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A Budget Data Bank for South Dakota Crop and Livestock Enterprises

Herbert R. Allen

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A Budget Data Bank for South Dakota Crop and Livestock Enterprises

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The Budget Data Bank, as presented in this publication, was initially developed by the Department of Agricultural Economics at Oklahoma State University. It has been modified and adapted to South Dakota conditions. Primary modifications include (1) a revision of the input forms to simplify data preparation and processing (2) a change in procedure for employing the price vector (3) the addition of an output agendum for obtaining a standardized output with the use of only two data cards per budget and (4) the development of a supplementary program to aid in preparing machinery complement cards.

The successful use of the Budget Data Bank requires that some individual be designated to supervise and control the storage of budget data. It will destroy the utility of the program if all individuals having access to the data are permitted to make permanent changes in the stored data. The data banks are accessible by terminal or batch processing.

Users of the data bank may be most interested in section IV on processing procedures. This section is organized in accordance with different purposes and/or objectives of the user. By reference to the index one may find the objective or procedure in which he is interested and go directly to the page containing complete instructions for carrying out the procedure. It should also be noted that all forms are blank. This permits the duplication of forms in this publication for direct use by anyone wishing to do so.

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CROP AND LIVESTOCK ENTERPRISES

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A BUDGET DATA BANK FOR SOUTH DAKOTA CROP AND
LIVESTOCK ENTERPRISES

Herbert R. Allen*

I. INTRODUCTION

The budget data bank is a tool for developing and storing crop and livestock enterprise budgets. It was initially developed as a "budget generator" by Oklahoma State University. Teaching staff, research workers and extension personnel in farm management frequently have need for cost and return data on crop and livestock enterprises. In addition, it is necessary to frequently update the budgets under changing price conditions or alter the budgets for specialized purposes. The budget data bank will store basic data for 349 budgets. It provides a system for quickly modifying and updating the budgets in accordance with individual needs and interests. It also provides a method for standardizing the format and computational procedures used in calculating costs and returns from the different enterprises.

The purpose of this report is to document the data preparation and processing procedures for South Dakota use in order to make the budget data bank a useful tool for all staff members.

II. PREPARATION OF THE BASIC DATA FILES

The budget data bank requires the maintenance of ten separate data files to provide information necessary for the computations performed by the computer program. These files are in addition to the basic budget data which must be

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input when preparing a budget to be placed in storage. The ten data files include:

1. A name list of 500 production items
2. Price data
3. Machinery complement data
4. Set of machinery names
5. Equipment complement data
6. Set of equipment names
7. Fuel multipliers
8. Default parameter values
9. Seasonal price indices
10. Units of measurement

A discussion of the methods and procedures for preparing and maintaining these files is presented in this section.

Name List of Production Items

This list of names is prepared according to the format and conditions as set forth in Form 1. The name list uses code numbers from one to 500 and has a limit of 16 characters per name. The following code guide is used in assigning names.

<u>Code No.</u>	<u>Name Category</u>
1- 69	Livestock
70- 99	Crops
100-150	Feeds
151-199	Seeds
200-299	Fertilizer & Chemicals
300-399	Custom hire services
400-500	Other

Data cards are prepared by punching the code number in card columns 5-7. The code number is right hand justified; no decimal is punched. The name is punched in card columns 9-24. Any number of characters, not to exceed 16, may be used as a name. One card containing the code number and name is prepared for each name to be placed in storage.

The MODIFY program is used when entering or changing names in the name file. The job control language for this program is given in the Appendix,

Table 16. One may enter a complete set of names, change a name or add a name by using the following card stream:

```

MODIFY (a set of job control cards)
NAME
    data cards (one for each name)
END*
STOP
/*

```

It is not necessary to have a name in all 500 rows of the name file. There may be blank rows to be used for adding names as they are needed.

The above procedure using the MODIFY program will make permanent changes in the name file. It is necessary to use the BUDLIV program to make a temporary change. The proper card stream would be as follows:

```

BUDLIV (a set of job control cards)
    price vector card
NAME
    data cards (one for each name change)
END*
OUT6
    data card with budget ID number
STOP
/*

```

The above procedure employs the OUT6 agendum which results in a printout of the budget and the data placed in storage for that budget. The OUT6 agendum is included in the card stream since the name change is good for only one computer run. There would be no point in making such a temporary change unless we also wanted a printout with the name change included.

Price Vector Data

The purpose of the price vector is to provide prices for the 500 items contained in the name list. Prices stored in the price file will be used when the value -1.0 is entered in column 13 as the price when input-output data for a budget is being prepared. When a budget is placed in storage it may have the desired price included or it may have -1.0 stored as the price. When -1.0 is

stored it will cause the price in the price vector to be used as the price for that item. Prices in the price vector correspond on a one to one basis with the 500 production and operating input item names.

Price data for the price vector file is prepared according to the format and conditions identified in Form 2. The code number is punched in card columns 5-7, right hand justified with no decimal. Price of the item is punched in columns 9-18, left hand justified with a decimal punched. Additional information may be punched in card columns 19-80 but it is not used by the program. One card is punched for each item and its price. The code numbers correspond to the code numbers used with the 500 production item names.

The following card stream is used to enter data into the price vector file.

```

MODIFY   (a set of job control cards)
PRCEii  (ii=number of price vector)
        data cards for as many prices as desired
END*
STOP
/*

```

Seasonal Price Indices

A permanent file is stored containing monthly seasonal price indices for the first 70 (livestock) items in the name list. When an annual price, either from the price vector or supplied by the user, is multiplied by the appropriate seasonal price index, an estimated price for a particular month is obtained.

A user can use the annual price found in the price vector adjusted by the seasonal index by inserting a -2.0 in column 13 of the livestock data input form.

In cases where the user wants to provide the annual price but wishes to have this price adjusted seasonally, the negative of the annual price he wishes to use should be entered in column 13. For example, if the annual price we wish to be used is \$17.00 and we wish to have this adjusted using the appropriate seasonal indices, the correct entry in column 13 is -17.00.

The seasonal price index array has 12 columns, one for each month, and 70 rows corresponding to the first 70 codes found in the name list. Indices can be stored in the array using the following formatting procedure. All indices entered should be divided by 100. For example, the appropriate entry for 105 would be 1.05.

	<u>Card Column</u>
January Price Index	9-14 (decimal punched)
February Price Index	15-20 (decimal punched)
March Price Index	21-26 (decimal punched)
April Price Index	27-32 (decimal punched)
May Price Index	33-38 (decimal punched)
June Price Index	39-44 (decimal punched)
July Price Index	45-50 (decimal punched)
August Price Index	51-56 (decimal punched)
September Price Index	57-62 (decimal punched)
October Price Index	63-68 (decimal punched)
November Price Index	69-74 (decimal punched)
December Price Index	75-80 (decimal punched)

One card is used for each row of the array to store the 12 monthly indices.

The complete data card stream to store the seasonal price indices is as follows:

```

MODIFY (a set of control cards)
SEAS
    data cards for seasonal price indices
END*
STOP
/*

```

Machinery Complement Data

A machinery complement is a table of 100 rows and 16 columns corresponding to those shown in Form 3. It contains data used in the machinery cost equations. Form 3 is used when preparing data to store in the machinery complement file. One row in the table is used to supply the cost coefficients* for each machine.

*Coefficients in this budgeting program are the items of input-output data required for building traditional budgets.

FORM 3. MACHINERY COMPLEMENT COEFFICIENTS

Budget Data Bank, South Dakota State University

First Data Card

	Gas Price Dol./gal.	L.P. Gas Price Dollars/gal.	Diesel Fuel Price Dollar./gal.	Rate per dollar of average investment for:				Print Control*
				Taxes	Housing	Insurance	Interest	
Column	1-5	6-10	11-5	16-20	21-25	26-30	31-35	36-40
Default Value	.365	.315	.345	.01	.01	.006	.07	XXXX
Your value								

*If 1.0 is punched in col. 36 of the first data card only the table form of machine costs will be printed.

Machine Cost Coefficients

COLUMN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
NAME OF MACHINE	CODE (LINE NO.)	WIDTH (FEET)	INITIAL LIST	SPEED (MPH)	FIELD EFFI- CIENCY	RC1	RC2	RC3	HOURS USED	YEARS OWNED	RFV1	RFV2	PURCHASE PRICE	FUEL TYPE **	HOURS OF LIFE	MAX PTO HP
1-16	17-20	21-24	25-29	30-33	34-36	37-40	41-47	48-51	52-55	56-57	58-62	63-66	67-71	72	73-77	78-80

Key Punching: Punch all decimals. If decimal is not given, right hand justify within the field.

** Fuel type: 1 = gas 2 = L.P. 3 = Diesel

Use catalogued program MACH7107 to calculate machine costs from the above data

Use catalogued program COMP3207 to punch the above data on cards in format for use in the budget generator and to reproduce the data and print it in tabular form.

The system is designed for storage of 15 different machinery complements. However, only one set of names is used. The name list is stored separately from the cost coefficients and each is identified by a corresponding row number (code number).

When preparing data for storage it is most convenient to use Form 3. The format for keypunching is identified on the form. The column headings on the form are largely self-explanatory. A brief description of each column on the form is given here. The name is entered on Form 3 for convenience and identification only. It cannot be stored with the program employed with this form. After data on Form 3 have been punched according to the format thereon it is possible to use either of two computer programs to accomplish a desired purpose. Program MACH7107 may be used to calculate and print the total cost structure for each machine. Program COMP3207 is used to print the data in tabular form as it appears in Form 3 and to punch the data on cards in a format for use in the budget data bank. Cards for the budget data bank use the format in the following data description.

First Data Card

1. Code Number (columns 17-20 right justified, no decimal)

Any number between 1-100 is a valid code number, with the following constraints:

- (a) Code numbers 1-9 are reserved for tractors
- (b) Code numbers 10-11 are reserved for a truck and pickup
- (c) Code numbers 12-29 are for any other self-propelled machine or any machines with an auxiliary engine
- (d) Code numbers 30-100 are for all pull type implements. Fuel cost is computed only for machines whose code is less than 30.

2. Width (columns 21-30, decimal punched)

This variable is the swath in feet that the machine covers, except for tractors and trucks. Tractor width is given as "0" and truck width is expressed in tons to indicate truck size.

3. Initial List Price (columns 31-40, decimal punched)

This variable is the factory recommended selling price in dollars, not the purchase price of the machine.

4. Speed (columns 41-50, decimal punched)

This variable is the average speed the machine travels in the field when performing its task, expressed in miles per hour. Table 1 contains a selected list of machines and their appropriate range of speeds. These data were taken from Table 1, page 292 of the Agricultural Engineers Yearbook 1971 [1].

5. Field Efficiency (columns 51-60, decimal punched)

This variable is the ratio of the actual effectiveness of a machine to its theoretical effectiveness, expressed as a decimal fraction. Table 1 contains a list of machines and their associated field efficiencies.

