DESIGN AND DEVELOPMENT OF A QUESTIONNAIRE AND COMPUTER PROGRAM FOR MARKET ANALYSIS OF FARM MACHINERY STORAGE BUILDINGS

Special Problem for the Degree of M. S.

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Design and Development of a Questionnaire and Computer Program for Market Analysis of Farm Machinery Storage Buildings

By

Bruce Allen Summerer

Special Problem

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ABSTRACT

Design and Development of
Questionnaire and Computer Program
for Market Analysis of Farm Machinery
Storage Buildings

By

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This report deals with the development of a questionnaire to determine the market for and some design parameters of steel farm machinery storage buildings. The analysis was conducted in the states of Michigan and Ohio as a part of a larger statistically designed survey entitled "Farm Machinery Use Study."

A computer program, written to analyze data from the questionnaire and preliminary results for 45 percent of the total sample are included.

Approved _____
Major Professor

Approved _____
Department Chairman

ACKNOWLEDGMENTS

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In addition, the author would like to thank Mr. Harold Hughes and Mr. Charles Hausmann for their inputs to the project and advice concerning the questionnaire and computer analysis.

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REASON FOR SURVEY

With few exceptions the market place of today is dynamic, gigantic and fiercely competitive for the majority of products. This is particularly true of markets in the United States (2). Due to present day economic conditions and this keen competition it has become increasingly difficult for businesses to create and maintain a differential advantage over their competitors in any particular product line. When new products are introduced, competitors respond rapidly and any competitive advantage which the innovating business firm may hold is rapidly eroded away.

Consequently, business firms must develop and market new products at a rapid rate and continually evaluate existing products to determine whether or not they are contributing their share to the profits of the firm. If a particular product proves unprofitable or its profit potential is declining then it should be replaced with one of better profit potential.

New product development is expensive and costs incurred are generally not recouped immediately. Hence, the decision to manufacture and market a new product, by any given firm, must be based upon the best possible information. A method used to obtain information about a particular product is to survey a statistical sample of those who might be potential purchasers of the product in question.

The management of the John Deere Plow Works, a Division of Deere and Company of Moline, Illinois wished to utilize a portion of the Plow Works facility to product another product. Hopefully, a product which would be in a growth market.

According to Messrs. Priester and Olsen of the John Deere Plow Works three major strengths which the Plow Works wished to capitalize on were:

1) Extensive facilities and ability to form steel.

2) A strong dealer network with good distribution systems, and

3) A well established brand name (John Deere) in the farm machinery industry.

They wished to determine the feasibility of manufacturing and marketing a steel machinery storage building. They felt that the information obtained from a survey of a statistical sample of farmers in Michigan and Ohio would help them in making this decision.

An agreement was made to include this survey with another concerned with farm machinery use which was being conducted by Agricultural Engineering personnel at Michigan State University and Ohio State University. This agreement provided that the questionnaire on farm machinery storage buildings would be administered by a personal interviewer and all those farms surveyed in the farm machinery use study would also be surveyed on farm machinery storage buildings.

QUESTIONNAIRE DESIGN AND DEVELOPMENT

As a basis for the design of an appropriate questionnaire, specific and measurable objectives had to be delineated. Broad objectives were established in cooperation with John Deere Plow Works personnel. In addition, information gained by surveying 34 university agricultural engineering departments concerned with farm buildings and 13 manufacturers of metal farm buildings served as a guideline to insure that the questions and objectives were relevant to current needs and practices. Following are primary objectives of the survey:

1. Determine the percentage of farmers in Michigan and Ohio who are likely to purchase a machinery storage building.
2. Determine the preferred design features of machinery storage buildings.
3. Determine what structures are in demand other than farm machinery storage buildings.
4. Determine the most common or preferable method of building erection, i.e. farmer or contractor.
5. Determine what, if any, are the most common criticisms of machinery storage buildings.

Objectives 1 and 2 are requirements for this survey concerned with the market potential of farm machinery storage buildings. Number one should indicate if there are sufficient customers and number two what they would most prefer in terms of the product.

Objective 3 should provide guides for future market expansion and diversification in the area of metal buildings.

Objective 4 was included because the method of erection will have profound influence on the merchandising methods used and the optimum method of distribution.

Objective 5 was included to avoid as many pitfalls in the design and marketing of a new product as possible. Clearly, it would show lack of planning if anyone were to design and attempt to market a machinery storage building which had undesirable characteristics.

In addition to the above objectives, other constraints had to be considered in the design of the questionnaire. Most of these are dictated by courtesy, common sense and by discussion with persons experienced with interviewing rural people. For example, the questionnaire must not take an excessive amount of time to answer in order that equally sincere and/or accurate responses are given by the interviewed party to all questions. If the questions are ambiguous or redundant the person being interviewed is likely to lose interest and supply answers which will end the interview in the shortest possible time instead of giving an accurate reflection of his opinion. Similarly, the physical size of the questionnaire must not appear too large or the interviewed party will become negatively influenced before the interview begins. Further considerations included efforts to make the questionnaire as easy to follow as possible for the interviewer and to minimize misinterpretation of questions and instructions. The social impact of some questions also had to be considered so that they were not offensive to the interviewed party (9a).

Before arriving at the final type and design of questionnaire much preliminary work was done. Many persons were consulted to obtain their suggestions and criticisms concerning the proposed market analysis and the effectiveness of the questionnaire.

As information was obtained concerning the types of questions to be used and the objectives became more clearly defined, numerous questions were tried within different questionnaire formats. In all, seven questionnaire formats were tried. Results of the field trials indicated that the persons interviewed should be progressively categorized by and directed through the questionnaire in such a way that they clearly understand the questions and do not have to respond to redundant questions. The need for this categorization is best illustrated by example; if a person has no intention of acquiring a machinery storage building, then his opinions concerning size, features and the like are not pertinent. He will probably never be a customer and his "off the cuff" answers would be misleading. Thus, the questionnaire was designed so that persons in this category did not answer questions on features, size etc.

For the purposes of the survey, it was felt that interviewed parties would fall into the following categories:

1. Those not interested in machinery storage buildings,
2. Those having recently constructed a machinery storage building, and
3. Those having interest in machinery storage buildings with possible intentions to build in the forseeable future.

The questionnaire (Appendix 1) was then designed so that the interviewed party only answered questions pertaining to one of the above categories. If, however, a person fell into more than one of the categories, he answered questions pertaining to both categories. In this respect the questionnaire was self administering.

With this design, all interviewees answer questions 1, 2, 3, 4, 5, 6, 19 and 20. Those in category 1 also answer questions 5, 6, 7, and 8. Persons in category 2 answer additional questions 7 - 14. Those persons in category 3 answer all questions.

Examination of the above in relation to the attached questionnaire will reveal that no one interviewed will have to answer unnecessary questions nor questions not relevant to their opinions or future plans. It is assumed that persons not having positive dispositions toward machinery storage buildings should not influence the market analysis in terms of design preferences.

Table 1 (Appendix 2) is a breakdown of questions and objectives; an "X" denotes satisfaction of an objective by a specific question.

Examination of the figure will reveal objectives 1 and 2 are satisfied by numerous questions. It was felt that these objectives were most important to the market analysis and are most difficult to deal with directly on a survey basis. Hence, the high proportion of questions for these objectives. Objectives 3, 4 and 5 are each satisfied by one question. These objectives are more straight forward in nature and can be satisfied quite directly by changing the wording of the objective from that of a statement to that of an interrogative.

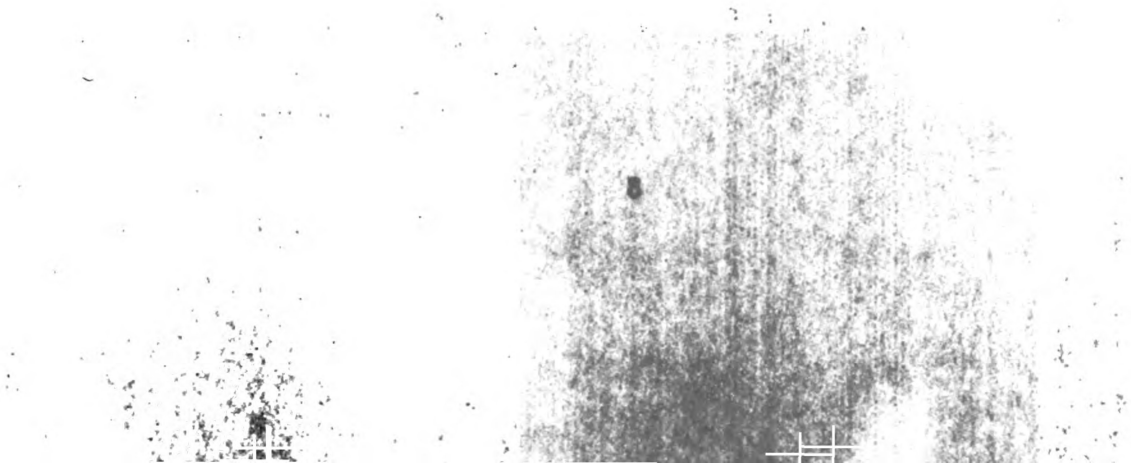
IMPLEMENTATION OF SURVEY

This survey will take the entire year of 1971 to complete, as the "Farm Machinery Use Study" runs from 1-1-71 to 12-31-71. Approximately 2,500 farmers are to be interviewed in the states of Michigan and Ohio, with the number approximately equally divided between the two states. The basis for choosing representative farmers and the type of farms (in Michigan) was the 1964 Michigan census. This was chosen because it was the most accurate and current source of data available at the time the survey was planned. Using this census, counties were then broken into five basic farming categories; dairy, fruit, livestock, cash crop or general. From these categories, a county and an alternate were randomly chosen to be representative. From within these counties, farms were randomly chosen for interviews within the farming areas. A starting farm (starting point) was randomly chosen from the County Extension Agent's mailing list. If this starting farm qualified as a farm according to the U.S. Census definition and it used farm machinery, then that farm and the next seven down the road were surveyed.

Interviewers were well known people within their respective geographic areas and had previous experience in the agri-business area. Typical examples of interviewers are soil conservationists and County Extension Agents. Women active in the farming community were also used as interviewers.

Training sessions were held at Ohio State University and Michigan State University, during the month of December 1970, for interviewers in those states. During these training sessions, some background was given concerning

the survey as well as general project instructions and detailed instructions on the use of the questionnaire and the forms used for the "Farm Machinery Use Study." The instructions included a basic description of what the form was designed to do, and detailed instructions on the type of information that was desired for each question. Interviewers were encouraged to make clarifying remarks on the form or to give additional information as they saw fit.



METHOD OF DATA ANALYSIS

The program to analyze data from this survey appears in Appendix 4.

The output from the program consists of percentages of respondents answering in a particular manner to a particular question. For example, for question number 10 the percentages of persons preferring roof styles a, b, c, d, e and f would be given. These percentages are based on the total number of respondents in a given category as explained below. In addition to these percentages the average acreage of farms surveyed, average length and width of recently constructed and planned buildings will be given. Again these averages will be for the particular category indicated.

The categories used will be as follows:

1. The respondent
    a. Operator
    b. Wife of Operator
    c. Other
2. The type of farming operation
    a. Cash Crop
    b. Dairy
    c. Livestock
    d. Fruit
    e. General farming
3. The acreage operated
    a. 50 acres or less
    b. 51 to 200 acres
    c. 201 to 400 acres
    d. More than 400 acres

4. A combination of farm type and acreage operated. For example:

   a. Cash Crop farms of 50 acres or less

   b. Cash Crop farms of 51 to 200 acres

   c. Cash Crop farms of 201 to 400 acres

   d. Cash Crop farms of more than 400 acres

5. A composite or total analysis of all respondents.

The categorization was done for several reasons. It is hoped that categorization will better enable the users of the data to determine:

1. What, if any, are the particular preferences in machinery storage buildings both in general and as related to a particular type of farming operation.
2. How farm size relates to building requirements,
3. If the class of respondent greatly influences the outcome of the survey,
4. How farm type and size together influence machinery storage building requirements, and
5. Which marketing approaches would prove most advantageous i.e., type of advertising, type of distribution system, options and features required.

The input to the computer program will consist of two standard computer cards which contain the coded data from each questionnaire submitted. These cards will have on them a number relating to the specific farm surveyed and the respondents replies to the various questions. For questions which are open ended or can be answered "other _____", various possible responses have been delineated so that qualitative analysis can be made.

More detailed information concerning the functioning of the program is given in "Comments on Computer Program", (Appendix 3).

See Appendix 5 for a sample output from the program.

PRELIMINARY RESULTS

This report summarizes the results of the machinery storage survey up through August 1, 1971. This represents approximately 45% of the total sample.

A brief analysis of the market potential for Michigan and Ohio is shown in Tables 2 and 3 (Appendixes 6 and 7). For the Michigan analysis, the number of farms was taken from the 1969 census of agriculture. The Ohio analysis is based on a 1964 farm census and projected to a 1969 figure by assuming a 16.6% decrease in number of farms as was experienced in Michigan. The Michigan analysis shows that 13,621 farm machinery storage buildings will be built in Michigan in the next five years. In Ohio the market potential is 17,300 farm machinery storage buildings in the next five years.

Table 4 (Appendix 8) is a brief analysis of the market potential in Michigan based on the type of farm. The number of farms in each classification is based on the 1964 farm census (1969 census not yet available). It should be noted that the greatest market potential for machinery storage buildings is in the cash crop and dairy farm enterprises.

CONCLUSIONS:

1. The survey shows that the demand for machinery storage buildings in the next five years in Michigan will be 13,621 and in Ohio, 17,300 for a total of 30,921 buildings. This represents an increase in the demand for machinery storage buildings of 3.5%.

2. In Michigan the dairy and cash crop farmers will account for 70% of the potential market for machinery storage buildings.

3. The greatest demand for machinery storage buildings in Michigan according to size of farm is in the 50-200 and 200-400 acre range. In Ohio, 42% of the demand will be in the 0-50 acre range and 44% from 50-200 acre range.

4. Analysis of the data show that 59.8% of the Michigan and Ohio farmers store their machinery in some type of machinery storage building. 15.3% store most of their machinery out of doors.

5. 61.2% of the Michigan and Ohio farmers surveyed indicated that they thought a machinery storage building was a good investment for them on their farms.

6. Of the Michigan and Ohio farmers who indicated that a machinery storage building is a good investment for them on their farms:

a. 55% prefer steel sheathing

b. 14% prefer steel framing and 8.5% have no preference

c. 66% would like a farm shop included in the machinery storage building

d. 65% preferred the common gable type roof. The modified gable and the shed type accounted for about 14.5% each.

e. 34% preferred the side opening and 27% preferred a side and end opening design which are designs A and E on the questionnaire

f. More than 70% indicated that they did not want any open sides on the building

g. 55% indicated they would construct this building by themselves

h. Approximately 33% were planning on building a machinery storage building in the next 5 years

i. The average size building planned will be 37.6 X 68.7 feet. This represents an increase over the size of past machinery storage buildings of 1.7 feet in width and 6.3 feet in length.

j. An overwhelming 70% of those who thought machinery storage buildings were a good investment prefer sliding doors

k. More than 50% wanted electrical outlets in the storage buildings and about 40% wanted sky lights

l. The most popular features desired in a machinery storage building were, electrical outlets, concrete floors and a service door.

