Other Legume Hay	Tons	.40	C
0600	Wild Hay (Non-Tillable)	Ton	.20	D
0610	Other Grass Hay	Ton	.20	D
0700	Alfalfa Silage	Ton	.40	B
0710	Corn Fodder	Ton	.60	D
0720	Corn Silage	Ton	.60	A
0750	Oat Silage	Ton	.40	C
0770	Sorghum	Ton	.60	C
0810	Alfalfa & Mixed Pasture	\$	.05	D
0820	Other Legume Pasture	\$	.05	D
0860	Pasture - Non-Tillable	\$	.01	D
1996	Other Tillable Land - Idle		.05	D
1994	Set Aside Acres - Tilled	\$	.20	B
	<u>Double Cropped Land</u>			
0293	Soybeans			
0402	Hay			
0226	Corn			
	<u>Rented Out Land Share</u>			
0225	Corn			
0294	Beans			
0176	Wheat			
0403	Alfalfa			
1996	Other Tillable Land (tenants portion)			
	<u>Rented Out Land for Cash</u>			
1997	Land rented out tillable	\$		
1998	Land rented out non-tillable	\$		