6. RC1 (columns 61-70, decimal punched)

RC1 is a repair cost variable which is the ratio of total accumulated repair costs to initial list price for the entire life of the machine. Table 2 contains a list of categories of machines and their associated RC1 values. These data are based upon work completed by Bowers [2]. The A.S.A.E. have adopted the equation used in the budget generating program and values for RC1 may be found in Table 2, page 294 of the Agricultural Engineers Yearbook [1].

7. RC2 (columns 71-80, decimal punched)

RC2 is a variable that helps determine the repair rate curve for a specific machine. Some values of RC2 for selected categories of machines may be found in Table 2. These values are also taken from page 14 of Bowers [2]. Additional values for RC2 may be found in Section 5.3.1.1. on page 209 of the Agricultural Engineers Yearbook [1].

Second Data Card

8. RC3 (columns 1-10, decimal punched)

RC3 is an exponent variable which in conjunction with RC2 determines the shape for the repair curve for a specific machine. The data sources for RC2 may also be used for RC3.

9. Hours Used Annually (columns 11-20, decimal punched)

This is the average number of hours a machine is used each year. This item varies significantly from farm to farm and region to region. Therefore, no specific reference is given for this item.

10. Years Owned (columns 21-30, decimal punched)

This is the average number of years a machine is owned before it is traded or sold.

TABLE 1. TYPICAL SPEEDS AND FIELD EFFICIENCIES
FOR SELECTED MACHINES

MACHINE	SPEED IN MILES PER HOUR	FIELD EFFICIENCY %
Moldboard plow or disk plow	3.5-6.0	70-90
Chisel plow	4.0-6.5	70-90
Lister	3.0-5.5	70-90
Oneway disk	4.0-7.0	70-90
Subsoiler	3.0-5.0	70-90
Powered rotary tiller	1.0-5.0	70-90
Single disk harrow	3.0-6.0	70-90
Tandem disk harrow	3.0-6.0	70-90
Offset disk	3.0-6.0	70-90
Spring tooth harrow	3.0-6.0	70-90
Spike tooth harrow	3.0-6.0	70-90
Roller or Packer (cultipacker)	4.5-6.5	70-90
Rotary hoe	5.0-10.0	70-85
Rod Weeder	4.0-6.0	70-90
Field cultivator	3.0-8.0	70-90
Row Crop cultivator		
shallow	2.5-5.0	70-90
deep	1.5-3.0	70-90
Bed shaper	2.0-4.0	70-90
Unpowered rotary cultivator	3.0-7.0	70-90
Fertilizer spreader pull type	3.0-5.0	60-75
Anhydrous ammonia applicator	3.0-5.0	60-75
Sprayer	3.0-5.0	60-75
Planter	3.0-6.0	50-85
Grain drill	2.5-6.0	65-85
Mower	5.0-7.0	75-85
Mower-conditioner	4.0-6.0	60-85
Self propelled swather	3.0-6.0	55-85
Hay conditioner	5.0-7.0	75-85
Hay rake	4.0-5.0	70-85
Windrower small grain	5.0-7.0	75-85
Pull type combine	2.0-4.0	65-85
Corn picker	2.0-4.0	60-80
Rotary mower	3.0-8.0	75-85

SOURCE: American Society of Agricultural Engineers, "Agricultural Machinery Management Data," Agricultural Engineers Yearbook, 1971, pp. 287-294.

TABLE 2. REPAIR COST FACTORS, REMAINING FARM VALUE FACTORS AND HOURS OF LIFE FOR TYPICAL FARM MACHINES

	Repair Cost Factors			Remaining Farm Value Factors		Hours of Life
	RC1	RC2	RC3	RFV1	RFV2	
Tractors	1.2	.000631	1.6	.68	.92	12,000
Trucks	.8	.000631	1.4	.67	.86	4,000
Pickups	.68	.000631	1.4	.60	.885	4,000
Fert. spreaders	.65	.000251	1.8	.56	.885	1,000
Anhydrous applicator	.65	.000631	1.6	.6	.885	1,000
Plows	2.0	.000251	1.3	.6	.885	2,000
Disks	.65	.000251	1.8	.6	.885	2,000
Chisels and Harrows	.65	.000251	1.8	.6	.885	2,000
Cultivators and Rotary Hoes	1.0	.000251	1.8	.6	.885	2,000
Combines	.33	.000251	1.8	.635	.895	2,000
Corn Pickers	.5	.000631	1.6	.6	.885	1,500
Ensilage Choppers	1.2	.002510	1.3	.56	.885	1,500
Row Planters	.80	.000631	1.6	.6	.885	1,200
Drills	.65	.000251	1.8	.6	.885	1,000
Listers	.80	.000631	1.6	.6	.885	1,200
Sickle Mower	1.8	.002510	1.3	.6	.885	1,000
Swathers and Rakes	1.0	.002510	1.3	.56	.885	1,500
Wagons	1.0	.002510	1.4	.56	.885	2,000
Balers	.85	.002510	1.3	.56	.885	2,000
Sweep	1.0	.000251	1.8	.6	.885	2,000
Stackhand	1.0	.002510	1.3	.6	.885	1,000
Sprayers	.65	.000251	1.8	.6	.885	1,000

SOURCE: American Society of Agricultural Engineers, "Agricultural Machinery Management Data," Agricultural Engineers Yearbook, 1971, pp. 287-294.

11. RFV1 (columns 31-40, decimal punched)

RFV1 is a constant used to arrive at the percentage of original value that remains after the first year depreciation occurs, expressed as a decimal fraction. Values for RFV1 may be found in Section 5.2.1.3., page 289 of the Agricultural Engineers Yearbook [1].

12. RFV2 (columns 41-50, decimal punched)

RFV2 is a remaining farm value variable which is a component of the standard double declining balance equation. Values for RFV2 may be found in Table 2. These values were taken from page 41 of Bowers [2]. Additional values for RFV2 may be found in section 5.2.1.3, page 289 of the Agricultural Engineers Yearbook [1].

13. Purchase Price (columns 51-60, decimal punched)

This variable is the actual dollar value paid for the machine. Purchase price should be lower than initial price (variable number 3). There is no specific reference for purchase price other than those given for initial list price.

14. Fuel Type (columns 61-70, decimal punched)

This variable indicates the type of fuel, gasoline, L.P. gas, or diesel, that the machine uses. The numbers that should be entered here are: 1.0 for gasoline, 2.0 for L.P. gas, and 3.0 for diesel.

15. Hours of Life (columns 71-80, decimal punched)

This variable is the number of hours of expected mechanical life. Table 2 contains several categories of machines and their respective mechanical life. These data were taken from page 12 in the Appendix of Bowers [2]. Additional machines and their mechanical lives can be found in Table 2, page 294 of the Agricultural Engineers Yearbook 1971 [1].

16. Machine Horsepower

This variable is entered individually for each of the machines on the first 29 rows of the machinery complement. The program was initially developed to calculate fuel consumption as a function of list price. It was later altered to calculate fuel consumption as a function of maximum PTO horsepower. If no horsepower coefficient is provided in column 16 of the machinery complement the list price procedure used in the past is put into use. If, however, a horsepower coefficient is provided then the new procedure is used.

If fuel must be computed by some procedure other than horsepower, the size index can be entered in column 16 of the machinery complement and fuel consumption per unit of that size entered in the fuel multiplier table.

Horsepower coefficients are placed in storage through use of the MCHG agendum with the MODIFY program. This processing procedure is discussed in Section III.

Storing Machinery Data

Two different agenda may be used to place machinery complement data into storage or to change data previously stored. The MCOM*i*i agendum changes all items on one row of the machinery complement matrix. The MCHG*i*i agendum changes one or more cells (coefficients) in the machinery complement matrix. The value "*i*" is the machinery complement number.

The MCOM*i*i agendum uses two cards for each machine or row in the table. It uses the following format.

<u>Variable</u>	<u>Card Column</u>
Code number	17-20 (right justified, no decimal)
Width	21-30 (decimal punched)
Initial list price	31-40 (decimal punched)
Speed	41-50 (decimal punched)
Field efficiency	51-60 (decimal punched)
RC1	61-70 (decimal punched)
RC2	71-80 (decimal punched)
RC3	1-10 (decimal punched)
Hours used annually	11-20 (decimal punched)
Years owned	21-30 (decimal punched)
RFV1	31-40 (decimal punched)
RFV2	41-50 (decimal punched)
Purchase price	51-60 (decimal punched)
Fuel type	61-70 (decimal punched)
Hours of life	71-80 (decimal punched)

The above format is used with the MCOM*i*i agendum when all items on one machine row of the matrix (table) are stored initially or added to an existing complement. If any data field in the cards is left blank it will be stored as a zero value. The complete data card stream would be as follows:

```

MODIFY (a set of program control cards)
MCOMii
      data cards - 2 cards for each machine
END*
STOP
/*

```

The MCHG*i*i agendum is used when individual items (cells in the matrix) of the machinery complement are to be added or changed. Data cards are prepared and punched in the format presented in Table 3. Five values may be entered

on each card and when the row number changes a new card is punched. Nothing is punched in the first 4 columns of the data card. The row number and column number are identified in Form 3 used for original entries, or in the computer printout of the machine complement. A single item or several items may be entered.

Table 3. Format for Data Cards with the MCHG11 Agendum

Row No.	ITEM 1		ITEM 2		ITEM 3		ITEM 4		ITEM 5	
	Col. No.	Value	Col. No.	Value	Col. No.	Value	Col. No.	Value	Col. No.	Value
5-6	7-8	9-18	19-20	21-30	31-32	33-42	43-44	45-54	55-56	57-66

The complete data card stream for using the MCHG11 agendum is as follows:

```

MODIFY    (a set of program control cards)
MCHG11
          data cards for machinery item changes
END*
STOP
/*

```

Formulas for Machine Cost Computations

Data entered on Form 3 and stored in the machinery complement file are used in making the machine cost calculations. To aid in understanding how machine costs are computed the basic formulas are presented here. These formulas have been taken from work by Wendel Bowers [2].

$$\text{Percent of life used up (L\%)} = \frac{\text{Hours used annually} \times \text{years owned} \times 100}{\text{hours of life}}$$

$$\text{Total accumulated repairs (TAR)} = \text{ILP} \times \text{RC1} \times \text{RC2(L\%)}^{\text{RC3}}$$

where ILP is the initial list price and L% is expressed as an integer (no decimal). Total accumulated repairs cover the percent of the total expected life period used up by the owner as represented by L%.

$$\text{Remaining Farm Value (RFV)} = \text{ILP} \times \text{RFV1} \times (\text{RFV2})^{\text{Y}}$$

where Y is the number of years owned and remaining farm value is the same as salvage value

$$\text{Annual Depreciation} = \frac{\text{Purchase price} - \text{RFV}}{\text{years owned}}$$