7. 22.3% of all Michigan and Ohio farms interviewed had plans for some other type structure: 4.9% of the farmers planned some type of crop storage, 3.7% planned livestock housing, 3.1% planned dairy housing and 2.3% planned swine housing.

8. 24.1% of all Michigan and Ohio farmers are considering the purchase of a cab on a new tractor.

REFERENCES

1. Bliss, Perry, Marketing and the Behavioral Sciences; Selected Readings, 2nd Edition, Allyn & Bacon, Inc., Boston, Copyright 1967

2. Sturdivant, F. D., Et. Al., Managerial Analysis in Marketing, Scott Foresman and Company, Copyright 1970

3. Kotler, Marketing Management: Analysis Planning & Control

4. Alexander, Et. Al., Marketing Definitions (A.M.A.)

5. Levitt, Theo., Innovation in Marketing; New Perspectives For Profit and Growth, McGraw-Hill, New York, 1962

6. Drucker, Peter F., The Practice of Management, Harper and Row, Publishers, Inc., New York, 1954

7. Howard, J. A. & Sheth, J. N. "Theory of Buyer Behavior".

8. McKitterick, J. B., "What is the Marketing Management Concept?"

9. The following people were consulted concerning Questionnaire Development and Marketing Theory:

   a. E. Rogers, Professor of Communications

   b. Willard C. Warrington, Director of Evaluation Services

   c. Richard Pfister, Assoc. Professor of Ag. Engineering

   d. Wilbur Dexter, Professor of Ag. Economics

   e. Gale Strank, Deere & Company, Moline, Illinois

   f. Leo G. Erickson, Professor of Marketing and Transportation Administration

   g. P. G. Priester, General Manager, John Deere Plow Works, Moline, Illinois

   h. G. Olsen, Engineer, John Deere Plow Works, Moline, Illinois

APPENDIX

BASIC INFORMATION

Farm Machinery Use and Storage

DATE _____ FARM NO. | | | | | | (Co. | Visit | No.)

NAME _____ TELEPHONE _____

ADDRESS _____ CITY _____ ZIP _____

PERSON ANSWERING QUESTIONS? ☐Operator ☐Wife of Operator ☐Other _____

1. Are you (operator) employed off the farm? ☐NO ☐YES → Do you work more hours ☐off farm or ☐on farm.

2. From what farming operation do you receive most of your income?
☐Cash Crop ☐Dairy ☐Livestock ☐Fruit ☐General Farming

3. How many acres of cropland do you operate including pastures and land diverted to soil bank? (This includes rented land, orchards, etc. where you could operate machinery).
_____ ACRES.

4. Where do you store most of your farm machinery? _____

5. Have you put up a new machinery storage building in the last 5 years?
☐NO ☐YES →
a. What SIZE is it? (width)_____ (length) _____
b. Is there anything about that building that you would change if you could?
_____

6. Do you think that a separate machinery storage building is worth the investment for you on your farm?
☐YES ☐NO → SKIP TO QUESTION 19

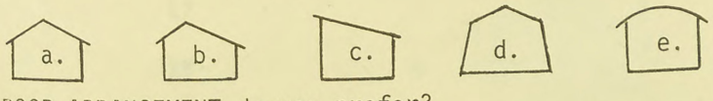
LET ME GET AN INDICATION OF YOUR PREFERENCES FOR A MACHINERY STORAGE BUILDING.

7. What outside COVERING do you prefer? ☐★Aluminum ☐★Steel ☐Wood ☐Other
★If Steel or Aluminum ☐Color Coating or ☐Unfinished

8. What FRAMING Material do you prefer? ☐Steel ☐Wood ☐no preference

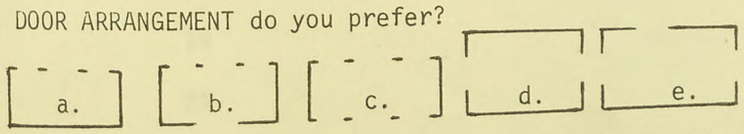
9. Do you want a shop in this building? ☐NO ☐YES → Heated? ☐NO ☐YES

10. What style ROOF do you prefer?



f. Other (sketch)

11. What DOOR ARRANGEMENT do you prefer?



f. Other (sketch)

12. Would you have any open sides on this building? How Many? 1 2 3 4 or ☐None

13. Would you put up a machinery storage building by YOURSELF☐; or hire a CONTRACTOR☐.

14. Do you have plans to build or buy a machinery storage building in the next 5 years?
☐YES ☐NO → SKIP TO QUESTION 19

15. How big do you expect it to be? (width)_____ (length)_____ or ☐don't know.

16. What kind of a machinery door do you want? ☐Hinged ☐Sliding ☐Overhead or ☐No Door.

17. What kind of LIGHTING? (check all that apply) ☐Windows ☐Skylights ☐Electrical ☐None

18. Would you want any of the following features in this building? (check all that apply)
☐Ventilators ☐Partitions ☐Grain Storage ☐Insulation
☐Electrical Outlets ☐Service Door ☐Concrete Floor ☐Other _____.

19. Do you plan any other farm buildings in the next 5 years?
☐NO ☐YES (state) _____.

20. Is a cab on a new tractor an investment that you might make in the next five years?
☐NO ☐YES →
Which two features would be most important to you? (check)
☐Weather protection ☐Overturn protection ☐Heater - defroster
☐Air conditioner ☐Noise and vibration reduction ☐Comments: _____.
Which is the least important? [Indicate by zero (0)].

TABLE 1

QUESTIONS vs. OBJECTIVES

Question No.	Primary Objective No. 1	2	3	4	5
1	X				
2	X				
3	X				
4	X				
5	X	X			X
6	X				
7		X			
8		X			
9		X			
10		X			
11		X			
12		X			
13				X	
14	X				
15		X			
16		X			
17		X			
18		X			
19			X		
20					

An "X" indicates satisfaction of an objective by a question.

COMMENTS ON COMPUTER PROGRAM

1. The data is categorized by a series of logical "IF" statements.
2. The data is initially stored in the array "X" and is then transferred to another array as directed by the "IF" statements.
3. Percentages listed are based on the total number of respondents in the given category.
4. The program is designed to accept only 0's and 1's as input except for the FARM NUMBER, acreage and length and width inputs.
5. Category variables used in the program are as follows:

   RO - Operator respondent

   RW - Wife respondent

   ROR- Other respondent

   CC - Cash Crop farm

   DY - Dairy farm

   SL - Livestock farm

   FT - Fruit farm

   GF - Several farms

   A50 - 50 acre or less farms

   A200 - from 50 to 200 acre farms

   A400 - from 200 to 400 acre farms

   AGT4 - farms greater than 400 acres

   CC50 - Cash crop farms of 50 acres or less

   CC200- Cash crop farms from 50 to 200 acres

   CC400- Cash crop farms from 200 to 400 acres

   CC4G - Cash crop farms greater than 400 acres

DY50 - Dairy farms of 50 acres or less

DY200 - Dairy farms from 50 to 200 acres

DY400 - Dairy farms from 200 to 400 acres

DY4G - Dairy farms greater than 400 acres

SL50 - Livestock farms of 50 acres or less

SL200 - Livestock farms from 50 to 200 acres

SL400 - Livestock farms from 200 to 400 acres

SL4G - Livestock farms greater than 400 acres

FT50 - Fruit farms of 50 acres or less

FT200 - Fruit farms from 50 to 200 acres

FT400 - Fruit farms from 200 to 400 acres

FT4G - Fruit farms greater than 400 acres

6. Data Interpretation:

   a. The output from the program is of the same format for each category.

   b. The category is indicated at the top of each page.

   c. The question numbers on the output appear as they do on the questionnaire itself.

   d. The following is a key to be used in correlating the response with the proper percentage:

	Operator	Wife of Operator	Other	
1.	No	Yes	Off farm	On farm
2.	Cash Crop	Dairy	Livestock	Fruit	General
3.	Average	Acres		

4. Outside Machinery storage barn covered other

5. No Yes Avg. Width Avg. length
Size material doors design too short concrete other

6. Yes No

7. Covering: alum. wood steel other color coat unfinished

8. Frame: steel wood no pref.

9. No Yes (heated: No Yes)

10. Roof: a b c d e special other

11. Door: Arr. a b c d e special special other

12. Open side: 1 2 3 4 none

13. Yourself Contractor

14. Yes No

15. Avg. width Avg. length don't know

16. Door: hinged sliding overhead don't know

17. Lighting: Windows skylights electrical none

18. Features:
(Types in consecutive order as listed) (1) Vent., (2) Part, (3) Grain Storage, (4) Insul., (5) Elec. Outlets, (6) Service Door, (7) Conc. Floor, (8) Other

19. Other farm buildings: No Yes
(Types in consecutive order as listed) (1) livestock housing, (2) dairy free stall, (3) poultry, (4) swine, (5) horse barn, (6) milk house, (7) garage, (8) shop, (9) hay storage, (10) grain storage silos, (11) other

20. No Yes Weather prot., Heater-defroster, air conditioner, noise and vibration reduction, comments

```
      PROGRAM JADE (INPUT,OUTPUT)
      DIMENSION X(110),RO(110),RW(110),ROR(110),CC(110),DY(110),SL(110),
     1FT(110),GF(110),A50(110),A200(110),A400(110),AGT4(110),CC50(110),C
     2C200(110),CC400(110),CC4G(110),DY50(110),DY200(110),DY400(110),DY4
     3G(110),SL50(110),SL200(110),SL400(110),SL4G(110),FT50(110),FT200(1
     410),FT400(110),FT4G(110),GF50(110),GF200(110),GF400(110),GF4G(110)
     5,XX(110),FN(2200),FN2(2200),CT(100),CTA(100),KCT(100)
      INTEGER FN,FN2
      DATAX,RO,RW,ROR,CC,DY,SL,FT,GF,A50,A200,A400,AGT4,CC50,CC200,CC400
     1,CC4G,DY50,DY200,DY400,DY4G,SL50,SL200,SL400,SL4G,FT50,FT200,FT400
     2,FT4G,GF50,GF200,GF400,GF4G,XX,FN,CT,FN2,CTA,KCT/8440*0.00000/
      READ10,NDS
   10 FORMAT(I4)
      PRINT 6000
 6000 FORMAT(*1*,15(/),27X,80(*X*)/27X,80(*X*)/27X,*XX*,76X,*XX*/27X,*XX
     A*,30X,*M I C H I G A N *,30X,*XX* / 27X, *XX*, 76X,*XX*/ 27X,*X
     BX*,76X,*XX*/27X,*XX*,22X,*S T A T E U N I V E R S I T Y *,22X,
     1*XX*/
     C27X,*XX*,76X,*XX*/ 27X,*XX*, 9X,*F A R M M A C H I N E R Y S T
     D O R A G E S U R V E Y*,10X,*XX*/27X,*XX*,76X,*XX*/27X,*XX*,76X,
     E*XX*/27X,*XX*,76X,*XX*/27X,*XX*,32X,*SPONSORED BY*,32X,*XX*/
     F27X, *XX*,76X,*XX*/27X,*XX*,20X,*AGRICULTURAL ENGINEERING DEPARTM
     GENT*,21X,*XX*/ 27X,*XX*,36X,*AND*,37X,*XX*/ 27X,*XX*,27X,*JOHN DE
     HERE PLOW WORKS*,28X,*XX*/27X,*XX*,76X,*XX*/27X,80(*X*)/ 27X,
     I80(*X*))
      PRINT 4100,NDS
 4100 FORMAT(1H1,*NUMBER OF DATA SETS THIS RUN = *,I4)
      XNDS=NDS
      DO 2 KM=1,100
      CTA(KM)=1.0000000
      CT(KM)=1.000000000
    2 CONTINUE
      DO 3500 I=1,NDS
      XI=I
      READ30,FN(I),(X(J),J=1,62),FN2(I),(X(J),J=63,108)
   30 FORMAT(1X,I5,12F1.0,F5.0,7F1.0,2F4.1,40F1.0/1X,I5,6F1.0,2F4.1,38F1
     1.0)
C RESPONDENT SORT
      IF(X(1).LT.0.5.AND.X(2).LT.0.5.AND.X(3).LT.0.5)X(1)=1.0000
      IF(X(1).GT..5)GO TO 100
      IF(X(2).GT..5)GO TO 120
      IF(X(3).GT..5)GO TO 140
C FARM TYPE SORT
 1000 IF(X(8).LT.0.5.AND.X(9).LT.0.5.AND.X(10).LT.0.5.AND.X(11).LT.0.5.
     1AND.X(12).LT.0.5)X(12)=1.0000
      IF (X(8).GT..5)GO TO 160
      IF(X(9).GT..5)GO TO 180
      IF(X(10).GT..5)GO TO 200
      IF(X(11).GT..5)GO TO 220
      IF(X(12).GT..5)GO TO 240
C ACREAGE SORT
 2000 IF(X(13).LE.50.)GO TO 260
      IF(X(13).LE.200.)GO TO 280
      IF(X(13).LE.400.)GO TO 300
      IF(X(13).GT.400.)GO TO 320
```

```
C SORT FOR FARM TYPE AND SIZE
 3000 IF(X(8).GT.0.5.AND.X(13).LE.50)GO TO 340
      IF(X(8).GT.0.5.AND.X(13).LE.200.)GO TO 360
      IF(X(8).GT.0.5.AND.X(13).LE.400.)GO TO 380
      IF(X(8).GT.0.5.AND.X(13).GT.400.)GO TO 400
      IF(X(9).GT.0.5.AND.X(13).LE.50.)GO TO 420
      IF(X(9).GT.0.5.AND.X(13).LE.200.)GO TO 440
      IF(X(9).GT.0.5.AND.X(13).LE.400.)GO TO 460
      IF(X(9).GT.0.5.AND.X(13).GT.400.)GO TO 480
      IF(X(10).GT.0.5.AND.X(13).LE.50.)GO TO 500
      IF(X(10).GT.0.5.AND.X(13).LE.200.)GO TO 520
      IF(X(10).GT.0.5.AND.X(13).LE.400.)GO TO 540
      IF(X(10).GT.0.5.AND.X(13).GT.400.)GO TO 560
      IF(X(11).GT.0.5.AND.X(13).LE.50.)GO TO 580
      IF(X(11).GT.0.5.AND.X(13).LE.200.)GO TO 600
      IF(X(11).GT.0.5.AND.X(13).LE.400.)GO TO 620
      IF(X(11).GT.0.5.AND.X(13).GT.400.)GO TO 640
      IF(X(12).GT.0.5.AND.X(13).LE.50.)GO TO 660
      IF(X(12).GT.0.5.AND.X(13).LE.200.)GO TO 680
      IF(X(12).GT.0.5.AND.X(13).LE.400.)GO TO 700
      IF(X(12).GT.0.5.AND.X(13).GT.400.)GO TO 720
      PRINT 3400,(X(IKL),IKL=1,13)
 3400 FORMAT(1HO,*HAVE NOT SATISFIED CONDITIONS FOR FARM TYPE AND SIZE
     1SORT*,//,13(F9.2))
      GO TO 3500
C  END OF SORTING ROUTINES
  100 DO 101 II=1,108
      RO(II)=RO(II)+X(II)
  101 CONTINUE
      ROA=RO(13)/CT(1)
      CT(1)=CT(1)+1.
      IF(X (21).LE. 0.5)GO TO 102
      AROW=RO(21)/CTA(1)
      AROL=RO(22)/CTA(1)
      CTA(1)=CTA(1)+1.
  102 IF( X(69).LE. 0.5)GO TO 1000
      BROW=RO(69)/CTA(2)
      BROL=RO(70)/CTA(2)
      CTA(2)=CTA(2)+1.
      GO TO 1000
  120 DO 121 JJ=1,108
      RW(JJ)=RW(JJ)+X(JJ)
  121 CONTINUE
      RWA=RW(13)/CT(2)
      CT(2)=CT(2)+1.
      IF( X(21).LE. 0.5)GO TO 122
      ARWW=RW(21)/CTA(3)
      ARWL=RW(22)/CTA(3)
      CTA(3)=CTA(3)+1.
  122 IF( X(69).LE. 0.5)GO TO 1000
      BRWW=RW(69)/CTA(4)
      BRWL=RW(70)/CTA(4)
      CTA(4)=CTA(4)+1.
      GO TO 1000
  140 DO 141 KK=1,108
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```
                ROR(KK)=ROR(KK)+X(KK)
              141 CONTINUE
                  RORA=ROR(13)/CT(3)
                  CT(3)=CT(3)+1.
      115         IF(  X(21).LE. 0.5)GO TO 142
                  ARORW=ROR(21)/CTA(5)
                  ARORL=ROR(22)/CTA(5)
                  CTA(5)=CTA(5)+1.
              142 IF(  X(69).LE. 0.5)GO TO 1000
      120         BRORW=ROR(69)/CTA(6)
                  BRORL=ROR(70)/CTA(6)
                  CTA(6)=CTA(6)+1.
                  GO TO 1000
              160 DO 161 LL=1,108
      125         CC(LL)=CC(LL)+X(LL)
              161 CONTINUE
                  CCA=CC(13)/CT(4)
                  CT(4)=CT(4)+1.
                  IF( X(21).LE. 0.5)GO TO 162
      130         ACCW=CC(21)/CTA(7)
                  ACCL=CC(22)/CTA(7)
                  CTA(7)=CTA(7)+1.
              162 IF( X(69).LE. 0.5)GO TO 2000
                  BCCW=CC(69)/CTA(8)
      135         BCCL=CC(70)/CTA(8)
                  CTA(8)=CTA(8)+1.
                  GO TO 2000
              180 DO 181 MM=1,108
                  DY(MM)=DY(MM)+X(MM)
      140     181 CONTINUE
                  DYA=DY(13)/CT(5)
                  CT(5)=CT(5)+1.
                  IF( X(21).LE. 0.5)GO TO 182
                  ADYW=DY(21)/CTA(9)
      145         ADYL=DY(22)/CTA(9)
                  CTA(9)=CTA(9)+1.
              182 IF( X(69).LE. 0.5)GO TO 2000
                  BDYW=DY(69)/CTA(10)
                  BDYL=DY(70)/CTA(10)
      150         CTA(10)=CTA(10)+1.
                  GO TO 2000
              200 DO 201 NN=1,108
                  SL(NN)=SL(NN)+X(NN)
              201 CONTINUE
      155         SLA=SL(13)/CT(6)
                  CT(6)=CT(6)+1.
                  IF( X(21).LE. 0.5)GO TO 202
                  ASLW=SL(21)/CTA(11)
                  ASLL=SL(22)/CTA(11)
      160         CTA(11)=CTA(11)+1.
              202 IF( X(69).LE. 0.5)GO TO 2000
                  BSLW=SL(69)/CTA(12)
                  BSLL=SL(70)/CTA(12)
                  CTA(12)=CTA(12)+1.
      165         GO TO 2000
```