Gallons of gas per hour = Horsepower rating x fuel consumption factor where fuel consumption factors are:

$$\begin{aligned} \text{Gasoline engines} &= 0.069 \\ \text{LP gas units} &= 0.0819 \\ \text{Diesel motors} &= 0.0484 \end{aligned}$$

Fuel, Oil & Grease per hour = gal. per hour x 1.15 x fuel price
where oil and grease charges = 15% of gasoline used

$$\text{Repair cost per hour} = \frac{\text{Total Accumulated Repairs (TAR)}}{\text{Hours Used Annually} \times \text{Years Owned}}$$

$$\text{Average value (AV)} = \frac{\text{Purchase Price} + \text{Remaining Farm Value}}{2}$$

$$\text{Tax Cost per hour} = \frac{\text{Purchase Price} \times \text{Tax Rate}}{\text{Hours Used Annually}}$$

$$\text{Insurance Cost per hour} = \frac{\text{Average Value} \times \text{Insurance Rate}}{\text{Hours Used Annually}}$$

$$\text{Interest Cost per hour} = \frac{\text{Average Value} \times \text{Interest Rate}}{\text{Hours Used Annually}}$$

$$\text{Hours per acre} = \frac{8.25}{\text{Width in Feet} \times \text{Speed in mph} \times \text{Field Efficiency}}$$

Tax rates, insurance rates and interest rates are stored in the default parameter file and used by the computer in the above calculations. These rates may be changed from time to time. Assumed rates currently stored are:

$$\begin{aligned} \text{Taxes} &= 0.01 \\ \text{Insurance} &= 0.006 \\ \text{Interest} &= 0.07 \end{aligned}$$

Housing is not included in the above formulas. However, housing costs may be readily included by increasing the insurance or tax rate sufficient to cover housing costs.

Set of Machinery Names

All machinery complements have the same set of names. Names can be stored for each of the 100 lines but it is not required that a name be placed on every line. Some line names may be left blank with names added as they are needed.

If a new set of cost coefficients is added to the machinery complement it is necessary to incorporate a name into the name list to correspond with the line number (code number) for the machinery item. If this is not done a blank will appear in the output in place of the machinery name.

Sixteen characters is the maximum length for a machinery name. Machinery names may be listed on Form 4. The data would be punched according to instructions on the form. Code numbers are punched in card columns 5-7, right hand justified and no decimal is punched. The name is punched in card columns 9-24. The following card sequence would be used to place the names in storage.

```

MODIFY   (a set of control cards)
MCNM
        data cards with names for the machinery complement
END*
STOP
/*

```

Equipment Complement Data

Data for calculating equipment costs are stored in the equipment complement data bank. The ECPA agendum is employed when equipment costs need to be calculated. To obtain a detailed output of the calculations one may employ the LUT2 agendum. For information on the use of these agendums see the discussion on processing procedures discussed in Section IV.

There is room to store 15 different equipment complements. Each of the complements contain 11 columns and 100 rows. An example of a completed equipment complement is presented in Appendix Table 13.

When preparing data for input it is best to use Form 5 prepared for this purpose. Even though there is room for 100 items in each complement it is not necessary that all 100 rows be used. The card format and keypunching instructions are all given on the data input form. The variables are all identified in the column headings. It will be noted that all data for one equipment item are entered on two cards. The equipment name is entered on Form 5

FORM 4. MACHINERY COMPLEMENT NAMES
Budget Data Bank
South Dakota State University

5-7	9-24
CODE	Name of Item

Card stream
MODIFY
MCM
name cards
END*
STOP
/*

Keypunching: Code number punched in cols. 5-7, right justified, no decimal.
Name punched in cols. 9-24

FORM 5. FORM FOR KEYPUNCHING EQUIPMENT COMPLEMENT DATA STORED IN THE BUDGET DATA BANK
South Dakota State University

COLUMN	1	2	3	4	5	6	7	8	9	10	11
FIRST DATA CARD							SECOND DATA CARD				
NAME	CODE	SIZE	UNITS CODE	ASSET TYPE*	LIST PRICE	PURCHASE PRICE	YEARS LIFE	PROPORTION OF LIST PRICE**			ANNUAL HOURS LABOR
1-16	17-20	21-30	31-40	41-50	51-60	61-70	71-80	1-10	11-20	21-30	31-40

*Asset Type: 1 = Capital livestock item 2 = Physical Equipment
 **Salvage value, repairs and Fuel and Oil are all entered in decimal form as a proportion of list price.
 Keypunching: Code is right justified, no decimal. All other values are left justified, decimal punched.

for convenience and identification only. The name will not be placed in storage by following the procedures on form 5.

To store the equipment complement data it is necessary to use the following data card stream.

```

MODIFY (a set of program control cards)
EQUIi1
      data cards for equipment
END*
STOP
/*

```

The value "i1" in card columns 5 and 6 of EQUIi1 agendum identifies the equipment complement number.

Variables on First Data Card of Equipment Complement

1. Code Number (columns 17-20 right justified, no decimal).

Any number between 1 and 100 is a valid code with the following reservations:

- (a) Code numbers 1-50 are for inanimate equipment items
- (b) Code numbers 51-100 are for capital livestock items

2. Size of Item (columns 21-30, decimal punched)

Some numerical measure of size should be entered here. It is usually expressed in terms of the number of units as identified by the units code entered in the adjacent column of the input form. For example, suppose you are entering data to represent that the cost of milking equipment in a six stall milking parlor is \$2,000. The units code in this case would specify "head" and the numerical size would be six. You would thus be indicating that the cost of equipment for a 6 stall milking parlor would be \$2,000.

3. Units Code (31-40, decimal punched)

One of the numerical units codes specified in Table 6 should be used. Valid entries are between 1 and 25.

4. Type of Asset (41-50, decimal punched)

Currently there are two types of equipment, physical equipment and capital livestock. The reason for specifying type is to determine the cost computation procedure used and in some cases a breakdown of costs. If in

the future some specialized cost computation procedures are developed for certain items, these can be placed in the program and the assets to which they apply identified by a type code.

Type Code	
1.0	Capital livestock item
2.0	Physical equipment

5. List Price (51-60, decimal punched)

This is the list price for each item. In most cases, list price and purchase price will be identical.

6. Purchase Price (61-70, decimal punched)

This is the price paid by the operator. In some cases quantity discounts may be available and this variable allows these to be taken into account.

7. Years Life (71-80, decimal punched)

Years life is the time period during which the asset will be used in its current form.

Variables on Second Data Card of Equipment Complement

8. Salvage Value as a Proportion of List Price (1-10, decimal punched)

When list price is multiplied by this variable, salvage value is determined. Very important in determining what this variable should be is the years life specified above. Some equipment, buckets, forks, etc. will be junked and the appropriate entry is 0.0. For some livestock items, no depreciation is expected and the appropriate entry is 1.0.

9. Repair Proportion (11-20, decimal punched)

Repairs are computed for the lifetime of the asset by multiplying this variable by the list price. Therefore, the entry made in this column should be the proportion of list price that one expects to spend on repairs over the item's life. This number can be greater or less than 1.0. Most livestock entries will have a zero entry for this variable.

10. Fuel and Lubricants as a Proportion of List Price (21-30, decimal punched)

Fuel and lubricant charges are computed on an annual basis by multiplying this variable by list price. The entry made for this variable should be the proportion of list price that fuel and lubricants are expected to amount to each year. In most cases, entries for livestock will be zero.

11. Annual Hours Labor Required (31-40, decimal punched)

The appropriate entry in this variable is the total number of hours labor expected to be expended on this item during each year. Care should be taken when specifying livestock labor. It is relatively easy to include livestock labor twice since row 49 of the budget input form also asks for the amount of labor spent on livestock.

Calculating Equipment Costs

Equipment costs are first calculated on an annual basis for a unit of equipment as identified in the equipment complement. The annual cost summary is printed by using the LUT2 agendum. An example of this cost summary is shown in Appendix Table 17. Formulas for calculating the annual cost per unit are as follows:

1. Average Value = (Purchase Price + Salvage) ÷ 2.
2. Depreciation per year = (Purchase Price less Salvage Value) ÷ Years of Life.
3. Interest = Annual Interest Rate X Average Value.

The interest rate is specified on line 6 of the set of default parameters placed in storage.

4. Insurance = Average Value X Insurance Rate.

The insurance rate is specified on line 15 of the set of default parameters placed in storage.

5. Taxes = Average Value X Tax Rate.

The equipment tax rate is specified on line 17 of the set of default parameters placed in storage.

6. Repairs = (List Price X Repair as a Proportion of List) ÷ Years of Life.

The repair proportion is an estimate of what total repairs throughout the ownership period will be as a proportion of list price. This proportion is specified in column 9 of the equipment complement data placed in storage.

7. Fuel and Lubrication = List Price X Fuel and Lub. Proportion

The fuel and lubrication as a proportion of list price is specified in column 10 of the equipment complement data placed in storage.

8. Labor Cost = Hours of Labor X Labor Cost Per Hour.

The hours of labor associated with a unit of equipment complement data. This does not involve the hours required for construction or

installation of items of equipment. It is only the hours of labor required annually for maintenance and operation. An alternative procedure is to specify no hours of labor for equipment and include all livestock labor on line 49 of the budget data input form. Care must be taken not to duplicate hours of labor in these two sections.

The labor cost per hour is specified on line 12 of the set of default parameters placed in storage.

After annual costs are calculated the annual charges for use in the budget are determined. Charges for equipment to be used in the budget are dependent upon the number of animals for which the budget is being established and the nature of the unit of equipment as defined in the equipment complement.

$$\text{Annual Charge} = \text{Total Annual Cost} \times \text{Number of Units} \times \text{Proportion of Cost}$$

The number of units is entered in column 13 of the budget input form and proportion of cost is entered in column 14. The number of units refers to the number of units of the item of equipment used or owned. The proportion of cost is that proportion which should be charged against this budget. For example, suppose a budget for one dairy cow is being prepared. One dairy cow is then referred to as the "budget unit." You have determined that the milking equipment for a 6 stall milking parlor will cost \$2,000. This equipment would serve a 100 cow herd. A unit of the equipment, as entered in the equipment complement, consists of 6 head (see discussion under item 2 of "variables entered on first data card" as discussed earlier in this section). When preparing the budget input form you would enter the number of units as .01, since one milking parlor is required for a 100 cow herd. The proportion of cost charged to this budget would be 1.0 since the budget unit is for 1 cow.

As a further example suppose a water tank with a 250 gallon capacity is used as an item of equipment. If a budget for one animal is being prepared and it is determined that a 10 gallon capacity is required per animal then 10/250 or .04 is entered in Column 14 as the proportion charged to this budget and "1.0" is entered in column 13 of the budget input form to indicate that one water tank is owned and/or used.

The printout from the LUT2 agendum, as presented in Appendix Table 17, shows the annual charges calculated as described in the preceding paragraphs. Ownership charges, as shown in the printout, include depreciation, insurance and taxes. Operating charge includes repairs plus fuel and lubrication. Interest is not included in the ownership costs since it is itemized separately in the budget printout.

Set of Equipment Names

The name list for equipment items is stored separately from the data pertaining to the item. All equipment complements have the same set of names. One name is stored for each of the 100 lines. When equipment complement data are entered using the EQUIP agendum the name of the equipment item is not entered or changed. In order to store a name or change a name it is necessary to use the MENA agendum. Card sequence and formatting information is as follows:

Card Columns		
First Card	MENA	1-4
Second and each additional card	Item line number	5-7 (right justified, no decimal)
	Name of item	9-24
Final Card	END*	1-4

Form 6 is used for compiling and keypunching the data cards used to enter equipment complement names. Sixteen characters is the maximum length for an equipment name. The code number on this form is the same as the line number of the equipment item.

The complete data card stream to enter a new name or change a name is as follows:

```

MODIFY (a set of program control cards)
MENA
    Data cards for equipment names. One card for
    each equipment item.
END*
STOP
/*

```

Fuel Multipliers

In addition to the 16 coefficients contained in the machinery complement table, self-powered machines require additional information for fuel cost computations. The first 29 machines in the machinery complement table have their own power. Column 14 in the table indicates whether the machine uses gasoline, L.P. gas or diesel fuel. Therefore, a table with 29 rows and 3 columns (for each of the fuel types) is required to provide multipliers for each of the first 29 machines.

When the budget data bank was initially developed fuel multipliers were prepared on the assumption that horsepower and list price were very highly correlated. Fuel multipliers as a function of list price were therefore placed in storage. Later it was decided that fuel multipliers as a function of drawbar horsepower would be more appropriate. Both methods are now available. The program chooses fuel consumption estimation procedure on the following basis: If no horsepower coefficient is provided in column 16 of the machinery complement table the list price procedure used in the past is put into use. If however, a horsepower coefficient is provided the new procedure is used.

If fuel use must be computed by some procedure other than horsepower the size index can be entered in column 16 of the machinery complement and fuel consumption per unit of that size entered in the fuel multiplier table.

Gallons of fuel per hour per horsepower are currently sorted in the program as follows: gasoline engines = 0.069 gal., L.P. engines = 0.081 gal. and diesel engines = 0.048 gal. Gallons of fuel per \$1,000 of initial list price are presented in Table 4.

Table 4. Fuel Multipliers in Gallons of Fuel
Per \$1,000 of List Price

EQUIPMENT	GASOLINE	DIESEL	L.P. GAS
Two wheel drive tractors Self propelled combines Self propelled swathers Auxiliary engines	.69	.44	.76
Self propelled cotton picker	.23	.16	.27
Trucks and pickups	1.00	.64	1.10
Four wheel drive tractors Self propelled forage harvestors	.46	.31	.53
Crawler tractors Feed trucks with power box	.36	.25	.44

SOURCE: Rodney L. Walker and Darrel D. Kletke [9].

Data cards are prepared with the following format to enter either horse-power fuel multipliers or list price fuel multipliers.

	<u>Card Column</u>
Row number	5-7 (right justified, no decimal)
Gasoline multiplier	9-18 decimal punched
L.P. gas multiplier	19-28 decimal punched
Diesel multiplier	29-38 decimal punched

The complete card stream to enter the fuel multipliers is as follows: To enter horsepower multipliers we use the FMIG agendum and to enter list price multipliers we use the FMLT agendum.

```

MODIFY (a set of program control cards)
FMIG or FMLT
      data cards with fuel multipliers
END*
STOP
/*

```

In order to use the procedure of calculating fuel consumption by horsepower it is also necessary to enter the horsepower rating in column 16 of the machinery complement table for any or all of the machines listed on the first 29 rows. Data cards to enter the drawbar horsepower ratings are prepared according to the following format:

	<u>Card Column</u>
Row Number	5-6 (right justified, no decimal)
Column Number	7-8 (right justified, no decimal)
Drawbar Horsepower	9-18 (left justified, decimal punched)

It will be recognized that the column number punched in card columns 7 and 8 will always be 16. One card is used for each machine horsepower entered. The complete card stream to enter the data would be as follows:

```

MODIFY (a set of program control cards)
MCHGi1 (i1 = complement number)
      data cards; one for each machine
END*
STOP
/*

```

Temporary changes can be made in the fuel multipliers and the horsepower coefficients using the FMTG and MCHG agenda of the BUDLIV program. The MCHG agendum is discussed in Section III. Below the FMTG requirements are given.

		<u>Card Column</u>
First Card	FMTG	1-4
Second and each additional card	Row number of machine (1-29)	5-7 right justified, no decimal
	Fuel type 1 = gas, 2 = LP, 3 = diesel	8-10 right justified, no decimal
	Fuel multiplier	11-20 decimal punched
Final card	END*	1-4

Default Parameter Values

A list of 25 values required for many of the calculations performed by the program are placed in a separate file and called by the program when they are needed. Form 7 has been prepared as a guide to preparation and entry of the data. Formatting, keypunching and card stream for processing are all identified on the form.

The default parameters currently stored in the computer file are identified in table 5.

Table 5. Default Parameters in Storage

<u>Description</u>	<u>Default Value</u>
1. Gasoline price	0.365
2. L.P. gas price	0.315
3. Diesel fuel price	0.345
4. Price per kilowatt hour of electricity	0.017
5. Price per 1,000 cu. ft. of natural gas	1.5
6. Interest rate (all capital except land)	0.085
7. Insurance rate per dollar of average machine value	.006
8. Tax rate per dollar of machine purchase cost	0.01
9. Interest rate on land (not built into program)	
10. Machinery labor per hour	2.00
11. Livestock labor per hour	2.00
12. Equipment labor per hour	2.00
13. Death loss as proportion of total receipts	
14. Livestock insurance rate per dollar of average value	
15. Equipment insurance rate per dollar of average value	0.006
16. Livestock tax rate per dollar of average value	
17. Equipment tax rate per dollar of average value	0.01
18. Irrigation labor - hours/acre inch	
19. Machine hours x this factor = tractor hrs.	1.1
20. Tractor hrs. x this factor = man hours	1.1
21. Self propelled machine hours x this factor = man hours of labor	1.2
22. Crop management charge as proportion of total receipts	
23. Livestock management charge as a proportion of total receipts	
24.	
25. To have LPFARM cards punched enter 7.0	7.0

A temporary change good for one computer run would employ the following card stream.

```

BUDLIV  (a set of program control cards)
PARM
    data cards as prepared on form 7
END*
OUT6
    card with budget ID number
STOP
/*

```

The OUT6 agendum is included in the above card stream since there is no logic in making a temporary change unless it is to be employed in obtaining a budget output.

A permanent change in the default parameter values or the making of an initial entry requires the following data card stream.

```

MODIFY  (a set of program control cards)
PARM
    data cards as prepared on form 7
END*
STOP
/*

```

Units of Measurement

When preparing data for individual enterprise budgets a column in the entry form requires that a code number be entered to identify the units of measurement being used. There are 25 units code numbers to identify 25, 4-character abbreviations for units of measurement. The requirements for formatting, key-punching and card stream for entering the data into storage are all given on Form 8. The code numbers and units currently stored in the computer file are identified in table 6.

Table 6. Units of Measurement in Storage

<u>Code No.</u>	<u>Unit</u>
1	HD.
2	BV.
3	TONS
4	DZ.
5	GAL.
6	BL.
7	ACRE
8	HR.
9	DAYS
10	AUMS
11	ACIN
12	LBS.
13	PT.
14	QT.
15	DOL.
16	CWT.
17	OZ.
18	MILE
19	FEET
20	FLOK
21	SQFT
22	
23	
24	
25	COW

III. PREPARATION OF BUDGET DATA

Preparing Crop Budgets

Crop budget data are prepared for processing on Form 10. The budget forms in this publication are left blank in order that they may be copied for use in preparing budgets. The format and instructions for keypunching are identified on the form.

Budget Identification Number

The budget identification code number is entered first. Form 9 presents a coding guide for use in establishing an ID number. A crop budget is identified in the computer program by punching a two digit enterprise code in card columns 3 and 4. This code number must be greater than 70. The area and county code, in card columns 5 and 6, is used to identify the individual county or it may identify an area. Area codes based on crop reporting districts or upon planning districts may be used according to the individual's preference. The capital month in section J of the budget identification number is the base month for computing annual capital. For crops the base month is usually the month of harvest. The base month is assumed to be the month in which all bills and interest charges are paid. If capital for production is needed in May and the base month (harvest month) is designated as October, interest will be charged for use of Capital from May to October. If card columns 16 and 17 (capital month columns) are left blank or if zeros are entered the default month will be June.

Title and Footnote Cards

Three title cards and three footnote cards must be completed. Card spaces 1-80 may be used to compose any title the user desires. There must be 3 cards even if one or more cards are blank. Card columns 69-80 are used in the footnote

FORM 9. CODING GUIDE FOR BUDGET IDENTIFICATION NUMBER
Budget Data Bank, South Dakota State University

A. STATE CODE

Not applicable
 Enter "00"

B. ENTERPRISE ID CODE

Livestock

- 11. Beef Breeding Grade
- 12. Beef Breeding Purebred
- 13. Beef Raise Replacements
- 14. Beef Growing (Stockers)
- 15. Beef Finishing
- 16.
- 17.
- 18.
- 19.
- 20.
- 21. Dairy Mfg. Milk Grade
- 22. Dairy Mfg. Milk Purebred
- 23. Dairy Raise Replacements
- 24. Dairy Feeders
- 25.
- 26.
- 27.
- 28.
- 29.
- 30.
- 31. Sheep Breeding Grade
- 32. Sheep Breeding Purebred
- 33. Sheep Raise Replacements
- 34. Sheep Feeding Lambs
- 35.
- 36.
- 37.
- 38.
- 39.
- 40.
- 41. Swine Raise Market Hogs
- 42. Swine Raise Feeder Pigs
- 43. Swine Raise Replacements
- 44. Swine Buy Feeder Pigs
- 45.
- 46.
- 47.
- 48.
- 49.
- 50.
- 51. Horses
- 52.
- 53.
- 54.
- 55.
- 56. Laying Hens

- 57. Turkeys
- 58. Ducks
- 59. Geese
- 60. Broilers
- 61. Rabbits
- 62. Goats
- 63. Dogs
- 64. Bees
- 65.
- 66.
- 67.
- 68.
- 69.
- 70.

Crops

- 71. Barley
- 72. Corn Grain
- 73. Corn silage
- 74. Grain Sorghum
- 75. Sorghum Silage
- 76. Oats
- 77. Oat Silage
- 78. Rye
- 79. Spring Wheat
- 80. Winter Wheat
- 81. Flax
- 82. Soybeans
- 83. Sunflowers
- 84. Millet
- 85.
- 86.
- 87. Alfalfa
- 88. Alfalfa-Brome
- 89. Tame Grass Hay
- 90. Native Grass Hay
- 91. Tame grass Pasture
- 92. Native Grass Pasture
- 93.
- 94.
- 95. Potatoes
- 96. Vegetables
- 97.
- 98.
- 99.