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      220 DO 221 I1=1,108
          FT(I1)=FT(I1)+X(I1)
      221 CONTINUE
          FTA=FT(13)/CT(7)
  170     CT(7)=CT(7)+1.
          IF( X(21).LE. 0.5)GO TO 222
          AFTW =FT(21)/CTA(13)
          AFTL=FT(22)/CTA(13)
          CTA(13)=CTA(13)+1.
  175 222 IF( X(69).LE. 0.5)GO TO 2000
          BFTW=FT(69)/CTA(14)
          BFTL=FT(70)/CTA(14)
          CTA(14)=CTA(14)+1.
          GO TO 2000
  180 240 DO 241 I2=1,108
          GF(I2)=GF(I2)+X(I2)
      241 CONTINUE
          GFA=GF(13)/CT(8)
          CT(8)=CT(8)+1.
  185     IF( X(21).LE. 0.5)GO TO 242
          AGFW=GF(21)/CTA(15)
          AGFL=GF(22)/CTA(15)
          CTA(15)=CTA(15)+1.
      242 IF( X(69).LE. 0.5)GO TO 2000
  190     BGFW=GF(69)/CTA(16)
          BGFL=GF(70)/CTA(16)
          CTA(16)=CTA(16)+1.
          GO TO 2000
      260 DO 261 I3=1,108
  195     A50(I3)=A50(I3)+X(I3)
      261 CONTINUE
          A50A=A50(13)/CT(9)
          CT(9)=CT(9)+1.
          IF(  X(21).LE. 0.5)GO TO 262
  200     AA50W=A50(21)/CTA(17)
          AA50L=A50(22)/CTA(17)
          CTA(17)=CTA(17)+1.
      262 IF(  X(69).LE. 0.5)GO TO 3000
          BA50W=A50(69)/CTA(18)
  205     BA50L=A50(70)/CTA(18)
          CTA(18)=CTA(18)+1.
          GO TO 3000
      280 DO 281 I4=1,108
          A200(I4)=A200(I4)+X(I4)
  210 281 CONTINUE
          A200A=A200(13)/CT(10)
          CT(10)=CT(10)+1.
          IF(   X(21).LE. 0.5)GO TO 282
          AA200W=A200(21)/CTA(19)
  215     AA200L=A200(22)/CTA(19)
          CTA(19)=CTA(19)+1.
      282 IF(   X(69).LE. 0.5)GO TO 3000
          BA200W=A200(69)/CTA(20)
          BA200L=A200(70)/CTA(20)
  220     CTA(20)=CTA(20)+1.
```

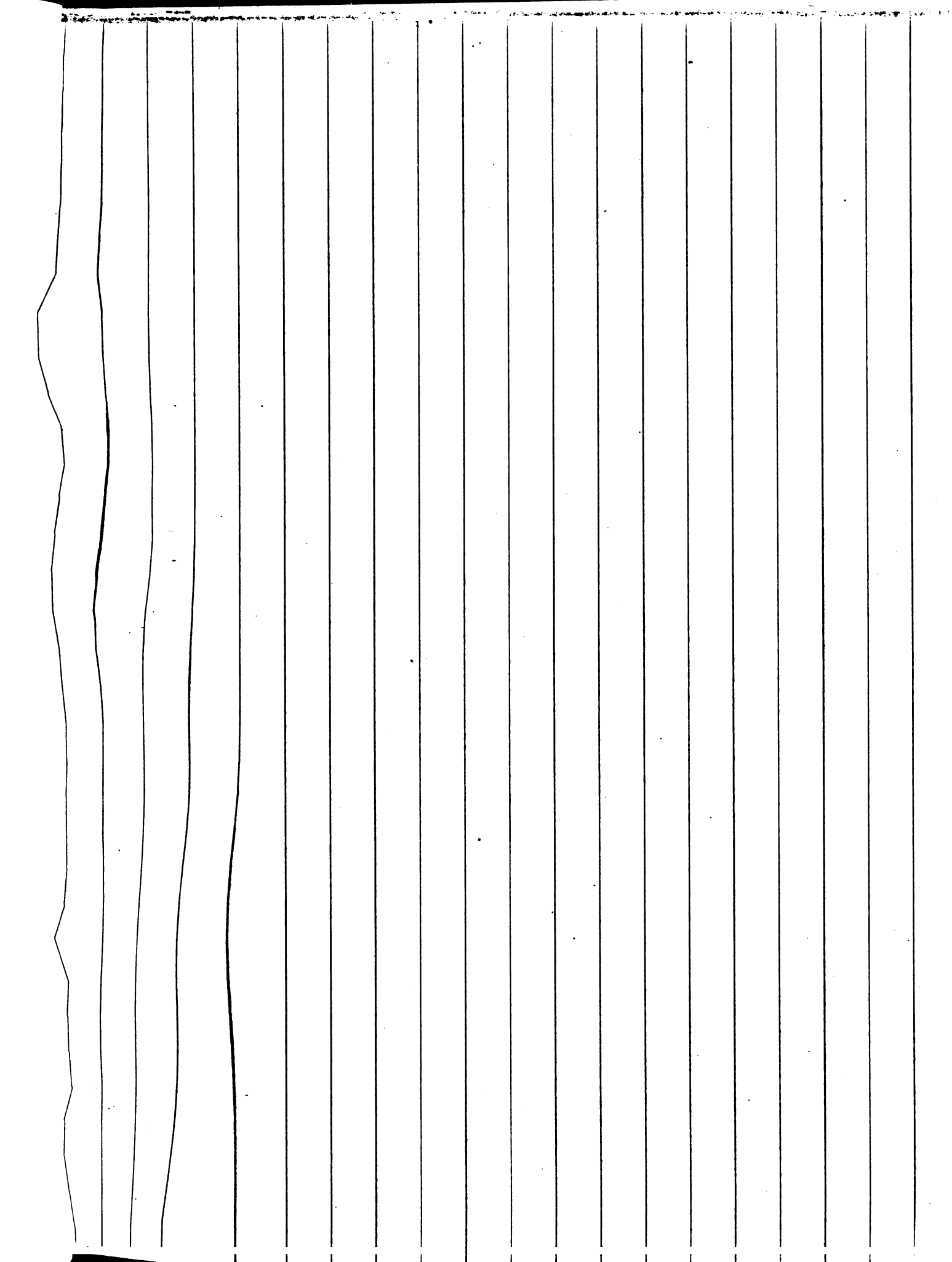

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      GO TO 3000
  300 DO 301 I5=1,108
      A400(I5)=A400(I5)+X(I5)
  301 CONTINUE
  225 A400A=A400(13)/CT(11)
      CT(11)=CT(11)+1.
      IF(   X(21).LE. 0.5)GO TO 302
      AA400W=A400(21)/CTA(21)
      AA400L=A400(22)/CTA(21)
  230 CTA(21)=CTA(21)+1.
  302 IF(   X(69).LE. 0.5)GO TO 3000
      BA400W=A400(69)/CTA(22)
      BA400L=A400(70)/CTA(22)
      CTA(22)=CTA(22)+1.
  235 GO TO 3000
  320 DO 321 I6=1,108
      AGT4(I6)=AGT4(I6)+X(I6)
  321 CONTINUE
      AGT4A=AGT4(13)/CT(12)
  240 CT(12)=CT(12)+1.
      IF(X(21).LE.0.5)GO TO 322
      AAGT4W=AGT4(21)/CTA(23)
      AAGT4L=AGT4(22)/CTA(23)
      CTA(23)=CTA(23)+1.
  245 322 IF(X(69).LE.0.5)GO TO 3000
      BAGT4W=AGT4(69)/CTA(24)
      BAGT4L=AGT4(70)/CTA(24)
      CTA(24)=CTA(24)+1.
      GO TO 3000
  250 340 DO 341 I7=1,108
      CC50(I7)=CC50(I7)+X(I7)
  341 CONTINUE
      CC50A=CC50(13)/CT(13)
      CT(13)=CT(13)+1.0
  255 IF(   X(21).LE. 0.5)GO TO 342
       ACC50W=CC50(21)/CTA(25)
       ACC50L=CC50(22)/CTA(25)
      CTA(25)=CTA(25)+1.
  342 IF(   X(69).LE. 0.5)GO TO 3500
  260  BCC50W=CC50(69)/CTA(26)
       BCC50L=CC50(70)/CTA(26)
      CTA(26)=CTA(26)+1.
      GO TO 3500
  360 DO 361 I8=1,108
  265 CC200(I8)=CC200(I8)+X(I8)
  361 CONTINUE
      CC200A=CC200(13)/CT(14)
      CT(14)=CT(14)+1.0
      IF(    X(21).LE. 0.5)GO TO 362
  270  ACC200W=CC200(21)/CTA(27)
       ACC200L=CC200(22)/CTA(27)
      CTA(27)=CTA(27)+1.
  362 IF(    X(69).LE. 0.5)GO TO 3500
       BCC200W=CC200(69)/CTA(28)
  275  BCC200L=CC200(70)/CTA(28)
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      CTA(28)=CTA(28)+1.
      GO TO 3500
  380 DO 381 I9=1,108
      CC400(I9)=CC400(I9)+X(I9)
  381 CONTINUE
      CC400A=CC400(13)/CT(15)
      CT(15)=CT(15)+1.0
      IF(    X(21).LE. 0.5)GO TO 382
      ACC400W=CC400(21)/CTA(29)
      ACC400L=CC400(22)/CTA(29)
      CTA(29)=CTA(29)+1.
  382 IF(    X(69).LE. 0.5)GO TO 3500
      BCC400W=CC400(69)/CTA(30)
      BCC400L=CC400(70)/CTA(30)
      CTA(30)=CTA(30)+1.
      GO TO 3500
  400 DO 401 I10=1,108
      CC4G(I10)=CC4G(I10)+X(I10)
  401 CONTINUE
      CC4GA=CC4G(13)/CT(16)
      CT(16)=CT(16)+1.0
      IF(   X(21).LE. 0.5)GO TO 402
      ACC4GW=CC4G(21)/CTA(31)
      ACC4GL=CC4G(22)/CTA(31)
      CTA(31)=CTA(31)+1.
  402 IF(   X(69).LE. 0.5)GO TO 3500
      BCC4GW=CC4G(69)/CTA(32)
      BCC4GL=CC4G(70)/CTA(32)
      CTA(32)=CTA(32)+1.
      GO TO 3500
  420 DO 421 I11=1,108
      DY50(I11)=DY50(I11)+X(I11)
  421 CONTINUE
      DY50A=DY50(13)/CT(17)
      CT(17)=CT(17)+1.0
      IF(   X(21).LE. 0.5)GO TO 422
      ADY50W=DY50(21)/CTA(33)
      ADY50L=DY50(22)/CTA(33)
      CTA(33)=CTA(33)+1.
  422 IF(   X(69).LE. 0.5)GO TO 3500
      BDY50W=DY50(69)/CTA(34)
      BDY50L=DY50(70)/CTA(34)
      CTA(34)=CTA(34)+1.
      GO TO 3500
  440 DO 441 I12=1,108
      DY200(I12)=DY200(I12)+X(I12)
  441 CONTINUE
      DY200A=DY200(13)/CT(18)
      CT(18)=CT(18)+1.0
      IF(    X(21).LE. 0.5)GO TO 442
      ADY200W=DY200(21)/CTA(35)
      ADY200L=DY200(22)/CTA(35)
      CTA(35)=CTA(35)+1.
  442 IF(    X(69).LE. 0.5)GO TO 3500
      BDY200W=DY200(69)/CTA(36)
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      BDY200L=DY200(70)/CTA(36)
      CTA(36)=CTA(36)+1.
      GO TO 3500
  460 DO 461 I13=1,108
  335 DY400(I13)=DY400(I13)+X(I13)
  461 CONTINUE
      DY400A=DY400(13)/CT(19)
      CT(19)=CT(19)+1.0
      IF(    X(21).LE. 0.5)GO TO 462
  340 ADY400W=DY400(21)/CTA(37)
      ADY400L=DY400(22)/CTA(37)
      CTA(37)=CTA(37)+1.
  462 IF(    X(69).LE. 0.5)GO TO 3500
      BDY400W=DY400(69)/CTA(38)
  345 BDY400L=DY400(70)/CTA(38)
      CTA(38)=CTA(38)+1.
      GO TO 3500
  480 DO 481 I14= 1,108
      DY4G(I14)=DY4G(I14)+X(I14)
  350 481 CONTINUE
      DY4GA=DY4G(13)/CT(20)
      CT(20)=CT(20)+1.0
      IF(    X(21).LE. 0.5)GO TO  482
      ADY4GW=DY4G(21)/CTA(39)
  355 ADY4GL=DY4G(22)/CTA(39)
      CTA(39)=CTA(39)+1..
  482 IF(    X(69).LE. 0.5)GO TO 3500
      BDY4GW=DY4G(69)/CTA(40)
      BDY4GL=DY4G(70)/CTA(40)
  360 CTA(40)=CTA(40)+1.
      GO TO 3500.
  500 DO 501 I15=1,108
      SL50(I15)=SL50(I15)+X(I15)
  501 CONTINUE
  365 SL50A=SL50(13)/CT(21)
      CT(21)=CT(21)+1.0
      IF(    X(21).LE. 0.5)GO TO 502
      ASL50W=SL50(21)/CTA(41)
      ASL50L=SL50(22)/CTA(41)
  370 CTA(41)=CTA(41)+1.
  502 IF(    X(69).LE. 0.5)GO TO 3500
      BSL50W=SL50(69)/CTA(42)
      BSL50L=SL50(70)/CTA(42)
      CTA(42)=CTA(42)+1.
  375 GO TO 3500
  520 DO 521 I16=1,108
      SL200(I16)=SL200(I16)+X(I16)
  521 CONTINUE
      SL200A=SL200(13)/CT(22)
  380 CT(22)=CT(22)+1.0
      IF(    X(21).LE. 0.5)GO TO 522
      ASL200W=SL200(21)/CTA(43)
      ASL200L=SL200(22)/CTA(43)
      CTA(43)=CTA(43)+1.
  385 522 IF(    X(69).LE. 0.5)GO TO 3500
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      BSL200W=SL200(69)/CTA(44)
      BSL200L=SL200(70)/CTA(44)
      CTA(44)=CTA(44)+1.
      GO TO 3500
  390 540 DO 541 I17=1,108
      SL400(I17)=SL400(I17)+X(I17)
      541 CONTINUE
      SL400A=SL400(13)/CT(23)
      CT(23)=CT(23)+1.0
  395 IF(    X(21).LE. 0.5)GO TO 542
      ASL400W=SL400(21)/CTA(45)
      ASL400L=SL400(22)/CTA(45)
      CTA(45)=CTA(45)+1.
      542 IF(    X(69).LE. 0.5)GO TO 3500
  400 BSL400W=SL400(69)/CTA(46)
      BSL400L=SL400(70)/CTA(46)
      CTA(46)=CTA(46)+1.
      GO TO 3500
      560 DO 561 I18=1,108
  405 SL4G(I18)=SL4G(I18)+X(I18)
      561 CONTINUE
      SL4GA=SL4G(13)/CT(24)
      CT(24)=CT(24)+1.0
      IF(    X(21).LE. 0.5)GO TO 562
  410 ASL4GW=SL4G(21)/CTA(47)
      ASL4GL=SL4G(22)/CTA(47)
      CTA(47)=CTA(47)+1.
      562 IF(    X(69).LE. 0.5)GO TO 3500
      BSL4GW=SL4G(69)/CTA(48)
  415 BSL4GL=SL4G(70)/CTA(48)
      CTA(48)=CTA(48)+1.
      GO TO 3500
      580 DO 581 I19=1,108
      FT50(I19)=FT50(I19)+X(I19)
  420 581 CONTINUE
      FT50A=FT50(13)/CTA(25)
      CT(25)=CT(25)+1.0
      IF(    X(21).LE. 0.5)GO TO 582
      AFT50W=FT50(21)/CTA(49)
  425 AFT50L=FT50(22)/CTA(49)
      CTA(49)=CTA(49)+1.0
      582 IF(    X(69).LE. 0.5)GO TO 3500
      BFT50W=FT50(69)/CTA(50)
      BFT50L=FT50(70)/CTA(50)
  430 CTA(50)=CTA(50)+1.0
      GO TO 3500
      600 DO 601 I20=1,108
      FT200(I20)=FT200(I20)+X(I20)
      601 CONTINUE
  435 FT200A=FT200(13)/CT(26)
      CT(26)=CT(26)+1.0
      IF(    X(21).LE. 0.5)GO TO 602
      AFT200W=FT200(21)/CTA(51)
      AFT200L=FT200(22)/CTA(51)
  440 CTA(51)=CTA(51)+1.0
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      602 IF(    X(69).LE. 0.5)GO TO 3500
          BFT200W=FT200(69)/CTA(52)
          BFT200L=FT200(70)/CTA(52)
          CTA(52)=CTA(52)+1.0
  445     GO TO 3500
      620 DO 621 I21=1,108
          FT400(I21)=FT400(I21)+X(I21)
      621 CONTINUE
          FT400A=FT400(13)/CT(27)
  450     CT(27)=CT(27)+1.0
          IF(    X(21).LE. 0.5)GO TO 622
          AFT400W=FT400(21)/CTA(53)
          AFT400L=FT400(22)/CTA(53)
          CTA(53)=CTA(53)+1.0
  455 622 IF(    X(69).LE. 0.5)GO TO 3500
          BFT400W=FT400(69)/CTA(54)
          BFT400L=FT400(70)/CTA(54)
          CTA(54)=CTA(54)+1.0
          GO TO 3500
  460 640 DO 641 I22=1,108
          FT4G(I22)=FT4G(I22)+X(I22)
      641 CONTINUE
          FT4GA=FT4G(13)/CT(28)
          CT(28)=CT(28)+1.0
  465     IF(    X(21).LE. 0.5)GO TO 642
          AFT4GW=FT4G(21)/CTA(55)
          AFT4GL=FT4G(22)/CTA(55)
          CTA(55)=CTA(55)+1.0
      642 IF(    X(69).LE. 0.5)GO TO 3500
  470     BFT4GW=FT4G(69)/CTA(56)
          BFT4GL=FT4G(70)/CTA(56)
          CTA(56)=CTA(56)+1.0
          GO TO 3500
      660 DO 661 I23=1,108
  475     GF50(I23)=GF50(I23)+X(I23)
      661 CONTINUE
          GF50A=GF50(13)/CT(29)
          CT(29)=CT(29)+1.0
          IF(    X(21).LE. 0.5)GO TO 662
  480     AGF50W=GF50(21)/CTA(57)
          AGF50L=GF50(22)/CTA(57)
          CTA(57)=CTA(57)+1.0
      662 IF(    X(69).LE. 0.5)GO TO 3500
          BGF50W=GF50(69)/CTA(58)
  485     BGF50L=GF50(70)/CTA(58)
          CTA(58)=CTA(58)+1.0
          GO TO 3500
      680 DO 681 I24=1,108
          GF200(I24)=GF200(I24)+X(I24)
  490 681 CONTINUE
          GF200A=GF200(13)/CT(30)
          CT(30)=CT(30)+1.0
          IF(    X(21).LE. 0.5)GO TO 682
          AGF200W=GF200(21)/CTA(59)
  495     AGF200L=GF200(22)/CTA(59)
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      CTA(59)=CTA(59)+1.0
  682 IF(    X(69).LE. 0.5)GO TO 3500
      BGF200W=GF200(69)/CTA(60)
      BGF200L=GF200(70)/CTA(60)
  500 CTA(60)=CTA(60)+1.0
      GO TO 3500
  700 DO 701 I25=1,108
      GF400(I25)=GF400(I25)+X(I25)
  701 CONTINUE
  505 GF400A=GF400(13)/CT(31)
      CT(31)=CT(31)+1.0
      IF(    X(21).LE. 0.5)GO TO 702
      AGF400W=GF400(21)/CTA(61)
      AGF400L=GF400(22)/CTA(61)
  510 CTA(61)=CTA(61)+1.0
  702 IF(    X(69).LE. 0.5)GO TO 3500
      BGF400W=GF400(69)/CTA(62)
      BGF400L=GF400(70)/CTA(62)
      CTA(62)=CTA(62)+1.0
  515 GO TO 3500
  720 DO 721 I26=1,108
      GF4G(I26)=GF4G(I26)+X(I26)
  721 CONTINUE
      GF4GA=GF4G(13)/CT(32)
  520 CT(32)=CT(32)+1.0
      IF(    X(21).LE. 0.5)GO TO 722
      AGF4GW=GF4G(21)/CTA(63)
      AGF4GL=GF4G(22)/CTA(63)
      CTA(63)=CTA(63)+1.0
  525 722 IF(    X(69).LE. 0.5)GO TO 3500
      BGF4GW=GF4G(69)/CTA(64)
      BGF4GL=GF4G(70)/CTA(64)
      CTA(64)=CTA(64)+1.0
 3500 CONTINUE
  530 DO 25 KKK=1,100
      KCT(KKK)=CT(KKK)
      KCT(KKK)=KCT(KKK)-1
   25 CONTINUE
      DO 51 MN=1,100
  535 IF(CT(MN).GT.1.05)CT(MN)=CT(MN)-1.0000000
   51 CONTINUE
      DO 50 IJ=1,108
      XX(IJ)=RQ(IJ)+RW(IJ)+ROR(IJ)
   50 CONTINUE
  540 CTA(70)=0.0
      CTA(70)=CTA(1) + CTA(3) + CTA(5)-3.
      AXXW=XX(21)/CTA(70)
      AXXL=XX(22)/CTA(70)
      CTA(71)=0.0
  545 CTA(71)=CTA(2) + CTA(4) + CTA(6)-3.
      BXXW=XX(69)/CTA(71)
      BXXL=XX(70)/CTA(71)
      XXA=XX(13)/XNDS
      DO 133 IK=1,108
  550 RQ(IK)=(RQ(IK)/CT(1))*100.
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      RW(IK)=(RW(IK)/CT(2))*100.
      ROR(IK)=(ROR(IK)/CT(3))*100.
      CC(IK)=(CC(IK)/CT(4))*100.
      DY(IK)=(DY(IK)/CT(5))*100.
  555 SL(IK)=(SL(IK)/CT(6))*100.
      FT(IK)=FT(IK)/CT(7)*100.
      GF(IK)=(GF(IK)/CT(8))*100.
      A50(IK)=(A50(IK)/CT(9))*100.
      A200(IK)=(A200(IK)/CT(10))*100.
  560 A400(IK)=(A400(IK)/CT(11))*100.
      AGT4(IK)=(AGT4(IK)/CT(12))*100.
      CC50(IK)=(CC50(IK)/CT(13))*100
      CC200(IK)=(CC200(IK)/CT(14))*100
      CC400(IK)=(CC400(IK)/CT(15))*100
  565 CC4G(IK)=(CC4G(IK)/CT(16))*100
      DY50(IK)=(DY50(IK)/CT(17))*100
      DY200(IK)=(DY200(IK)/CT(18))*100
      DY400(IK)=(DY400(IK)/CT(19))*100.
      DY4G(IK)=(DY4G(IK)/CT(20))*100.
  570 SL50(IK)=(SL50(IK)/CT(21))*100.
      SL200(IK)=(SL200(IK)/CT(22))*100.
      SL400(IK)=(SL400(IK)/CT(23))*100.
      SL4G(IK)=(SL4G(IK)/CT(24))*100.
      FT50(IK)=(FT50(IK)/CT(25))*100.
  575 FT200(IK)=(FT200(IK)/CT(26))*100
      FT400(IK)=(FT400(IK)/CT(27))*100
      FT4G(IK)=(FT4G(IK)/CT(28))*100.
      GF50(IK)=(GF50(IK)/CT(29))*100.
      GF200(IK)=(GF200(IK)/CT(30))*100.
  580 GF400(IK)=(GF400(IK)/CT(31))*100.
      GF4G(IK)=(GF4G(IK)/CT(32))*100.
      XX(IK)=(XX(IK)/XNDS)*100.
  133 CONTINUE
      PRINT 4001,NDS
  585 PRINT 4000,(XX(I),I=1,12),XXA,(XX(J),J=14,20),AXXW,AXXL,(XX(K),K=2
     13,68),BXXW,BXXL,(XX(L),L=71,108)
      PRINT 4002,KCT(1)
      PRINT 4000,(RO(I),I=1,12),ROA,(RO(J),J=14,20),AROW,AROL,(RO(K),K=2
     13,68),BROW,BROL,(RO(L),L=71,108)
  590 PRINT 4003,KCT(2)
      PRINT 4000,(RW(I),I=1,12),RWA,(RW(J),J=14,20),ARWW,ARWL,(RW(K),K=2
     13,68),BRWW,BRWL,(RW(L),L=71,108)
      PRINT 4004,KCT(3)
      PRINT 4000,(ROR(I),I=1,12),RORA,(ROR(J),J=14,20),ARORW,ARORL,(ROR(
  595 1K),K=23,68),BRORW,BRORL,(ROR(L),L=71,108)
      PRINT 4005,KCT(4)
      PRINT 4000,(CC(I),I=1,12),CCA,(CC(J),J=14,20),ACCW,ACCL,(CC(K),K=2
     13,68),BCCW,BCCL,(CC(L),L=71,108)
      PRINT 4006,KCT(5)
  600 PRINT 4000,(DY(I),I=1,12),DYA,(DY(J),J=14,20),ADYW,ADYL,(DY(K),K=2
     13,68),BDYW,BDYL,(DY(L),L=71,108)
      PRINT 4007,KCT(6)
      PRINT 4000,(SL(I),I=1,12),SLA,(SL(J),J=14,20),ASLW,ASLL,(SL(K),K=2
     13,68),BSLW,BSLL,(SL(L),L=71,108)
  605 PRINT 4008,KCT(7)
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      PRINT 4000,(FT(I),I=1,12),FTA,(FT(J),J=14,20),AFTW,AFTL,(FT(K),K=2
     13,68),BFTW,BFTL,(FT(L),L=71,108)
      PRINT 4009,KCT(8)
      PRINT 4000,(GF(I),I=1,12),GFA,(GF(J),J=14,20),AGFW,AGFL,(GF(K),K=2
610  13,68),BGFW,BGFL,(GF(L),L=71,108)
      PRINT 4010,KCT(9)
      PRINT 4000,(A50(I),I=1,12),A50A,(A50(J),J=14,20),AA50W,AA50L,(A50(
     1K),K=23,68),BA50W,BA50L,(A50(L),L=71,108)
      PRINT 4011,KCT(10)
615   PRINT 4000,(A200(I),I=1,12),A200A,(A200(J),J=14,20),AA200W,AA200L,
     1(A200(K),K=23,68),BA200W,BA200L,(A200(L),L=71,108)
      PRINT 4012,KCT(11)
      PRINT 4000,(A400(I),I=1,12),A400A,(A400(J),J=14,20),AA400W,AA400L,
     1(A400(K),K=23,68),BA400W,BA400L,(A400(L),L=71,108)
620   PRINT 4013,KCT(12)
      PRINT 4000,(AGT4(I),I=1,12),AGT4A,(AGT4(J),J=14,20),AAGT4W,AAGT4L,
     1(AGT4(K),K=23,68),BAGT4W,BAGT4L,(AGT4(L),L=71,108)
      PRINT 4014,KCT(13)
      PRINT 4000,(CC50(I),I=1,12),CC50A,(CC50(J),J=14,20),ACC50W,ACC50L,
625   1(CC50(K),K=23,68),BCC50W,BCC50L,(CC50(L),L=71,108)
      PRINT 4015,KCT(14)
      PRINT 4000,(CC200(I),I=1,12),CC200A,(CC200(J),J=14,20),ACC200W,ACC
     1200L,(CC200(K),K=23,68),BCC200W,BCC200L,(CC200(L),L=71,108)
      PRINT 4016,KCT(15)
630   PRINT 4000,(CC400(I),I=1,12),CC400A,(CC400(J),J=14,20),ACC400W,ACC
     1400L,(CC400(K),K=23,68),BCC400W,BCC400L,(CC400(L),L=71,108)
      PRINT 4017,KCT(16)
      PRINT 4000,(CC4G(I),I=1,12),CC4GA,(CC4G(J),J=14,20),ACC4GW,ACC4GL,
     1(CC4G(K),K=23,68),BCC4GW,BCC4GL,(CC4G(L),L=71,108)
635   PRINT 4018,KCT(17)
      PRINT 4000,(DY50(I),I=1,12),DY50A,(DY50(J),J=14,20),ADY50W,ADY50L,
     1(DY50(K),K=23,68),BDY50W,BDY50L,(DY50(L),L=71,108)
      PRINT 4019,KCT(18)
      PRINT 4000,(DY200(I),I=1,12),DY200A,(DY200(J),J=14,20),ADY200W,ADY
640  1200L,(DY200(K),K=23,68),BDY200W,BDY200L,(DY200(L),L=71,108)
      PRINT 4020,KCT(19)
      PRINT 4000,(DY400(I),I=1,12),DY400A,(DY400(J),J=14,20),ADY400W,ADY
     1400L,(DY400(K),K=23,68),BDY400W,BDY400L,(DY400(L),L=71,108)
      PRINT 4021,KCT(20)
645   PRINT 4000,(DY4G(I),I=1,12),DY4GA,(DY4G(J),J=14,20),ADY4GW,ADY4GL,
     1(DY4G(K),K=23,68),BDY4GW,BDY4GL,(DY4G(L),L=71,108)
      PRINT 4022,KCT(21)
      PRINT 4000,(SL50(I),I=1,12),SL50A,(SL50(J),J=14,20),ASL50W,ASL50L,
     1(SL50(K),K=23,68),BSL50W,BSL50L,(SL50(L),L=71,108)
650   PRINT 4023,KCT(22)
      PRINT 4000,(SL200(I),I=1,12),SL200A,(SL200(J),J=14,20),ASL200W,ASL
     1200L,(SL200(K),K=23,68),BSL200W,BSL200L,(SL200(L),L=71,108)
      PRINT 4024,KCT(23)