C. COUNTY CODE

- 01. Aurora
- 02. Beadle
- 03. Bennett
- 04. Bon Homme
- 05. Brookings

- 06. Brown
- 07. Brule
- 08. Buffalo
- 09. Butte
- 10. Campbell
- 11. Charles Mix
- 12. Clark
- 13. Clay
- 14. Codington
- 15. Corson
- 16. Custer
- 17. Davison
- 18. Day
- 19. Deuel
- 20. Dewey
- 21. Douglas
- 22. Edmunds
- 23. Fall River
- 24. Faulk
- 25. Grand
- 26. Gregory
- 27. Haakon
- 28. Hamlin
- 29. Hand
- 30. Hanson
- 31. Harding
- 32. Hughes
- 33. Hutchinson
- 34. Hyde
- 35. Jackson
- 36. Jerauld
- 37. Jones
- 38. Kingsbury
- 39. Lake
- 40. Lawrence
- 41. Lincoln
- 42. Lyman
- 43. Marshal
- 44. McCook
- 45. McPherson
- 46. Meade
- 47. Melette
- 48. Miner
- 49. Minnehaha
- 50. Moody
- 51. Pennington
- 52. Perkins
- 53. Potter
- 54. Roberts
- 55. Sanborn
- 56. Shannon
- 57. Spink
- 58. Stanley
- 59. Sully
- 60. Todd
- 61. Tripp

- 62. Turner 71-76. Planning
- 63. Union district one
- 64. Walworth through six.
- 65. Washabaugh 81-89. Crop reporting
- 66. Yankton districts one through
- 67. Ziebach nine.

D. SPECIES CODE

- 1. Beef
- 2. Dairy
- 3. Sheep
- 4. Swine
- 5. Other
- 6. Poultry

IRRIGATION CODE

- 1. Gated Pipe
- 2. Center Pivot
- 3. Wheel Move
- 4. Big Gun
- 5. Towline
- 6. Gravity Ditch
- 7. Flood
- 8.
- 9.

E. AGE AND SEX CODE

- 1. Male Young
- 2. Female Young
- 3. Neuter Young
- 4. Male Adolescent
- 5. Female Adolescent
- 6. Neuter Adolescent
- 7. Male Adult
- 8. Female Adult
- 9. Neuter Adult

LAND CLASS CODE

- 1. Very good land; may be cultivated safely with ordinary good farming methods.
- 2. Good land that can be cultivated with easily applied practices.
- 3. Moderately good land that can be cultivated occasionally; best suited treatments such as terracing and strip cropping.
- 4. Fairly good land that can be cultivated occasionally; best suited to pasture and hay with row crops not more than one year in six.
- 5. Suited for grazing or forestry; too wet or stony for cultivation.
- 6. Suited for grazing or forestry with careful management.
- 7. Suited for grazing or forestry with major limitations; too steep, rough or dry to be seeded to pasture plants.
- 8. Suited only for wildlife or recreation.

F. GRAZING CODE

- 0. No grazing
- 1. Cool season grazing
- 2. Warm season grazing
- 3. Full season grazing

EQUIPMENT COMPLEMENT

Up to 15 sets of equipment may be stored in the equipment complement file

G. MACHINERY COMPLEMENT

Up to 15 sets of machinery may be stored in the machinery complement file.

H. PRICE VECTOR

Up to 9 sets of prices may be stored in the price vector file.

I. INDIVIDUAL NUMBER

0-199 = Livestock
 200-299 = Grain Crops
 300-349 = Forages

J. CAPITAL MONTH

This is the base month for computing annual capital. Default month is June.

FORM 10. C R O P B U D G E T D A T A I N P U T F O R M

Name _____

SDSU Budget Data Bank

Date _____

HEAD

BUDGET IDENTIFICATION NUMBER The enterprise code in cols. 3 & 4 must = 70 or greater for a crop budget.

a. State Code	b. Enterprise Code	c. Area and County Code	d. Irrigation Code	e. Land Class Code	f. Grazing Code	g. Machinery Complement	h. Price Vector	i. Individual Number	j. Harvest Month*
1 2	3 4	5 6	7	8	9	10 11	12	13 14 15	16 17

* This is the base month for computing annual capital. Default month is June.

TITL

1	80
1	80
1	80

FOOT

1	68	69 Type of budget	80
1	68	69 Person responsible	80
1	68	69 Date of budget	80

Enter quantity sold in columns 1-12

BUD,BCHG

L I N E I T E M S P R O D U C E D	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	PRICE		UNITS CODE	NAME CODE
1.															X	
2.															X	
3.															X	
4.															X	
5.															X	
6.															X	
7.															X	
8.															X	
9.															X	
10.															X	

BUD, BCHG Continued

LINE	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	PRICE		UNITS CODE	NAME CODE
OPERATING INPUTS																
11.														X		
12.														X		
13.														X		
14.														X		
15.														X		
16.														X		
17.														X		
18.														X		
19.														X		
20.														X		
21.														X		
22.														X		
23.														X		
24.														X		
25.														X		
↓																
37.														X		
MACHINERY REQUIREMENTS													Enter the no. of times over in cols. 1-12. For power units only, using machinery complement codes 1-11, the entry is in hours per acre. Code nos. in cols. 13-16 come from the machinery complement table.		TRAC. CODE	MACH. CODE
38.													X	X		
39.													X	X		
40.													X	X		
41.													X	X		
42.													X	X		
43.													X	X		
44.													X	X		
45.													X	X		
46.													X	X		
47.													X	X		
48.													X	X		
49. Acre in. irrig. water													X	X	X	X
50. Overhead Labor													X	X	X	X
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Keypunching Format

Row No.	First Item Col.	Value	Second Item Col.	Value	Third Item Col.	Value	Fourth Item Col.	Value	Fifth Item Col.	Value										
5-6	7	8	9	18	19	20	21	30	31	32	33	42	43	44	45	54	55	56	57	66

cards for a brief identification of the budget. When budget listings are printed, this section of the footnote cards will be printed in such a manner as to provide a convenient method for budget identification.

Items Produced

The remaining sections of the crop input form are used to enter cost and production coefficients. It will be noted that the computer program agendum to be used is identified in a square frame near the left hand margin of the form. The BUD agendum is used when a new set of coefficients is being stored and the BCHG agendum is used when a change in a stored budget is being made. These processing procedures are discussed in Section IV.

Production items are entered on a monthly basis. The yield or total production is entered on lines 1-10 according to the month in which the product is expected to be sold. Price is entered in column 13. If it is desired to use a price from the price vector file a -1.0 is entered in column 13 rather than the actual price. The units code in column 15 identifies whether the product is in tons, bushels, pounds, etc. The name code comes from the list of 500 production and input names. The list of names and also the units code are part of the basic data files discussed in Section II.

Operating Inputs

Operating inputs include all the direct cash costs of production. They are listed on lines 11-37. Do not enter fuel or repair cost for machinery and equipment. These costs are calculated by the computer from data stored in the machinery complement file. The quantity of each input item is entered in the month of use (columns 1-12). Price or cost of the input is entered in column 13. Price is multiplied by quantity to arrive at total cost for an input item.

The units code and name code for operating inputs are entered in columns 15 and 16 in the same manner as explained for production items.

Machinery Requirements

Machinery requirements are identified on lines 38-50 of the crop budget form. The number of times over for a particular machine operation is entered in the month that the operation was performed. For example, if two cultivations on corn were made in the month of June the value "2.0" is entered in column 6. No entries are made in columns 13 and 14. The tractor code number and also the machinery code number in columns 15 and 16 come from the machinery complement table.

Code numbers (row numbers) 1-11 in the machinery complement are for power units only. When these power units are listed by themselves without pulling another implement the appropriate entry in columns 1-12 is hours per acre rather than times over per acre. When two implements are pulled in tandem both implements are listed on separate lines but a "0" is entered for the power unit in column 15 of one of the implements. The tractor, or power unit, is listed only once.

Custom hiring is listed as a cash cost under operating inputs. For example, if a combine was custom hired and it cost \$5.00 per acre the appropriate entry would include a "1.0" in the month of hire and 5.00 in column 13 for the price. This would indicate a once over operation at \$5.00 per acre.

Some implements, such as a baler, do not have specific widths. However, the width factor may be employed as a "capacity" factor to determine the proper cost per acre of operation. It should be remembered that the machine cost per acre is calculated by the following basic formula:

$$\text{Cost Per Acre} = \text{Cost Per Hour} \times \text{Hours Per Acre} \times \text{Times Over}$$

The hours per acre formula (see machine cost computations in Section II) employs the width factor to determine the number of hours. One may store any factor in the machinery complement that will result in the proper hours per acre

being calculated. For example, suppose you have a baler that you know has a capacity of 6 tons per hour. If your hay yield is 3 tons per acre it will require 0.5 hours of machine time per acre. Upon examining the "hours per acre" formula it will be found that a width factor of 8.2 will give the proper number of hours per acre. Another approach is to recognize that we have windrows of hay that are 8 feet apart and so we can use the actual width of 8 feet and the actual speed at which the machine is traveling in the hours per acre formula. The same approach may be used with other implements. The hours of use per acre must be known and the width and speed factors may be derived in such a manner as to result in the correct number of hours of use per acre.

Another alternative is to enter the machinery costs per hour directly. This is done by using Form 12 and keypunching the data according to the instructions on the form. Code numbers are right hand justified with no decimal punched. All other values are left hand justified with a decimal punched. The data is processed by using the MACH agendum. If this agendum and the MCPH agendum are both used, the MACH agendum should follow the MCPH agendum. The MACH agendum may also be used as a substitute for the MCPH agendum. Instructions for processing are presented in Section IV. The code number for a machine is the same as the line number in the machinery complement table.

Irrigation Costs

Irrigation budgets make use of line 49 of the crop input form. The acre inches of water applied each month is entered in the appropriate monthly column. When this is done it is also necessary to calculate all costs per acre inch of water applied and read these costs as input data. The costs per acre inch are entered on one card using the data format shown on Form 12. The data is processed with the MACH agendum. The costs include depreciation, interest, insurance, taxes, total fixed cost (sum of depreciation, interest, insurance and

taxes), repairs, fuel, lubrication and total operating expenses (sum of repairs, fuel and lubricants). The hours of labor required per acre inch of water is set by using default parameter 18.

Overhead Labor

Line 50 of the crop budget input form is used for allocating general overhead labor to a particular enterprise that is over and above the requirements for machinery operation. This would include such things as time spent in planning, record keeping, buying and selling activities, etc. For example, suppose a farmer estimates that he spends 80 hours in February developing his cropping plans and 60 hours in September and October for record keeping. He farms 1600 acres. The appropriate entry would be 0.05 hours per acre in February and 0.0125 hours per acre in September and October. No entries are made in columns 15 and 16 when using lines 49 and 50 of the crop budget input form.