      PRINT 4000,(SL400(I),I=1,12),SL400A,(SL400(J),J=14,20),ASL400W,ASL
655  1400L,(SL400(K),K=23,68),BSL400W,BSL400L,(SL400(L),L=71,108)
      PRINT 4025,KCT(24)
      PRINT 4000,(SL4G(I),I=1,12),SL4GA,(SL4G(J),J=14,20),ASL4GW,ASL4GL,
     1(SL4G(K),K=23,68),BSL4GW,BSL4GL,(SL4G(L),L=71,108)
      PRINT 4026,KCT(25)
660   PRINT 4000,(FT50(I),I=1,12),FT50A,(FT50(J),J=14,20),AFT50W,AFT50L,
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     1(FT50(K),K=23,68),BFT50W,BFT50L,(FT50(L),L=71,108)
      PRINT 4027,KCT(26)
      PRINT 4000,(FT200(I),I=1,12),FT200A,(FT200(J),J=14,20),AFT200W,AFT
     1200L,(FT200(K),K=23,68),BFT200W,BFT200L,(FT200(L),L=71,108)
665   PRINT 4028,KCT(27)
      PRINT 4000,(FT400(I),I=1,12),FT400A,(FT400(J),J=14,20),AFT400W,AFT
     1400L,(FT400(K),K=23,68),BFT400W,BFT400L,(FT400(L),L=71,108)
      PRINT 4029,KCT(28)
      PRINT 4000,(FT4G(I),I=1,12),FT4GA,(FT4G(J),J=14,20),AFT4GW,AFT4GL,
670   1(FT4G(K),K=23,68),BFT4GW,BFT4GL,(FT4G(L),L=71,108)
      PRINT 4030,KCT(29)
      PRINT 4000,(GF50(I),I=1,12),GF50A,(GF50(J),J=14,20),AGF50W,AGF50L,
     1(GF50(K),K=23,68),BGF50W,BGF50L,(GF50(L),L=71,108)
      PRINT 4031,KCT(30)
675   PRINT 4000,(GF200(I),I=1,12),GF200A,(GF200(J),J=14,20),AGF200W,AGF
     1200L,(GF200(K),K=23,68),BGF200W,BGF200L,(GF200(L),L=71,108)
      PRINT 4032,KCT(31)
      PRINT 4000,(GF400(I),I=1,12),GF400A,(GF400(J),J=14,20),AGF400W,AGF
     1400L,(GF400(K),K=23,68),BGF400W,BGF400L,(GF400(L),L=71,108)
680   PRINT 4033,KCT(32)
      PRINT 4000,(GF4G(I),I=1,12),GF4GA,(GF4G(J),J=14,20),AGF4GW,AGF4GL,
     1(GF4G(K),K=23,68),BGF4GW,BGF4GL,(GF4G(L),L=71,108)
 4001 FORMAT(1H1,*THE FOLLOWING DATA SUMMARIZES *,I5,* FARMS*)
 4002 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,  I5,* OPERATOR RE
685  1SPONDENTS*)
 4003 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,  I5,* WIFE RESPON
     1DENTS*)
 4004 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,  I5,* OTHER RESPON
     1NDENTS*)
690  4005 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,  I5,* CASH CROP F
     1ARMS*)
 4006 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,  I5,* DAIRY FARMS
     1*)
 4007 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,  I5,* LIVESTOCK F
695  1ARMS*)
 4008 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,  I5,* FRUIT FARMS
     1*)
 4009 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,  I5,* GENERAL FAR
     1MS*)
700  4010 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,  I5,* 50 ACRE OR
     1LESS FARMS*)
 4011 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,  I5,* 50 TO 200 A
     1CRE FARMS*)
 4012 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,  I5,* 200 TO 400
705  1ACRE FARMS*)
 4013 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,  I5,* 400 ACRE OR
     1 LARGER FARMS*)
 4014 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 50 ACRE OR LE
     1SS CASH CROP FARMS*)
710  4015 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 50 TO 200 ACR
     1E CASH CROP FARMS*)
 4016 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 200 TO 400 AC
     1RE CASH CROP FARMS*)
 4017 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 400 ACRE OR L
715  1ARGER CASH CROP FARMS*)
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      4018 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 50 ACRE OR LE
     1SS DAIRY FARMS*)
      4019 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 50 TO 200 ACR
     1E DAIRY FARMS*)
  720 4020 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 200 TO 400 AC
     1RE DAIRY FARM*)
      4021 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 400 ACRE OR L
     1ARGER DAIRY FARMS*)
      4022 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 50 ACRE OR LE
  725 1SS LIVESTOCK FARMS*)
      4023  FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,*  50 TO 200
     1ACRE LIVESTOCK FARMS*)
      4024 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 200 TO 400 AC
     1RE LIVESTOCK FARMS*)
  730 4025 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 400 ACRES OR
     1LARGER LIVESTOCK FARMS*)
      4026 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 50 ACRE OR LE
     1SS FRUIT FARMS*)
      4027 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 50 TO 200 ACR
  735 1E FRUIT FARMS*)
      4028 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 200 TO 400 AC
     1RE FRUIT FARMS*)
      4029 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 400 ACRE OR L
     1ARGER FRUIT FARMS*)
  740 4030 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 50 ACRE OR LE
     1SS GENERAL FARMS*)
      4031 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 50 TO 200 ACR
     1E GENERAL FARMS*)
      4032 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 200 TO 400 AC
  745 1RE GENERAL FARMS*)
      4033 FORMAT(1H1,*THE FOLLOWING SUMMARIZES DATA FROM*,I5,* 400 ACRE OR L
     1ARGER GENERAL FARMS*)
      4000 FORMAT(1HO,* QUESTION NO. *,25X,*COMPOSITE RESULTS*,///,5X,3(F5.1
     1,* %*,5X)//,* 1.*,5X,4(F5.1,* %*,5X)//,* 2.*,5X,5(F5.1,* %*,5X)//,
  750 1* 3.*,5X,* AVERAGE ACRES =*,F6.1,//,* 4.*,5X,5(F5.1,* %*,5X)//,* 5
     2.*,5X,2(F5.1,* %*,5X),*AVG. WIDTH =*,F6.1,5X,*AVG. LENGTH =*,F6.1,
     3/,5X,7(F5.1,* %*,5X)//,* 6.*,5X,2(F5.1,* %*,5X)//,* 7.*,5X,6(F5.1,
     4* %*,5X)//,* 8.*,5X,3(F5.1,* %*,5X)//,* 9.*,5X,4(F5.1,* %*,5X)//,*
     5 10.*,5X,7(F5.1,* %*,5X)//,* 11.*,5X,8(F5.1,* %*,5X)//,* 12.*,5X,5
  755 6(F5.1,* %*,5X)//,* 13.*,5X,2(F5.1,* %*,5X)//,* 14.*,5X,2(F5.1,* %*
     7,5X)//,* 15.*,5X,*AVG. WIDTH =*,F6.1,5X,*AVG. LENGTH =*,F6.1,5X,F5
     8.1,* %*,//,* 16.*,5X,4(F5.1,* %*,5X)//,* 17.*,5X,4(F5.1,* %*,5X)/
     9/,* 18.*,5X,8(F5.1,* %*,5X)//,* 19.*,5X,13(F5.1,* %*,2X)//,* 20.*,
     15X,8(F5.1,* %*,5X))
  760  END
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MICHIGAN

STATE UNIVERSITY

FARM MACHINERY STORAGE SURVEY

SPONSORED BY

AGRICULTURAL ENGINEERING DEPARTMENT
AND
JOHN DEERE PLOW WORKS

THE FOLLOWING DATA SUMMARIZES 1047 FARMS

QUESTION NO. COMPOSITE RESULTS

	76.6	19.9	3.5									
1.	63.3	35.0	27.2	10.8								
2.	28.9	24.1	24.8	5.2	23.8							
3.	AVERAGE ACRES = 226.0											
4.	15.3	59.8	39.2	.1	10.4							
5.	82.5	17.3	AVG. WIDTH = 35.9		AVG. LENGTH = 62.4							
	4.3	.1	.7	1.3	.4	.5	.3					
6.	61.1	38.7										
7.	12.1	13.3	34.6	1.4	22.6	19.1						
8.	8.6	47.8	5.2									
9.	20.5	40.2	11.3	29.3								
10.	39.7	8.9	8.8	2.9	1.1	.1	.1					
11.	20.7	7.3	2.9	9.1	16.4	.5	1.3	2.9				
12.	16.4	.9	.6	.6	42.9							
13.	33.9	30.6										
14.	20.8	41.5										
15.	AVG. WIDTH = 37.6		AVG. LENGTH = 68.7		3.9							
16.	.3	14.0	5.1	2.8								
17.	5.2	12.0	16.2	1.3								
18.	3.3	5.8	3.4	5.2	17.6	14.1	15.6	.8				
19.	77.3	22.3	3.7	3.1	.3	2.3	.4	1.0	1.2	.8	.7	4.9	4.5
20.	75.8	24.1	20.2	16.0	10.9	31.4	16.0	.8				

	100.0	0.0	0.0									
1.	69.2	29.1	21.1	10.2								
2.	27.4	24.6	24.3	5.7	26.1							
3.	AVERAGE ACRES = 237.1											
4.	16.2	59.5	40.9	.1	9.9							
5.	83.0	16.7	AVG. WIDTH = 36.1		AVG. LENGTH = 63.1							
	4.6	.1	.7	1.6	.5	.6	.4					
6.	64.6	35.2										
7.	10.8	14.7	38.0	1.5	24.4	20.0						
8.	9.1	50.1	5.7									
9.	19.0	45.3	12.0	33.4								
10.	42.8	10.1	8.2	2.6	1.4	.1	.2					
11.	20.9	7.9	3.1	8.5	19.2	.5	1.5	3.0				
12.	17.2	.9	.7	.7	45.6							
13.	35.7	32.2										
14.	22.4	43.3										
15.	AVG. WIDTH = 37.8		AVG. LENGTH = 69.3		2.9							
16.	.2	15.5	5.6	2.5								
17.	5.1	13.7	18.0	1.2								
18.	3.5	7.1	4.1	6.1	19.2	16.0	16.6	.7				
19.	76.4	23.1	4.0	3.0	.2	2.6	.5	1.0	1.4	.5	.6	5.1	4.9
20.	74.2	25.7	21.1	16.8	11.5	34.7	17.1	.6				

THE FOLLOWING SUMMARIZES DATA FROM 208 WIFE RESPONDENTS
QUESTION NO. COMPOSITE RESULTS

	0,0	100,0	0,0									
1.	42,3	56,3	49,0	13,5								
2.	32,2	23,1	26,9	2,9	17,3							
3.	AVERAGE ACRES = 183,8											
4.	12,0	59,6	34,1	0,0	12,5							
5.	79,3	20,7	AVG. WIDTH = 35,8		AVG. LENGTH = 58,8							
	3,4	0,0	,5	,5	0,0	0;0	0,0					
6.	50,5	49,5										
7.	16,8	8,7	23,1	1,4	17,3	15,4						
8.	7,2	41,3	2,4									
9.	26,0	24,0	8,7	16,8								
10.	29,8	4,3	12,0	3,4	;5	0,0	0,0					
11.	21,6	5,3	1,9	10,1	7;2	,5	1,0	2;4				