Preparing Livestock Budgets

The livestock budget forms are similar to the crop budget forms. However, the data being entered is different and an explanation of the procedures is given in the following discussion. Completing a budget data bank form requires the knowledge and understanding inherent in the development of livestock budgets by traditional methods.

Form 11 is used for compiling the necessary data preparatory to keypunching and processing on the computer.

Budget Identification Number

When developing the identification number it is necessary to consult the coding guide presented in Form 9. The ID number is comprised of 10 sections of

FORM 11. LIVESTOCK BUDGET DATA INPUT FORM

Name _____

SDSU Budget Data Bank

Date _____

HEAD

BUDGET IDENTIFICATION NUMBER The enterprise code in cols. 3&4 must be 69 or less for a livestock budget.

a. State Code	b. Enterprise Code	c. Area and County Code	d. Specie	e. Age Sex	f. Equip. Comp.	g. Machinery Complement	h. Price Vector	i. Individual Number	j. Capital Month*
<u>1</u> <u>2</u>	<u>3</u> <u>4</u>	<u>5</u> <u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u> <u>11</u>	<u>12</u>	<u>13</u> <u>14</u> <u>15</u>	<u>16</u> <u>17</u>

* This is the base month for computing annual capital. Default month is June.

TITL

_____ 80

_____ 80

_____ 80

FOOT

_____ 68 69 Type of budget 80

_____ 68 69 Person responsible 80

_____ 68 69 Date of budget 80

Data entered in all of the forms that follow conforms to the computational formula:

Total amount = £(cols. 1-12) x (col. 13) x (col. 14)

BUD, BCHG

L I N E	PRODUCTION	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	PRICE	WT./ HEAD	UNITS CODE	NAME CODE	TYPE CODE
1.																		2.0
2.																		2.0
3.																		2.0
4.																		2.0
5.																		2.0
6.																		2.0
7.																		2.0
8.																		2.0
9.																		2.0
10.																		2.0

(BUD, BCHG)

L I ..	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL	COL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
OPERATING INPUTS													PRICE	# OF HEAD	UNITS CODE	ITEM CODE*	TYPE CODE	YEAR CODE
Rate per head in terms of no. of units per head																		
11.																		3.0
12.																		3.0
13.																		3.0
14.																		3.0
15.																		3.0
16.																		3.0
17.																		3.0
18.																		3.0
19.																		3.0
20.																		3.0
21.																		3.0
22.																		3.0
23.																		3.0
24.																		3.0
25.																		3.0

*Item code is from the name list for 500 production and input items.

EQUIPMENT REQUIREMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	13	14	15	16	17	18
	1	2	3	4	5	6	7	8	9	10	11	12	#-OF UNITS	PROP OF COST	XXXX	EQUIP CODE	TYPE CODE	XXXX
38.																		5.0
39.																		5.0
40.																		5.0
41.																		5.0
42.																		5.0
43.																		5.0
44.																		5.0
45.																		5.0
46.																		5.0
47.																		5.0
48.																		5.0
49.Lvstk Labor Yr 1													X	X	X	X	X	X
50.Lvstk Labor Yr 2													X	X	X	X	X	X

Entries are made only in cols. 13, 14 and 16. No entry need be made in col. 15 for the units code since it is already identified in the equipment complement file stored in the computer.
 Number of units refers to the number of units of the equipment employed in this budget. In the case of livestock it would be the number of head of livestock involved with this budget.
 Proportion of cost is that proportion of an equipment unit being employed in this budget (a unit as designated in the equipment complement file). If an equipment unit is one milking parlor of a size to serve a 100 cow herd and this budget is being made up for one cow, the proportion of cost would be 0.01.
 The equipment code number comes from the equipment complement file.

Keypunching Format:

Row No.	First Item		Second Item		Third Item		Fourth Item		Fifth Item			
	Col.	Value	Col.	Value	Col.	Value	Col.	Value	Col.	Value		
5	6	7	8	9-18	19-20	21-30	31-32	33-42	43-44	45-54	55-56	57-66

FORM 12. FORM TO ENTER MACHINERY COSTS PER HOUR AND IRRIGATION COSTS PER ACRE INCH OF WATER
 Budget Data Bank, South Dakota State University

MACH Machinery costs per hour

		1	2	3	4	5	6	7	8	9	10
ITEM	CODE	DEPRECIATION COST PER	INTEREST COST PER	INSURANCE COST PER	TAX COST PER	TOTAL FIXED COST PER	REPAIRS COST PER	FUEL COST PER	LUBE COST PER	TOTAL VARIABLE COST PER	HOURS PER
UNIT	LINE NO.	HOUR	HOUR	HOUR	HOUR	HOUR	HOUR	HOUR	HOUR	HOUR	ACRE
MACHINE NAME											
1.											
2.											
3.											
4.											
5.											

IRIG Irrigation costs per acre inch

UNIT	CODE	ACRE INCH	ACRE INCH	ACRE INCH	ACRE INCH	ACRE INCH	ACRE INCH	ACRE INCH	ACRE INCH	ACRE INCH	ACRE INCH
IRRIGATION SYSTEM											
Keypunch	5-6	7-13	14-20	21-27	28-34	35-41	42-48	49-55	56-62	63-69	70-76

information, "a" through "j", that are used in various ways in the computer program. The state code, section a, is not applicable and may be left blank. The enterprise code in section b must be 69 or less for a livestock budget. Entries into each of the sections are self-explanatory after consultation with the coding guide in Form 9. Up to 15 sets of equipment complements and 15 sets of machinery complements may be placed in storage. Also, nine sets of price data may be placed in storage. Sections f, g and h of the budget ID number indicate which sets of information are used in the budget. However, the entries into the ID number for these three sets of information are informational only. No control over the computational procedure is exercised by the code numbers in sections f, g and h of the budget ID number. If no instructions are input to the computer the default value is "1" for all three sets of information. Control over computational procedures and choice of data is explained in Section IV on processing procedures.

The individual number is available for personal use to number budgets from 1-349 if this is desired. It may also be left blank.

Title and Footnote Cards

Three title cards and three footnote cards must be used even if they are blank cards. Any title up to 80 characters in length on each card may be created by the user. The card columns 69-80 on each of the three footnote cards are used to enter a brief description of the budget. When a list of the budgets in storage is called for, this section of the footnote card is printed separately to provide easy identification.

Production Data

The production data form for livestock has 17 columns. Columns 1-12 are for enumeration of the quantity produced and the month of production. Price is entered in column 13 and weight per head is entered in column 14. The

units code in column 15 comes from Table 6 of the basic data files presented in Section II. The name code in column 16 is from the list of 500 production items discussed in Section II. Column 17 is a "type" code indicating that the entries are production items. The value "2.0" is given and must be keypunched along with all other entries in the form.

It should be noted that the computations on lines 1 through 25 conform to the following formula:

$$\text{Total Amount} = \Sigma (\text{cols. 1-12}) \times (\text{col. 13}) \times (\text{col. 14})$$

With the use of this formula one may keep budget form entries in proper perspective. The total value of a product (or total cost of an input item) is the product of three variables. For example, if we are preparing a budget for a dairy cow producing 14,000 pounds of milk it is necessary to enter the quantity of milk produced each month. Suppose we choose to enter the data in hundredweights (cwt.). The units code in column 15 would be 16 for "CWT.". The name code in column 16 would be 05 for "MFG MILK". Suppose further that the 140 cwt. of milk is assumed to be produced during a 9-month period. This would result in an average of 15.55 cwt. of milk in each month. We would probably choose to distribute the production in accordance with an estimated seasonal pattern. If an estimated price of \$6.50 per cwt. is used we would enter this price in column 13. However, we may choose to have the price be automatically selected from a set of prices that have been placed in storage (the price vector). In this case a "-1.0" would be entered as the price.

We have now entered two of the three variables (price x quantity) used in the computational procedure. The first variable is:

$$\Sigma (\text{cols. 1-12}) = 140 \text{ cwt. of milk}$$

The second variable is:

$$\text{Price} = \$6.50 \text{ entered in column 13}$$

The third variable, wt./head, in column 14, now becomes a neutral factor of "1.0" to give us price x quantity for the value of milk produced. However, if we were preparing a budget for a 30 cow herd we would enter "30" in column 14.

Operating Inputs

Operating expense items are entered on lines 11-25 in much the same manner as production items. The code number 3.0 in column 17 indicates that this is an operating input item and is keypunched in the same way as other data on each line. The code in column 18 is not applicable and column 18 is ignored. The item code in column 16 is from the name list of 500 production items and the units code in column 15 is from the set of units names placed in storage with the basic data files as discussed in Section II.

All of the direct cash costs of production are entered on lines 11-25. Do not enter fuel, repairs or interest charges. These costs are calculated by the computer from data stored in the equipment complement file.

Suppose we have an item of production expense such as hay for feeding to a dairy cow. If we produce our own hay and feed 3 tons per cow the appropriate entry would be 3.0 in column 6. This would indicate 3 tons of hay acquired in June which is the month of harvest. Another alternative is to enter the quantity of hay fed per cow in each month of the year. However, the acquisition of home produced feeds is "lumpy" in character and it seems more logical to consider the hay as "stockpiled" in the month of harvest. A charge for interest on operating capital is made in accordance with the month of acquisition or month of capital outlay. The hay price is entered in column 13. It is again possible to enter "-1.0" if we wish to use a price stored in the price vector file. The entry in column 14 becomes a neutral factor of "1.0" because the computational procedure is the product of 3 variables as explained in the preceding discussion for entering products for sale.

Machinery Requirements

Lines 26-37 of the livestock budget form are used for machinery usage. However, it will be noted that lines 26-37 are not included on the livestock budget form in this publication. This was done in order to simplify the budget forms. Machinery items are not frequently included in livestock budgets and this permits the printing of the entire budget form on the front and back side of one 8½ x 11 inch sheet of paper. This greatly simplifies the budget preparation procedures. However, machinery usage may be entered by using Form 10 for crop budgets. Entries are made in the same manner as for crop machinery except for the following:

1. The appropriate entry in each month is hours of use per budget unit rather than times over.
2. A 4.0 is entered in column 17 to indicate that it is a machinery item (column 17 is not included on the crop budget form).