12.	15,4	1,0	0,0	0,0	33;2							
13.	30,3	24,5										
14.	16,3	35,6										
15.	AVG. WIDTH = 35,3		AVG. LENGTH = 62,4		7,2							
16.	,5	9,6	3,4	4,3								
17.	5,8	7,2	10,6	1,9								
18.	3,4	1,9	1,4	1,9	13;0	8,2	12,5	0;0				
19.	79,3	20,7	3,4	2,9	,5	1,0	0,0	1,0	1,0	1;9	1,0	3,8	3,8
20.	80,8	19,2	18,3	14,9	8;2	22,1	12,5	0;0				

THE FOLLOWING SUMMARIZES DATA FROM 37 OTHER RESPONDENTS
QUESTION NO. COMPOSITE RESULTS

	0.0	0.0	100.0										
1.	54.1	43.2	37.8	8.1									
2.	43.2	18.9	24.3	5.4	10.8								
3.	AVERAGE ACRES = 223.7												
4.	13.5	67.6	29.7	0.0	10.8								
5.	89.2	10.8	AVG. WIDTH = 32.0		AVG. LENGTH = 72.2								
	2.7	0.0	0.0	0.0	0.0	0.0	0.0						
6.	45.9	54.1											
7.	13.5	8.1	24.3	0.0	13.5	21.6							
8.	5.4	32.4	8.1										
9.	24.3	21.6	10.8	10.8									
10.	29.7	8.1	2.7	5.4	0.0	0.0	0.0						
11.	10.8	5.4	2.7	16.2	8.1	0.0	0.0	2.7					
12.	5.4	0.0	0.0	0.0	37.8								
13.	16.2	29.7											
14.	10.8	35.1											
15.	AVG. WIDTH = 50.0		AVG. LENGTH = 80.0		8.1								
16.	0.0	8.1	2.7	0.0									
17.	2.7	2.7	10.8	0.0									
18.	0.0	0.0	0.0	2.7	8.1	8.1	10.8	0.0					
19.	83.8	16.2	0.0	5.4	0.0	2.7	0.0	0.0	0.0	0.0	0.0	5.4	0.0
20.	83.8	16.2	13.5	2.7	13.5	13.5	10.8	2.7					

THE FOLLOWING SUMMARIZES DATA FROM 303 CASH CROP FARMS
QUESTION NO. COMPOSITE RESULTS

72.6 22.1 5.3

1. 53.8 44.6 34.0 12.9

2. 100.0 2.6 7.6 1.0 .7

3. AVERAGE ACRES = 218.3

4. 11.9 53.8 50.2 0.0 9.2

5. 86.5 13.2 AVG. WIDTH = 43.2 AVG. LENGTH = 68.6
3.0 0.0 1.0 .3 0.0 .3 0.0

6. 51.2 48.8

7. 12.5 9.6 28.4 1.0 23.4 14.9

8. 8.3 39.3 4.6

9. 17.8 33.3 8.9 24.8

10. 34.3 5.6 6.6 3.3 2.0 0.0 .3

11. 14.5 4.3 3.0 11.9 13.9 .7 1.7 2.0

12. 8.3 .3 .7 .3 42.2

13. 28.1 26.7

14. 16.2 35.3

15. AVG. WIDTH = 37.2 AVG. LENGTH = 71.9 3.0

16. .3 11.2 6.6 1.7

17. 5.9 8.9 13.5 .7

18. 3.6 4.6 3.3 5.3 14.5 12.5 13.5 .8

19. 84.8 14.5 .7 0.0 0.0 1.7 0.0 .3 1.3 .7 .3 6.6 3.6

20. 72.9 27.1 23.1 16.5 15.5 29.0 19.8 1.0

THE FOLLOWING SUMMARIZES DATA FROM 244 DAIRY FARMS
QUESTION NO. COMPOSITE RESULTS

79,1 18,4 2,5

1. 82,4 16,4 7.0 13.1

2. 0,0 100,0 3,7 ,4 4,5

3. AVERAGE ACRES = 284,3

4. 17,2 05,2 24,6 ,4 18,9

5. 72,5 27,0 AVG. WIDTH = 34,4 AVG. LENGTH = 63,0

7,4 ,4 ,4 3,3 ,8 ,8 ,8

6. 80,3 19,3

7. 19,3 16,0 45,1 ,8 33,6 25,0

8. 10,7 60,2 9,4

9. 25,0 55,3 13,5 42,6

10. 56,6 11,5 7,8 3,7 1;6 0,0 0,0

11. 23,8 11,1 3,7 9;0 23,8 ,8 2,9 4;5

12. 23,0 1,6 ,8 0,0 54;5

13. 41,8 42,6

14. 32,4 48,4

15. AVG. WIDTH = 41,2 AVG. LENGTH = 73,8 6,1

16. 0,0 23,0 6,1 4,5

17. 6,1 22,1 25,4 1,2

18. 5,7 7,8 5,7 9,0 26;2 23,8 25,4 ;4

19. 63,1 36,9 8,6 12,3 0,0 ,4 ,8 2,5 1,6 0;0 1,6 5,3 3,7

20. 69,3 30,7 27,0 24,6 12;3 41,0 20,5 0;0

THE FOLLOWING SUMMARIZES DATA FROM 228 LIVESTOCK FARMS
QUESTION NO. COMPOSITE RESULTS

	74,6	21,5	3,9									
1.	56,6	40,8	39,0	6,6								
2.	0,0	0,0	100,0	,9	11,4							
3.	AVERAGE ACRES = 213,0											
4.	19,3	62,7	37,7	0.0	6,1							
5.	81,6	18,4	AVG. WIDTH = 34,7		AVG. LENGTH = 58,6							
	5,3	0,0	,4	,9	,4	‡4	0,0					
6.	61,4	38,2										
7.	11,4	16,2	31,6	2,6	19,3	17,1						
8.	7,5	48,2	6,6									
9.	21,1	39,5	11,0	28,5								
10.	35,5	11,8	11,8	2,2	‡4	0,0	0,0					
11.	21,9	9,6	3,9	7,5	15‡8	0,0	,9	3‡1				
12.	24,6	1,8	,4	,4	35‡1							
13.	36,0	28,1										
14.	19,3	43,0										
15.	AVG. WIDTH = 34,3		AVG. LENGTH = 59,1		3,5							
16.	,4	12,3	3,5	2,6								
17.	5,3	10,1	15,4	1,3								
18.	1,8	5,7	1,3	3,1	16‡7	11,4	‡3,2	‡9				
19.	78,9	20,6	4,8	,9	,9	4,4	0,0	0,0	,4	1‡3	,4	3,1	5,3
20.	81,6	18,4	15,4	8,8	9‡2	27,2	‡0.1	‡4				

THE FOLLOWING SUMMARIZES DATA FROM 48 FRUIT FARMS
QUESTION NO. COMPOSITE RESULTS

	85,4	10,4	4,2									
1.	81,3	16,7	14,6	6,3								
2.	0,0	0,0	0,0	100,0	0,0							
3.	AVERAGE ACRES = 156,9											
4.	14,6	64,6	22,9	0,0	10,4							
5.	85,4	14,6	AVG. WIDTH = 38,6		AVG. LENGTH = 67,7							
	0,0	0,0	0,0	0,0	0,0	0;0	0,0					
6.	60,4	39,6										
7.	6,3	8,3	41,7	4,2	16,7	22,9						
8.	12,5	47,9	0,0									
9.	25,0	35,4	20,8	16,7								
10.	50,0	4,2	6,3	0,0	0;0	0,0	0,0					
11.	29,2	10,4	0,0	4,2	12;5	2,1	0,0	0;0				
12.	4,2	0,0	0,0	0,0	56;3							
13.	31,3	29,2										
14.	12,5	47,9										
15.	AVG. WIDTH = 40,0		AVG. LENGTH = 64,4		2,1							
16.	0,0	8,3	2,1	2,1								
17.	0,0	6,3	10,4	2,1								
18.	0,0	0,0	0,0	0,0	12;5	8,3	10,4	0;0				
19.	83,3	16,7	0,0	0,0	0,0	2,1	0,0	0,0	0,0	0;0	0,0	2,1	12,5
20.	75,0	25,0	18,7	25,0	6;3	33,3	6,3	4;2				

THE FOLLOWING SUMMARIZES DATA FROM 224 GENERAL FARMS
COMPOSITE RESULTS

QUESTION NO.

79,5 18,7 1,8

1. 58,5 40,2 30,8 10,7

2. 0,0 0,0 0,0 0,0 101,3

3. AVERAGE ACRES = 201,2

4. 13,8 58,0 45,1 0,0 7,1

5. 88,4 11,6 AVG. WIDTH = 29,5 AVG. LENGTH = 55,1

2,7 0,0 ,9 1,3 ,4 ,4 ,4

6. 53,6 46,4

7. 5,8 13,4 33,0 ,9 14,3 19,6

8. 7,1 45,1 ,9

9. 17,9 34,8 10,3 24,6

10. 30,8 8,5 10,3 2,7 ,4 ,4 0,0

11. 22,8 4,0 1,3 8,0 13,4 0,0 0,0 2,7

12. 14,7 0,0 ,4 1,8 36,2

13. 31,7 25,4

14. 17,9 39,3

15. AVG. WIDTH = 34,1 AVG. LENGTH = 64,6 3,6

16. ,4 11,2 4,0 2,7

17. 4,0 8,5 12,1 2,2

18. 2,7 6,7 4,0 4,0 14,3 9,8 11,2 ,9

19. 79,5 20,1 2,2 0,0 ,4 3,1 ,9 1,3 1,8 1,3 ,4 4,5 4,0

20. 81,3 18,3 14,3 11,2 5,8 28,1 13,8 0,0

THE FOLLOWING SUMMARIZES DATA FROM 104 50 ACRE OR LESS FARMS
COMPOSITE RESULTS

QUESTION NO,

67.3 29.8 2.9

1. 38.5 59.6 54.8 7.7

2. 26.9 6.7 29.8 7.7 36.5

3. AVERAGE ACRES = 30.8

4. 32.7 42.3 33.7 0.0 6.7

5. 90.4 8.7 AVG. WIDTH = 29.6 AVG. LENGTH = 50.0

1.0 0.0 0.0 0.0 0.0 0.0 0.0

6. 33.7 66.3

7. 7.7 10.6 11.5 3.8 5.8 9.6

8. 1.9 29.8 1.9

9. 14.4 19.2 6.7 11.5

10. 21.2 5.8 5.8 1.0 0.0 0.0 0.0

11. 15.4 5.8 0.0 4.8 5.8 1.0 0.0 1.0

12. 14.4 1.0 0.0 0.0 17.3

13. 27.9 6.7

14. 14.4 18.3

15. AVG. WIDTH = 26.3 AVG. LENGTH = 54.3 2.9

16. 1.0 5.8 4.8 4.8

17. 4.8 6.7 9.6 2.9

18. 2.9 4.8 1.9 1.9 12.5 8.7 7.7 1.0

19. 83.7 16.3 0.0 0.0 1.0 1.0 0.0 0.0 1.9 1.0 0.0 2.9 7.7

20. 93.3 6.7 5.8 3.8 5.8 2.9 8.7 0.0

THE FOLLOWING SUMMARIZES DATA FROM 547 50 TO 200 ACRE FARMS
QUESTION NO. COMPOSITE RESULTS

	75,0	21,2	3,8									
1,	54,7	43,9	36,0	11,5								
2.	29,3	19,2	24,9	6,6	26,3							
3.	AVERAGE ACRES = 121,3											
4,	13,9	60,3	36,9	,2	11,0							
5.	85,0	14,8	AVG. WIDTH = 31,8		AVG. LENGTH = 54,9							
	4,8	0,0	,7	1,3	,2	;4	;2					
6.	57,2	42,6										
7.	10,6	14,4	30,7	1,5	16,8	19,9						
8.	8,2	45,5	4,0									
9.	21,2	35,5	11,2	25,0								
10.	36,4	8,8	8,8	2,0	1;3	0,0	,2					
11.	21,4	7,1	2,7	8,6	13;2	,2	,9	2;4				
12.	14,8	1,1	,5	,9	40,6							
13.	32,5	27,2										
14.	17,2	41,7										
15.	AVG. WIDTH = 35,1		AVG. LENGTH = 64,4		3,1							
16.	,2	10,6	4,4	2,7								
17.	3,1	9,1	12,1	1,3								
18.	2,0	4,2	3,7	2,0	13;0	10,2	11,5	;4				
19.	84,1	15,5	2,6	1,6	0,0	1;1	,2	,7	1,3	1;1	,5	2,9	4,0
20.	82,8	17,0	14,4	11,5	6;9	20,5	11,5	;5				

THE FOLLOWING SUMMARIZES DATA FROM 252 200 TO 400 ACRE FARMS
COMPOSITE RESULTS

QUESTION NO.

	80,2	16,7	3,2								
1.	78,6	19,0	11,1	10,3							
2.	31,0	36,5	22,2	2,8	20,6						
3.	AVERAGE ACRES = 296,9										
4.	14,3	60,7	38,1	0,0	13,5						
5.	78,2	21,8	AVG. WIDTH = 37,5		AVG. LENGTH = 66,6						
	3,6	0,0	,8	1,6	,8	;8	,4				
6.	74,2	25,4									
7.	17,1	11,9	45,6	,8	34,9	22,2					
8.	11,5	57,1	6,0								
9.	22,2	52,0	13,5	38,5							
10.	50,8	8,3	9,9	4,4	2;0	0,0	0,0				
11.	20,6	6,0	4,4	11,1	25;0	,8	3,6	3;8			
12.	17,5	,8	1,2	,4	54,4						
13.	38,5	38,9									
14.	29,0	46,0									
15.	AVG. WIDTH = 41,1		AVG. LENGTH = 75,5		6,3						
16.	,4	22,6	6,3	2.0							
17.	8,3	18,3	25,0	,8							
18.	5,6	8,7	3,6	9,9	25;8	21,4	23,4	;8			
19.	69,4	30,2	4,8	5,6	,8	4,4	1,2	1,6	1,2	0;0	,8	6,7	4,4
20.	67,9	32,1	27,8	20,6	15;9	43,3	19,4	;8			

THE FOLLOWING SUMMARIZES DATA FROM 144 400 ACRE OR LARGER FARMS
QUESTION NO. COMPOSITE RESULTS

	83,3	13,2	3,5									
1.	87,5	11,1	2,1	11,1								
2.	25,7	33,3	25,7	2,1	22,2							
3.	AVERAGE ACRES = 641,0											
4.	9,7	68,8	53,5	0,0	5.6							
5.	75,0	25,0	AVG. WIDTH = 44,1		AVG. LENGTH = 75,0							
	6,3	,7	,7	2,1	,7	;7	,7					
6.	72,9	27,1										
7.	12,5	13,2	46,5	,7	35,4	17,4						
8.	9,7	52,8	10,4									
9.	19,4	52,8	11,1	42,4								
10.	46,5	12,5	9,0	4,9	0;0	,7	0,0					
11.	22,2	11,1	2,8	10,4	21;5	,7	0,0	4;9				
12.	22,2	0,0	0,0	0,0	50;0							
13.	35,4	45,8										
14.	25,0	49,3										
15.	AVG. WIDTH = 42,1		AVG. LENGTH = 72,2		3,5							
16.	0,0	18,1	5,6	2,8								
17.	7,6	16,0	21,5	1,4								
18.	4,9	7,6	3,5	11,1	24;3	20,1	22,9	1;4				
19.	60,4	38,9	9,0	6,3	0,0	4,2	0,0	1,4	,7	;7	1,4	10,4	4,2
20.	50,7	49,3	39,6	33,3	20;8	72,9	31,9	1;4				

THE FOLLOWING SUMMARIZES DATA FROM 28 50 ACRE OR LESS CASH CROP FARMS
COMPOSITE RESULTS

QUESTION NO.

	71.4	25.0	3.6									
1.	35.7	60.7	60.7	7.1								
2.	100.0	0.0	3.6	0.0	3.6							
3.	AVERAGE ACRES = 34.0											
4.	25.0	28.6	50.0	0.0	0.0							
5.	96.4	3.6	AVG. WIDTH = 32.0		AVG. LENGTH = 44.0							
	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
6.	28.6	71.4										
7.	14.3	7.1	7.1	0.0	7.1	7.1						
8.	0.0	25.0	3.6									
9.	7.1	21.4	3.6	17.9								
10.	21.4	0.0	7.1	0.0	0.0	0.0	0.0					
11.	10.7	3.6	0.0	3.6	7.1	3.6	0.0	0.0				
12.	10.7	0.0	0.0	0.0	17.9							
13.	25.0	3.6										
14.	14.3	10.7										
15.	AVG. WIDTH = 30.0		AVG. LENGTH = 60.4		3.6							
16.	3.6	7.1	7.1	7.1								
17.	7.1	7.1	14.3	0.0								
18.	7.1	10.7	0.0	3.6	17.9	14.3	10.7	0.0				
19.	85.7	14.3	0.0	0.0	0.0	0.0	0.0	0.0	7.1	0.0	0.0	3.6	3.6
20.	85.7	14.3	14.3	7.1	10.7	7.1	17.9	0.0					

66,9 26,9 6,3

1. 42,5 56,3 45,6 12,5

2. 100,0 ,6 5,0 1,2 0,0

3. AVERAGE ACRES = 118,7

4. 10,6 51,9 48,1 0,0 11,2

5. 90,0 9,4 AVG. WIDTH = 31,3 AVG. LENGTH = 57,3

1,9 0,0 ,6 ,6 0,0 0;0 0,0

6. 44,4 55,6

7. 10,6 9,4 23,1 1,2 15,6 17,5

8. 8,1 35,0 2,5

9. 18,7 25,6 10,0 16,2

10. 30,0 4,4 6,9 2,5 1;2 0,0 ,6

11. 13,7 4,4 1,9 13,7 8;7 0,0 1,2 1;2

12. 6,9 ,6 0,0 ,6 36,9

13. 25,0 21,9

14. 13,1 31,9

15. AVG. WIDTH = 33,0 AVG. LENGTH = 63,9 2,5

16. 0,0 7,5 5,6 1,9

17. 4,4 6,9 8,1 1,2

18. 1,9 1,9 2,5 3,1 8;7 8,1 9,4 0;0

19. 88,1 11,2 1,2 0,0 0,0 0,0 0,0 0,0 1,2 1;2 ,6 4,4 3,7

20. 80,0 20,0 17,5 13,7 13;7 15,0 15,6 1;2

[illegible]	[illegible]	[illegible]	
70.5	20.9	16.7	12.8

	80,8	16,7	2,6									
	70,5	26,9	16,7	12,8								
	100,0	5,1	15,4	1,3	1,3							
3.	AVERAGE ACRES = 299,3											
4.	9,0	61,5	46,2	0,0	11,5							
5.	78,2	21,8	AVG. WIDTH = 39,8		AVG. LENGTH = 76,0							
	5,1	0,0	2,6	0,0	0,0	1,3	0,0					
6.	70,5	29,5										
7.	14,1	11,5	44,9	1,3	37,2	16,7						
8.	12,8	52,6	6,4									
9.	16,7	53,8	7,7	46,2								
10.	48,7	7,7	6,4	3,8	5,1	0,0	0,0					
11.	17,9	6,4	3,8	11,5	24,4	0,0	3,8	3,8				
12.	12,8	0,0	2,6	0,0	56,4							
13.	33,3	41,0										
14.	21,8	50,0										
15.	AVG. WIDTH = 42,2		AVG. LENGTH = 83,3		2,6							
16.	0,0	19,2	6,4	0,0								
17.	7,7	10,3	20,5	0,0								
18.	6,4	9,0	6,4	7,7	21,8	17,9	20,5	1,3				
19.	82,1	16,7	0,0	0,0	0,0	6,4	0,0	0,0	0,0	0,0	0,0	6,4	3,8
20.	60,3	39,7	34,6	21,8	20,5	50,0	25,6	0,0				

81,1 10,8 8,1

81,1 18,9 0,0 18,9

100,0 8,1 5,4 0,0 0,0

AVERAGE ACRES = 617,6

13,5 64,9 67,6 0,0 2,7

81,1 18,9 AVG. WIDTH = 78,3 AVG. LENGTH = 78,6

5,4 0,0 0,0 0,0 0,0 0;0 0,0

56,8 43,2

16,2 8,1 32,4 0,0 40,5 5,4

5,4 40,5 10,8

24,3 32,4 10,8 21,6

32,4 10,8 5,4 8,1 0;0 0,0 0,0

13,5 0,0 8,1 10,8 18;9 2,7 0,0 2;7

2,7 0,0 0,0 0,0 54;1

32,4 35,1

18,9 37,8

AVG. WIDTH = 42,5 AVG. LENGTH = 75,8 5,4

0,0 13,5 10,8 0,0

8,1 16,2 21,6 0,0

2,7 2,7 2,7 10,8 21,6 18,9 18,9 0;0

75,7 24,3 0,0 0,0 0,0 0,0 0,0 2,7 0,0 0;0 0,0 18,9 2,7

59,5 40,5 29,7 24,3 16;2 62,2 27,0 2;7

42,9 42,9 14,3

42,9 57,1 42,9 14,3

0,0 100,0 0,0 14,3 0,0

AVERAGE ACRES = 23,0

28,6 42,9 0,0 0,0 42,9

85,7 0,0 AVG. WIDTH = ,0 AVG. LENGTH = ,0

0,0 0,0 0,0 0,0 0,0 0,0 0,0

42,9 57,1

14,3 0,0 28,6 0,0 0,0 28,6

14,3 28,6 0,0

28,6 14,3 0,0 14,3

14,3 14,3 0,0 14,3 0,0 0,0 0,0

14,3 0,0 0,0 28,6 0,0 0,0 0,0 0,0

0,0 0,0 0,0 0,0 42,9

28,6 14,3

0,0 42,9

AVG. WIDTH = ,0 AVG. LENGTH = ,0 0,0

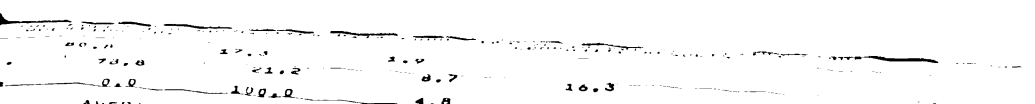
0,0 0,0 0,0 0,0

0,0 0,0 0,0 0,0

0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0

85,7 14,3 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 14,3

85,7 14,3 14,3 28,6 0,0 0,0 14,3 0,0


73.8
17.1
1.0
0.0
21.2
8.7
100.0
16.3
1.8

80,8 17,3 1,9

78,8 21,2 8,7 16,3

0,0 100,0 4,8 0,0 1,0

AVERAGE ACRES = 138,1

16,3 65,4 23,1 1,0 19,2

75,0 25,0 AVG. WIDTH = 31,2 AVG. LENGTH = 55,5

9,6 0,0 0,0 2,9 0,0 1;0 0,0

72,1 26,9

17,3 18,3 37,5 1,0 25,0 24,0

9,6 52,9 9,6

23,1 49,0 10,6 39,4

46,2 13,5 5,8 3,8 2;9 0,0 0,0

22,1 10,6 4,8 7,7 18;3 0,0 1,9 4;8

20,2 2,9 1,0 0,0 49;0

39,4 36,5

26,0 47,1

AVG. WIDTH = 37,4 AVG. LENGTH = 65,6 5,8

0,0 16,3 4,8 5,8

2,9 19,2 16,3 1.9

2,9 4,8 7,7 1,0 18;3 17,3 17,3 1;8

74,0 26,0 4,8 7,7 0,0 0,0 0,0 1,9 1,9 0;0 1,9 2,9 3,8

79,8 20,2 16,3 18,3 4;8 26,9 15,4 0;8

75,0 22,7 2,3

88,6 10,2 3,4 9,1

0,0 100,0 1,1 0,0 6,8

AVERAGE ACRES = 292,6

21,6 59,1 21,6 0,0 22,7

72,7 27,3 AVG. WIDTH = 39,0 AVG. LENGTH = 66,9

3,4 0,0 0,0 4,5 1,1 0;0 1,1

89,8 10,2

25,0 13,6 52,3 0,0 45,5 26,1

12,5 72,7 4,5

30,7 59,1 20,5 38,6

69,3 6,8 10,2 3,4 1;1 0,0 0,0

21,6 6,8 4,5 11,4 34;1 2,3 5,7 3;4

20,5 1,1 1,1 0,0 65;9

45,5 46,6

43,2 46,6

AVG. WIDTH = 42,4 AVG. LENGTH = 78,7 8,0

0,0 31,8 9,1 4,5

10,2 31,8 36,4 1,1

9,1 12,5 4,5 18,2 36;4 33,0 65,2 0;0

53,4 46,6 11,4 14,8 0,0 1,1 2,3 3,4 2,3 0;0 2,3 6,8 3,4

68,2 31,8 30,7 23,9 15;9 39,8 17,0 0;0

68,9 8,9 2,2

84,4 11,1 4,4 13,3

0,0 100,0 6,7 0,0 8,9

AVERAGE ACRES = 646,6

8,9 60,0 37,8 0,0 6,7

64,4 35,6 AVG. WIDTH = 32,7 AVG. LENGTH = 69,2

11,1 2,2 2,2 2,2 2,2 2,2 2,2

86,7 13,3

13,3 17,8 51,1 2,2 35,6 24,4

8,9 57,8 20,0

17,8 68,9 8,9 62,2

62,2 15,6 8,9 2,2 0,0 0,0 0,0

33,3 22,2 0,0 4,4 20,0 0,0 0,0 6,7

37,8 0,0 0,0 0,0 46,7

42,2 53,3

31,1 55,6

AVG. WIDTH = 44,7 AVG. LENGTH = 75,8 4,4

0,0 24,4 4,4 2,2

6,7 13,3 28,9 0,0

6,7 6,7 4,4 11,1 28,9 24,4 28,9 0,0

53,3 46,7 13,3 20,0 0,0 0,0 0,0 2,2 0,0 0,0 0,0 6,7 2,2

44,4 55,6 46,7 40,0 24,4 82,2 40,0 0,0

73,3 26,7 0,0

. 30,0 70,0 70,0 3,3

. 0,0 0,0 100,0 0,0 13,3

. AVERAGE ACRES = 30,6

. 43,3 43,3 30,0 0,0 6,7

. 83,3 16,7 AVG. WIDTH = 30,8 AVG. LENGTH = 51,2

3,3 0,0 0,0 0,0 0,0 0,0 0,0

. 36,7 63,3

. 6,7 10,0 6,7 13,3 6,7 6,7

. 0,0 33,3 3,3

. 16,7 20,0 16,7 3,3

0. 23,3 10,0 3,3 0,0 0,0 0,0 0,0

1. 13,3 10,0 0,0 6,7 3,3 0,0 0,0 3,3

2. 20,0 3,3 0,0 0,0 13,3

3. 33,3 6,7

4. 10,0 26,7

5. AVG. WIDTH = 20,0 AVG. LENGTH = 46,7 0,0

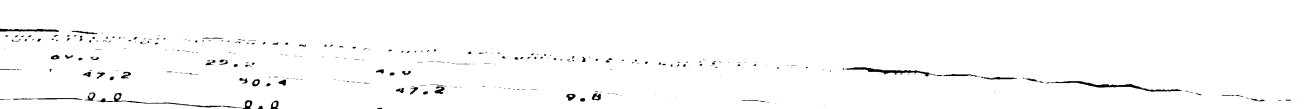
6. 0,0 6,7 0,0 3,3

7. 3,3 3,3 3,3 3,3

8. 0,0 0,0 3,3 0,0 6,7 0,0 3,3 0,0

9. 90,0 10,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 10,0

0. 96,7 3,3 0,0 0,0 6,7 3,3 3,3 0,0


47.2
0.0
25.0
30.4
4.0
47.2
9.8
0.0

69,9 25,2 4,9

47,2 50,4 47,2 9,8

0,0 0,0 100,0 1,6 10,6

AVERAGE ACRES = 117,7

19,5 65,0 32.5 0,0 8,1

82,1 17,9 AVG. WIDTH = 33,7 AVG. LENGTH = 52,7

8.9 0,0 .8 .8 0.0 0;0 0,0

65,0 35,0

12,2 19,5 30.9 1,6 18.7 18,7

8,9 50,4 6,5

22,8 40,7 11,4 30,1

0. 35,8 13,0 15,4 0.0 ;8 0,0 0,0

1. 26,0 10,6 4,9 5.7 15;4 0,0 ,8 2;8

2. 28,5 1,6 ,8 0.0 35;0

3. 40,7 26,0

4. 21,1 44,7

AVG. WIDTH = 35,3 AVG. LENGTH = 61,4 3,3

0,0 11,4 5,7 4,1

4,1 8,9 16,3 1.6

2,4 6,5 1,6 2,4 17;9 13,0 13,0 ;8

9. 84,6 15,4 4,1 ,8 0.0 3,3 0,0 0,0 ,8 1;6 0,0 1,6 4,1

0. 87,0 13,0 11,4 4,9 1;6 22,8 5,7 ;8

83,7 9,3 7,0

. 72,1 20,9 20,9 4,7

. 0,0 0,0 100,0 0,0 18,6

. AVERAGE ACRES = 286,3

. 9,3 65,1 48.8 0,0 2,3

. 81,4 18,6 AVG. WIDTH = 31,7 AVG. LENGTH = 50,5

0,0 0,0 0,0 0,0 2,3 2;3 0,0

. 60,5 37,2

. 14,0 14,0 34,9 0,0 25,6 18,6

. 7,0 46,5 9,3

. 20,9 41,9 7,0 32,6

0. 37,2 11,6 7,0 7,0 0;0 0,0 0,0

1. 23,3 4,7 4,7 9,3 16;3 0,0 2,3 2;3

2. 20,9 2,3 0,0 2,3 37;2

3. 34,9 27,9

4. 23,3 39,5

5. AVG. WIDTH = 36,3 AVG. LENGTH = 52,9 9,3

6. 2,3 18,6 2,3 0,0

7. 9,3 16,3 23,3 0,0

8. 0,0 7,0 0,0 2,3 20;9 11,6 18,6 0;0

9. 76,7 23,3 2,3 2,3 4,7 7,0 0,0 0,0 0,0 0;0 0,0 4,7 4,7

0. 83,7 16,3 11,6 9,3 11;6 23,3 11,6 0;0

81,3 18,7 0,0

96,9 3,1 3,1 0,0

0,0 0,0 100,0 0,0 3,1

AVERAGE ACRES = 651,7

9,4 68,8 50,0 0,0 3,1

78,1 21,9 AVG. WIDTH = 43,7 AVG. LENGTH = 90,6

0,0 0,0 0,0 3,1 0,0 0,0 0,0

71,9 28,1

9,4 12,5 53,1 0,0 25,0 18,7

9,4 56,3 6,3

18,7 50,0 9,4 40,6

0. 43,8 9,4 12,5 6,3 0,0 0,0 0,0

1. 12,5 12,5 3,1 12,5 28,1 0,0 0,0 6,3

2. 18,7 0,0 0,0 0,0 53,1

3. 21,9 56,3

4. 15,6 56,3

5. AVG. WIDTH = 36,0 AVG. LENGTH = 66,0 0,0

6. 0,0 12,5 0,0 0,0

7. 6,3 12,5 12,5 0,0

8. 3,1 6,3 0,0 9,4 15,6 15,6 15,6 3,1