Equipment Requirements

Entries on lines 38-50 are closely related to the manner in which data has been stored in the equipment complement file as discussed in Section II. Mathematical computations are made by the computer to arrive at an annual charge for use of equipment. The item of equipment to be used is designated by the equipment code number entered in column 16. This code number is the same as the line number in the equipment complement file. The annual charge is calculated as follows:

$$\text{Annual Charge} = \text{Total Annual Cost} \times \text{Number of Units} \times \text{Proportion of Cost.}$$

Entries on lines 38-48 are made for the purpose of designating the number of units and the proportion of cost. Therefore entries need be made only in columns 13 and 14 with column 16 used to identify the item of equipment. The number of units is entered in column 13 of the input form and proportion of cost

is entered in column 14. The number of units refers to the number of units of the item of equipment used or owned. The proportion of cost is that proportion which should be charged against this budget. For example, when developing a budget for one dairy cow the dairy cow is referred to as the "budget unit." You have determined that the milking equipment for a 6 stall milking parlor will cost \$2,000. This equipment would serve a 100 cow herd. A unit of the equipment, as entered in the equipment complement, consists of 6 head (see discussion under item 2 of "variables entered on first data card" as discussed in Section II). When preparing the budget input form you would enter the number of units as 1, since one milking parlor is required for a 100 cow herd. The proportion of cost charged to this budget would be 1.0 since the budget unit is for 1 cow.

As a further example suppose a water tank with a 250 gallon capacity is used as an item of equipment. If a budget for one animal is being prepared and it is determined that a 10 gallon capacity is required per animal then $10/250$ or .04 is entered in column 14 as the proportion charged to this budget and "1.0" is entered in column 13 of the budget input form to indicate that one water tank is owned and/or used.

The hours of labor required per budget unit are entered on lines 49-50. It should be recognized that some labor for operation and maintenance of equipment may already be entered in the equipment complement table. The hours of labor entered on line 49 are in addition to any labor specified in the equipment complement table. Care must be taken not to duplicate hours of labor in these two sections. An alternative procedure would be to specify no hours of labor in the equipment complement table and include all livestock labor on line 49.

The labor cost per hour is specified on line 12 of the set of default parameters placed in storage.

Labor on line 50 is only for budgeting periods longer than 12 months.

No entries are made in columns 13-18 of lines 49-50.

Keypunching of Data

Keypunching is facilitated by having the card format and instructions for keypunching on each of the data input forms. After becoming familiar with the budget generator system it becomes convenient to enter data or make changes by going directly to the form appropriate for the occasion. A file of all the necessary forms may be maintained for this purpose. Instructions on many of the forms are also sufficient for preparation of the complete card stream necessary for processing on the computer.

Keypunching is greatly facilitated by the use of a drum card for column control. The preparation of drum cards can be explained by any experienced keypunch operator.

IV. PROCESSING PROCEDURES

This section is intended as a reference manual for those persons processing data in the budget data bank. It contains descriptions and outlines of the most common procedures performed by the program. It does not contain all of the operational procedures developed by Oklahoma State University even though the procedures are part of the program as catalogued on the computer at South Dakota State University. Additional agenda procedures and program description may be obtained from Oklahoma Research Report P-663 [9].

The main program is catalogued as BUDLIV on the South Dakota computer. Both crop and livestock budgets may be processed using the BUDLIV program. This program uses a number of data agenda. An explanation of their function and use is given in this section. The index to this publication is organized so that the user may refer directly to a section of the manual that will describe the data card stream and agenda required to accomplish his particular processing objective. Each agendum is composed of 4 characters and punched in card columns 1-4.

The HEAD agendum is used in most budget processing procedures to identify the budget (identification number) with which succeeding agenda will work.

Storing Data for a New Budget

Data cards are prepared by using Form 10 for crop budgets and Form 11 for livestock budgets. Preparation of the data on these forms is discussed in section III. The card stream for placing a new set of budget data in storage is as follows:

```

BUDLIV    (a set of job control cards)
           data card with price vector no. in cols. 1-2
HEAD
           data card for budget ID number
TITL
           3 cards containing title
FOOT
           3 cards containing footnotes

```

```

BUD
    data cards for budget
END*
STOR
STOP
/*

```

The above procedure is used for either a crop budget or a livestock budget. However, it should be recognized that the above card stream will only place the data in storage. It will make no calculation nor print any output. If these operations are desired the calculating and printing agenda may be inserted following the STOR agendum.

Printing Out a Crop Budget in Storage

In order to obtain output the computational agenda must be included in the data card stream. To do this the "print" agenda and the "computational" agenda are inserted following the LOAD agendum. The computational agenda should be in the order shown in the following card stream. The printing or output agenda must have OT12 following OUT1. All the remaining output agenda may be in any order and one or all of them may be included depending upon the output desired by the user. Refer to Form 10 for the keypunching format on the budget ID number.

Card Stream

```

BUDLIV (a set of job control cards)
    price vector card--vector no. in cols. 1-2
HEAD
    data card for budget ID number
LOAD
MCPH    Computes machine costs per hour
MCPA    Computes machine costs per acre
GRET    Computes total costs and returns
OUT1    Prints costs and returns
OT12    Prints costs and returns
OT13    Prints monthly machine & labor hours
OUT2    Prints hourly cost summary
OUT3    Prints detailed monthly costs
OUT4    Prints a list of the machinery complement
OUT5    Prints a table of machine costs
OTBD    Prints input data stored for a budget

```

```

OUT4   Prints machinery complement listing
LUT4   Prints equipment complement listing
LPFM   Punches cards for LP-FARM if 7.0 is stored as default parameter 25
STOP
/*

```

OUT6 Agendum

A simplified procedure for obtaining a basic output may be employed by using the OUT6 agendum. This agendum automatically invokes the HEAD, LOAD, MCPH, MCPA, GRET, OUT1, OT12 and OTBD agenda. The card stream would be as follows:

```

BUDLIV  (a set of job control cards)
        Price vector card with number in columns 1-2
OUT6
        data card for budget ID number
OUT6
        data card for budget ID number

```

continue for as many budgets as desired

```

STOP
/*

```

Printing Out a Livestock Budget in Storage

The procedure for printing out a livestock budget is similar to that for printing out a crop budget. The card stream to obtain output is given here. In order to obtain output the computational agenda cards must precede the output or "print" agenda in the card stream.

The agenda should be processed in the order shown down through LT12. The agenda following LT12 may be employed in any sequence and one or all of them may be used depending upon the desires of the user. LUT1 and LT12 print the cost and returns in two parts. Consequently both are used or neither one is used. The OUT6 agendum, as described for obtaining a crop budget printout, may also be used for obtaining a livestock budget printout.

Card
Stream

BUDLIV (set of job control cards)
 Price vector card with price vector no. in cols. 1-2
 HEAD
 data card with budget ID number
 LOAD
 MCPH Computes machine cost per hour
 MCPA Computes machine cost per acre
 ECPA Computes equipment costs
 GRTL Computes total costs and returns
 LUT1 Prints costs and returns
 LT12 Prints costs and returns
 LUT3 Prints detailed monthly costs
 LUT2 Prints cost summary for machinery & equipment
 LT13 Prints machinery cost per hour
 LUT5 Prints resource requirements by month
 BOUT Prints input data stored for a budget
 OUT4 Prints machinery complement listing
 LUT4 Prints equipment complement listing
 LPFL Punches cards for LP-FARM if 7.0 is stored as default parameter 25
 STOP
 /*

Changing the Identification Number of a Budget in Storage

It is frequently necessary to make a change in the identification number of a budget placed in storage while all other data is left unchanged. The following procedure will accomplish this objective. Refer to Form 10 for the budget ID number format.

Card
Stream

BUDLIV (a set of job control cards)
 Price vector card (no. in cols. 1-2)
 HEAD
 data card with old budget ID number
 LOAD
 HEAD
 data card with new ID number
 STOR
 ELIM
 data card with old budget ID number
 STOP
 /*

Making a Permanent Change in the Basic Data Files

The budget data bank requires the maintenance of 10 separate data files to provide information necessary for the computations performed by the computer program. It is frequently necessary to make changes or update the data contained in these files. The following is a list of agenda and the data files with which they are used.

MCOM*ii* = Machinery complement (*ii* = machinery complement number)
 EQUI*ii* = Equipment complement (*ii* = equipment complement number)
 PARM = Default Parameters
 PRCE*ii* = Default prices for the items of production
 SEAS = Seasonal price indices
 FLT = Fuel multipliers against price
 FMTG = Fuel multipliers against horsepower
 MENA = Names for equipment items
 MCNM = Names for machinery items
 NAME = Names for 500 items of production
 UNIT = Units of measurement
 MCHG*ii* = Change one item on a machinery complement row
 ECHG*ii* = Change one item on an equipment complement row

There are several agenda used in manipulating the machinery and equipment data files. Details on these files were discussed in Section II. However, it should be noted at this point that the sets of machinery and equipment names are separate from the sets of cost coefficients used in making computations. Thus names and data files are changed separately.

The MCOM*ii* agenda is used to change the cost coefficients. It will change all the coefficients on one row of the machinery complement. A blank space on the card will place a zero value in storage for that item. The value "*ii*" represents the machinery complement number.

The EQUI*ii* agenda does for the equipment complement what the MCOM*ii* agenda does for the machinery complement. It is used when all of the data on one row of the equipment complement table is being entered or changed.

There may be many instances when we wish to change one item of data (one cell in the matrix) in the machinery or equipment complement. To do this the MCHG*ii* agenda is used for machinery and the ECHG*ii* agenda is used for equipment.

The reader should refer to Section II of this report for instructions on data card preparation.

The card stream may contain one or all of the agenda depending upon the users desires. The order of the agenda in the card stream is not important. However, after all data have been entered there must be a card with STOP in columns 1-4.

Card Stream

```

MODIFY    (a set of program control cards)
MCOM11
    data cards for machinery
END*
EQU11
    data cards for equipment
END*
PARM
    data cards for default parameters
END*
PRCE11
    data cards for production item prices
END*
SEAS
    data cards for seasonal price indices
END*
FMLT
    data cards for gal. of fuel per dollar list price
END*
FMTG
    data cards for gal. of fuel per horsepower
END*
MENA
    data cards for equipment names
END*
MCNM
    data cards for machinery names
END*
UNIT
    data cards for units of measurement
END*
MCHG11
    data cards for one or several machinery coefficients
END*
ECHG11
    data cards for one or several equipment coefficients
END*
STOP
/*

```

Making a Temporary Change in Items
of the Machinery Complement

The MCHG agendum may be used to change one or more items in the machinery complement. If a temporary change is desired the BUDLIV program is used. If a permanent change is desired the MODIFY program is used. A temporary change is good for one run of the program and does not change any data in storage.

Card streams for the two programs are as follows:

```
BUDLIV (a set of program control cards)
  Price vector card
MCOM
  Card with machine complement no. (cols. 5-6)
MCHG
  Data cards (use form 13)
END*
OUT6
  data card for budget ID number
STOP
/*
```

The OUT6 agendum is included in the above card stream since there would be no purpose in making a temporary change unless a budget printout is wanted. The following card stream for a permanent change does not include the OUT6 agendum. The BUDLIV program must be used to employ the OUT6 agendum.

```
MODIFY (a set of program control cards)
MCHGii (ii = complement no.)
  Data cards (use form 13)
END*
STOP
/*
```

The price vector card must be included with the BUDLIV program even if it is a blank card. A blank card for the price vector will invoke default vector number 1.