9. 50,0 46,9 15,6 0,0 0,0 9,4 0,0 0,0 0,0 3,1 6,1 9,4 6,3

0. 43,8 56,3 50,0 31,3 37,5 71,9 31,3 0,0

THE FOLLOWING SUMMARIZES DATA FROM 7 50 ACRE OR LESS FRUIT FARMS
QUESTION NO. COMPOSITE RESULTS

85.7 14.3 0.0

. 85.7 14.3 14.3 0.0

. 0.0 0.0 0.0 100.0 0.0

. AVERAGE ACRES = 111.5

. 28.6 85.7 14.3 0.0 0.0

. 71.4 28.6 AVG. WIDTH = 30.0 AVG. LENGTH = 65.0

0.0 0.0 0.0 0.0 0.0 0.0 0.0

. 14.3 85.7

. 0.0 0.0 14.3 0.0 14.3 0.0

. 0.0 14.3 0.0

. 14.3 0.0 0.0 0.0

0. 14.3 0.0 0.0 0.0 0.0 0.0 0.0

1. 14.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0

2. 0.0 0.0 0.0 0.0 14.3

3. 14.3 0.0

4. 0.0 14.3

5. AVG. WIDTH = .0 AVG. LENGTH = .0 0.0

6. 0.0 0.0 0.0 0.0

7. 0.0 0.0 0.0 0.0

8. 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

9. 85.7 14.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 14.3

0. 100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

THE FOLLOWING SUMMARIZES DATA FROM 32 50 TO 200 ACRE FRUIT FARMS
QUESTION NO. COMPOSITE RESULTS

81,3 12,5 6,3

• 75,0 21,9 18,7 9,4

• 0,0 0,0 0,0 100,0 0,0

• AVERAGE ACRES = 112,1

• 6,3 71,9 25,0 0,0 6,3

• 93,8 6,3 AVG. WIDTH = 31,0 AVG. LENGTH = 55,0

0,0 0,0 0,0 0,0 0,8 0;0 0,0

• 68,8 31,3

• 3,1 6,3 53,1 6,3 15,6 31,3

• 12,5 56,3 0,0

• 21,9 46,9 25,0 25,0

0. 59,4 6,3 3,1 0,0 0;0 0,0 0,0

1. 34,4 12,5 0,0 3,1 12;5 3,1 0,0 0;0

2. 3,1 0,0 0,0 0,0 65,6

3. 37,5 31,3

4. 6,3 62,5

5. AVG. WIDTH = 40,0 AVG. LENGTH = 60,0 0,0

6. 0,0 6,3 0,0 0,0

7. 0,0 6,3 6,3 0,0

8. 0,0 0,0 0,0 0,0 6;3 3,1 6,3 0;0

9. 90,6 9,4 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0;0 0,0 0,0 9,4

0. 78,1 21,9 21,9 18,7 6;3 25,0 6,3 0;0

1. 100,0 0,0 0,0 0,0

2. 0,0 0,0 0,0 100,0 0,0

3. AVERAGE ACRES = 325,8

4. 50,0 33,3 16,7 0,0 16,7

5. 83,3 16,7 AVG. WIDTH = 40,0 AVG. LENGTH = 64,0
0,0 0,0 0,0 0,0 0,0 0;0 0;0

6. 66,7 33,3

7. 16,7 33,3 16,7 0,0 0,0 16,7

8. 16,7 50,0 0,0

9. 50,0 16,7 16,7 0,0

10. 33,3 0,0 33,3 0,0 0;0 0,0 0,0

11. 33,3 16,7 0,0 0,0 16;7 0,0 0,0 0;0

12. 16,7 0,0 0,0 0,0 50,0

13. 33,3 33,3

14. 50,0 16,7

15. AVG. WIDTH = 30,0 AVG. LENGTH = 65,0 16,7

16. 0,0 16,7 16,7 16,7

17. 0,0 0,0 33,3 16,7

18. 0,0 0,0 0,0 0,0 50,0 33,3 33,3 0;0

19. 50,0 50,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0;0 0,0 16,7 33,3

20. 66,7 33,3 33,3 16,7 16;7 66,7 0,0 16;7

100.0 0.0 0.0

100,0 0,0 0,0 0,0

0,0 0,0 0,0 100,0 0,0

AVERAGE ACRES = 588,3

0,0 0,0 33,3 0,0 66,7

33,3 66,7 AVG. WIDTH = 54,0 AVG. LENGTH = 85,0

0,0 0,0 0,0 0,0 0,0 0,0 0,0

66,7 33,3

33,3 0,0 33,3 0,0 66,7 0,0

33,3 33,3 0,0

33,3 33,3 33,3 0,0

0. 66,7 0,0 0,0 0,0 0,0 0,0 0,0

1. 0,0 0,0 0,0 33,3 33,3 0,0 0,0 0,0

2. 0,0 0,0 0,0 0,0 66,7

3. 0,0 66,7

4. 33,3 33,3

5. AVG. WIDTH = 66,0 AVG. LENGTH = 72,0 0,0

6. 0,0 33,3 0,0 0,0

7. 0,0 33,3 33,3 0,0

8. 0,0 0,0 0,0 0,0 33,3 33,3 33,3 0,0

9. 66,7 33,3 0,0 0,0 0,0 33,3 0,0 0,0 0,0 0,0 0,0 0,0 0,0

0. 0,0 100,0 0,0 166,7 0,0 133,3 33,3 33,3

THE FOLLOWING SUMMARIZES DATA FROM 32 50 ACRE OR LESS GENERAL FARMS
QUESTION NO. COMPOSITE RESULTS

59.4 37.5 3.1

. 37.5 59.4 46.9 12.5

. 0.0 0.0 0.0 0.0 103.1

. AVERAGE ACRES = 29.6

. 31.3 43.8 34.4 0.0 6.3

. 96.9 3.1 AVG. WIDTH = 20.0 AVG. LENGTH = 20.0

0.0 0.0 0.0 0.0 0.0 0.0 0.0

. 37.5 62.5

. 3.1 18.7 15.6 0.0 3.1 12.5

. 3.1 34.4 0.0

. 15.6 21.9 3.1 15.6

0. 21.9 6.3 9.4 0.0 0.0 0.0 0.0

1. 21.9 6.3 0.0 0.0 9.4 0.0 0.0 0.0

2. 18.7 0.0 0.0 0.0 15.6

3. 28.1 9.4

4. 25.0 12.5

5. AVG. WIDTH = 26.3 AVG. LENGTH = 53.0 6.3

6. 0.0 6.3 9.4 6.3

7. 6.3 12.5 15.6 6.3

8. 3.1 6.3 3.1 3.1 18.7 15.6 12.5 3.1

9. 75.0 25.0 0.0 0.0 3.1 3.1 0.0 0.0 0.0 3.1 0.0 6.3 6.3

0. 96.9 3.1 3.1 0.0 3.1 0.0 6.3 0.0

83.0	13.6	.8

. 52,3 46,1 39,8 8,6

. 0,0 0,0 0,0 0,0 101,6

. AVERAGE ACRES = 116,7

. 12,5 59,4 41,4 0,0 7,8

. 87,5 12,5 AVG. WIDTH = 30,7 AVG. LENGTH = 54,8

1,6 0,0 1,6 1,6 ,8 ,8 ,8

. 50,8 49,2

. 5,5 14,8 28,9 ,8 10,2 18,0

. 5,5 45,3 0,0

. 21,1 28,9 9,4 19,5

0. 31,3 7,0 8,6 2;3 ;8 0,0 0,0

1. 22,7 3,1 ,8 7,0 12;5 0,0 0,0 2;3

2. 10,2 0,0 ,8 3,1 37;5

3. 27,3 26,6

4. 14,1 41,4

5. AVG. WIDTH = 33,0 AVG. LENGTH = 68,5 2,3

6. ,8 10,2 2,3 ,8

7. 1,6 4,7 10,9 ,8

8. 1,6 5,5 4,7 1,6 10;9 6,3 9,4 0;0

9. 85,2 14,1 1,6 0,0 0,0 1,6 ,8 1,6 1,6 1;6 0,0 3,1 3,1

0. 85,9 13,3 10,2 7,8 5;5 18,7 10,2 0;0

THE FOLLOWING SUMMARIZES DATA FROM 37 200 TO 400 ACRE GENERAL FARMS
QUESTION NO. COMPOSITE RESULTS

	83.8	13.5	2.7									
1.	75.7	24.3	8.1	16.2								
2.	0.0	0.0	0.0	0.0	100.0							
3.	AVERAGE ACRES = 309.7											
4.	8.1	62.2	51.4	0.0	8.1							
5.	86.5	13.5	AVG. WIDTH = 30.8		AVG. LENGTH = 59.6							
	5.4	0.0	0.0	0.0	0.0	0.0	0.0					
6.	62.2	37.8										
7.	8.1	2.7	48.6	2.7	21.6	29.7						
8.	10.8	43.2	5.4									
9.	10.8	48.6	16.2	35.1								
10.	29.7	10.8	16.2	5.4	0.0	0.0	0.0					
11.	18.9	2.7	5.4	13.5	16.2	0.0	0.0	5.4				
12.	16.2	0.0	0.0	0.0	43.2							
13.	37.8	29.7										
14.	13.5	48.6										
15.	AVG. WIDTH = 40.0		AVG. LENGTH = 63.3		5.4							
16.	0.0	13.5	2.7	0.0								
17.	5.4	8.1	8.1	0.0								
18.	2.7	2.7	0.0	5.4	10.8	10.8	5.4	0.0				
19.	75.7	24.3	2.7	0.0	0.0	5.4	2.7	2.7	2.7	0.0	0.0	5.4	2.7
20.	64.9	35.1	24.3	24.3	10.8	56.8	24.3	0.0				

THE FOLLOWING SUMMARIZES DATA FROM 27 400 ACRE OR LARGER GENERAL FARMS
QUESTION NO, COMPOSITE RESULTS

77,8 16,5 3,7

1. 88,9 11,1 0,0 11,1
2. 0,0 0,0 0,0 0,0 100,0
3. AVERAGE ACRES = 656,8
4. 7,4 63,0 66,7 0,0 3,7
5. 85,2 14,8 AVG. WIDTH = 25,7 AVG. LENGTH = 59,2
7,4 0,0 0,0 3,7 0,0 0;0 0;0
6. 74,1 25,9
7. 7,4 14,8 51,9 0,0 37,0 22,2
8. 14,8 59,3 0,0
9. 14,8 59,3 14,8 44,4
10. 40,7 14,8 11,1 3,7 0;0 3,7 0,0
11. 29,6 7,4 0,0 14,8 18,5 0,0 0,0 3;7
12. 29,6 0,0 0,0 0,0 44,4
13. 48,1 33,3
14. 33,3 48,1
15. AVG. WIDTH = 39,4 AVG. LENGTH = 68,0 3,7
16. 0,0 18,5 7,4 11,1
17. 11,1 22,2 18,5 7,4
18. 7,4 18,5 7,4 14,8 29;6 18,5 25,9 3;7
19. 63,0 37,0 7,4 0,0 0,0 7,4 0,0 0,0 3,7 0;0 3,7 7,4 7,4
20. 63,0 37,0 33,3 22,2 3;7 66,7 25,9 0;0

TABLE 2

MARKET SUMMARY FOR MICHIGAN BY SIZE OF FARM
(Based on 1969 Farm Census)

	0-50 Acres	50 to 200 Acres	200 to 400 Acres	400 and Up	TOTAL
No. of Farms in Mich.	16,285	42,376	12,613	6,662	77,936
% of total	20.9%	54.4%	16.2%	8.6%	100%
No. of Farms in Sample	42	284	123	63	512
% of total Sample	8.2%	55.5%	24.0%	12.3%	100%
Stg. Const. 1966 to 71	8	36	31	20	95
% of Sample	19%	12.7%	25.2%	31.7%	*18.6%
Plan Stg. 1971 thru 75	5	41	40	14	100
% of Sample	11.9%	14.4%	32.5%	22.2%	*19.5%
5 Yr. Rate of Const.	1,940	6,100	4,100	1,481	13,621
Yearly Rate of Const.	388	1,220	820	296	2,722
% of Total Market	14%	45%	30%	11%	100%

*Overall

TABLE 3

MARKET SUMMARY FOR OHIO BY SIZE OF FARM
(Based on 1964 Farm Census)

	0 TO 50 ACRES	50 TO 200 ACRES	200 TO 400 ACRES	400 AND UP	TOTAL
No. of Farms in Ohio	53,448	45,499	6,894	4,354	110,194
% of total	48.5%	41.3%	6.3%	3.9%	100%
No. of Farms in Sample	62	263	129	81	535
% of total Sample	11.6%	49.1%	24.2%	15.1%	100%
Stg. Const. 1966 to 71	1	45	24	16	86
% of Sample	1.6%	17.1%	18.6%	19.8%	*16.1%
Plan Stg. 1971 thru 75	10	53	33	22	118
% of Sample	16.1%	20.2%	25.6%	27.2%	*22.1%
5 Yr. Rate of Const.	8,600	9,200	1,760	1,180	20,740
Yearly Rate of Const.	1,720	1,840	352	236	4,148
% of Total Market	42%	44%	8%	6%	100%

Projected no. of farms in Ohio based on Michigan's reduction rate (16.6%) = 91,600
Total projected rate of mach. stg. construction for the next 5 yrs. for Ohio = 17,250
Total projected rate of mach. stg. construction for the next 5 yrs. for Michigan and Ohio = 30,871

*overall

TABLE 4

MARKET SUMMARY FOR MICHIGAN BY TYPE OF FARM
(Based on 1964 Farm Census)

	CASH CROP	DAIRY	LIVESTOCK	FRUIT	GENERAL	TOTAL
No. of Farms in Mich.	30,672	22,205	19,227	5,940	15,460	93,500
% of Total	32.8%	23.8%	20.6%	6.3%	16.5%	100%
No. of Farms in Sample	167	126	94	42	83	512
% of total Sample	32.6%	26%	22.7%	9.4%	20.1%	110.8%
Stg. Const. 1966 to 71	25	34	22	6	8	95
% of total Sample	15%	27%	23.4%	14.3%	9.6%	*18.6%
Plan Stg. 1971 thru 75	31	40	14	4	11	100
% of total Sample	18.6%	31.7%	14.9%	9.5%	13.3%	*19.5%
5 Yr. Rate of Const.	5700	7040	2860	564	2060	18,224
Yearly Rate of Const.	1140	1408	572	113	412	3,645
% of total market	31.3%	38.6%	15.7%	3.1%	11.3%	100%

*overall

ITY

MANUFACTURING (26)
PRINTS OF THE

(27)

LOST