The MCOM agendum in the BUDLIV program is used only if we wish to specify a machine complement number other than "1". If the MCOM agendum is omitted from the card stream the default complement number "1" is employed.

Data cards are prepared and punched according to the format in Form 13. Five values are entered on each card. When the row number changes a new card

is punched. Nothing is punched in the first 4 columns of the data card. The row number and column number may be identified in Form 3 used for making the original entries of machine cost data. The row and column number may also be identified in the computer printout of the machinery complement (see appendix Table 12).

Making a Temporary Change in Items of the Equipment Complement

The BUDLIV program is used to make a temporary change in items of the equipment complement. One or more items may be changed according to the user's interests. It should also be noted that changes can be made using the MODIFY program as discussed in preceding paragraphs for making changes in the basic data files. However, the MODIFY program will make permanent changes in data files while the BUDLIV program makes a temporary change good for one computer run. Form 13, the same form used for changes in the machinery complement, may be used to prepare the data cards. The card stream for processing is as follows:

```

BUDLIV (a set of program control cards)
  price vector card
ECOM
  number of equipment complement to be loaded (cols. 5-6)
ECHG
  data cards for changes to be made (use Form 13)
END*
OUT6
  data card for budget ID number
STOP
/*

```

Note that the OUT6 agendum is included in the above card stream. There would be no purpose in making a temporary change unless a budget output is wanted. The ECHG agendum must precede any computational or output procedures.

Obtaining a List of All Budgets in Storage

A special program has been written to obtain a printout of the budget ID numbers and their title and footnote. The following set of cards will obtain this listing.

```

JOB CARD is the first card of the deck
/** LISTBUD PROGRAM JOHN SMITH
//LIST EXEC PGM=LISTBUD
//STEPLIB DD DSN=SYS1.SDSULIB,DISP=SHR
//FTO6FOO1 DD SYSOUT=A,DCB=(RECFM=FA),OUTLIM=5000
//FTO7FOO1 DD SYSOUT=B
//FTO9FOO1 DD DSN=GRIF.BUDGET.FILE,UNIT=3340,DISP=OLD,VOL=SER=VS1203
/*

```

Making a Permanent Change of Coefficients in a Stored Budget

Form 14 may be used for compiling data on permanent changes to be made in the budget data in storage. Form 14 uses the same format as used for punching data on Form 10 under the BUD agendum. It is possible to use Form 10 to compile changes that are to be made. However, it may be more convenient to use Form 14 because it permits a compilation of data from several budgets and organizes the data in a form for easy keypunching.

One to five values may be punched on each card. Whenever the row number changes another card must be used. The budget number is not keypunched. It is entered for identification purposes only. The row number and column number may be obtained from the original entry form (Form 10) or from the computer printout as shown in appendix Table 8.

The following card stream, which makes use of the REPL agendum, will replace data currently in storage with the data following the BCHG agendum.

```

BUDLIV
    card with no. of price vector in cols. 1-2
HEAD
    data card for budget ID number
LOAD
BCHG
    data card for change to be made (use Form 14 or 10)
END*
REPL
STOP
/*

```


Making a Temporary Change of Coefficients in a Stored Budget

The procedure for making a temporary change is the same as that discussed in the preceding paragraphs for a permanent change. The only difference is that the REPL agendum is not used.

Note also that the OUT6 agendum is included in the following card stream. There is no logic in making a temporary change unless we wish to obtain output using the change. A temporary change lasts for one computer run and does not affect the data in storage.

```

BUDLIV (a set of program control cards)
  price vector card
HEAD
  data card for budget ID number
LOAD
BCHG
  data card for change to be made (use Form 14 or 10)
END*
OUT6
STOP
/*

```

Printing Out Information Contained in the Basic Data Files

One or all of the basic data files may be printed out by using the following agenda in the job stream of the MODIFY program.

```

DFLT   = Default parameters
NAMPii = List of 500 production and input names and their prices (ii is
        the number of the price vector file)
UNNM   = List of 25 units names
FMTL   = Matrix of fuel multipliers used against horsepower.
FLTN   = Matrix of fuel multipliers used against price.
SEAP   = Seasonal price indices
OUT4ii = Machinery complement data and the machinery names (ii is the
        machinery complement number).
OUT4ii = Equipment complement data and the equipment names (ii is the
        equipment complement number).

```

The above agenda are keypunched in columns 1-4, one name per card and follow the MODIFY program deck in any order. One or all of them may be used. The following is an example card stream.

```

MODIFY   (a set of program control cards)
DFLT
NAMP01
UNNM
FMTL
FLTN
SEAP
OUT401
LUT401
STOP
/*

```

Eliminating a Budget in Storage

It frequently is necessary to delete or eliminate a budget from the data file. This may be done using the ELIM agendum. The following card stream may be repeated for as many budgets as desired.

```

BUDLIV   (a set of program control cards)
          price vector card
ELIM
          ID number of budget to be eliminated
STOP
/*

```

Punching Cards for the LP FARM Program

In order to have cards for the LP FARM program punched it is necessary to have the value 7.0 stored as default parameter X(25). The LPFM agendum is used for crop budgets and the LPFL agendum is used for livestock budgets. These agenda will print the data being punched as well as punch the cards.

Card Stream for Crop Budgets

```

BUDLIV   (a set of control cards)
          price vector card
HEAD
          data card for budget ID no.
LOAD
MCPH
MCPA
GRET
LPFM
STOP
/*

```

Card Stream for Livestock Budgets

```

BUDLIV  (a set of control cards)
         price vector card
HEAD
         data card for budget ID no.
LOAD
MCPH
MCPA
ECPA
GRTL
LPFL
STOP
/*

```

Changing Prices Used in a Stored Budget

Budgets are stored in one of two ways. (1) The price itself is stored with the budget or (2) the value -1.0 is stored in place of the price causing the computer to refer to a set of prices contained in a separate file as discussed under price vector data in Section II of this report.

A temporary change, good for one computer run, may be made by using the BCHG agendum.

Card Stream

```

BUDLIV  (a set of control cards)
         price vector card
HEAD
         data card with ID number of budget
LOAD
BCHG
         data card with price change (use Form 14)
END*
OUT6
STOP
/*

```

If a permanent change is desired one must insert the REPL agendum between the END* and OUT6 agenda. It should be noted that the price vector card contains the number of the price vector to be used in this budget. A price vector is a set of stored prices. Up to 9 different sets of prices may be stored. If the price vector card is blank it will automatically employ price vector number 1. However, the price vector will be referred to

only if the value -1.0 is stored in place of the actual price in the budget. If the value -1.0 is stored in the budget a temporary change in one price may be made by using the above card stream to change the value -1.0 to the price desired.

The price vector card will cause a certain set of prices to be employed on all budgets identified in the card stream. Therefore, if several prices are to be changed or a completely new set of prices is being used it may be more convenient to use the MODIFY program and store a new set of prices as discussed under the procedures for preparation of the basic data files.

The MODIFY program may be used to change one or several prices placed in the price vector file and this may be followed with the BUDLIV program to obtain a printout of the budget using new prices. If this procedure is followed it is not necessary to use the BCHG agenda in the card stream following the BUDLIV program.

Several alternative procedures are available for changing the prices used in a stored budget. When using the different alternatives it is necessary to distinguish between placing a price in storage in the price vector file vs. storing a price in the budget data file.

Making a Permanent Change in a Budget Title or Footnote

Changes in the Title or Footnote are made using the TITL and FOOT agenda. It is not necessary to use both agenda if only one is to be changed. However, 3 cards must follow the TITL and FOOT agenda even if they are blank. The following card stream is used.

```

BUDLIV  (a set of control cards)
        price vector card
HEAD
        data card with ID number of budget
LOAD
TITL
        3 cards containing budget title changes
FOOT
        3 cards containing budget footnote changes
REPL
STOP
/*

```

Entering Machinery Costs per Hour

Data for entering machinery costs per hour directly are prepared on Form 12. Code numbers are right hand justified with a decimal punched. The data is processed by using the MACH agendum. If this agendum and the MCPH agendum are both used, the MACH agendum should follow the MCPH agendum. The MACH agendum may also be used as a substitute for the MCPH agendum. The code number for a machine is the same as the line number in the machinery complement table. The following card stream is used.

```

BUDLIV (a set of job control cards)
      price vector card - price in cols. 1-2
HEAD
      data card for budget ID number
LOAD
MACH
      data cards for machine cost per hour
END*
MCPA
GRET

      select the output agenda as desired

STOP
/*

```

The above card stream is an example of how the MACH agendum is used with a crop budget. If a livestock budget is used it will be necessary to use agenda appropriate to a livestock budget as discussed earlier in this section.

The OUT6 agendum cannot be used when the costs per hour are entered directly with the MACH agendum.

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9. Walker, Rodney L. and Darrel D. Kletke. The Application and Use of the Oklahoma State University Crop and Livestock Budget Generator, Agricultural Experiment Station, Oklahoma State University, Research Report P-663, July 1972.

APPENDIX

Table 7. Example Printout of a Crop Budget

CORN PRODUCTION EASTERN SOUTH DAKOTA
45 BUSHEL YIELD

CATEGORY	UNITS	PRICE	QUANTITY	VALUE

PRODUCTION				
CORN	BU.	3.000	45.000	135.00
TOTAL RECEIPTS				135.00

OPERATING INPUTS				
CORN SEED	BU.	30.000	0.125	3.75
2-4-D	LBS.	1.000	0.750	0.75
INSECTICIDE	LBS.	2.000	0.750	1.50
NITROGEN	LBS.	0.180	45.000	8.10
CROP INSURANCE	ACRE	2.500	1.000	2.50
TRACTOR FUEL COST	ACRE			3.76
TRACT REPAIR COST	ACRE			1.69
TRACTOR LUBE COST	ACRE			0.56
EQUIP REPAIR COST	ACRE			1.92
TOTAL OPERATING COST				24.53

RETURNS TO LAND, LABOR, CAPITAL, MACHINERY, OVERHEAD, RISK, AND MANAGEMENT				110.47

CAPITAL COST				
ANNUAL OPERATING CAPITAL		0.085	8.937	0.76
TRACTOR INVESTMENT		0.085	25.194	2.17
EQUIPMENT INVESTMENT		0.085	36.395	3.09
TOTAL INTEREST CHARGE				6.02

RETURNS TO LAND, LABOR, MACHINERY, OVERHEAD, RISK AND MANAGEMENT				104.45

OWNERSHIP COST (DEPRECIATION, TAXES, INSURANCE)				
TRACTOR	DOL.			3.12
EQUIPMENT	DOL.			5.66
TOTAL OWNERSHIP COST				8.78

RETURNS TO LAND, LABOR, OVERHEAD, RISK AND MANAGEMENT				95.67

LABOR COST				
MACHINERY LABOR	HR.	2.000	3.094	6.19
TOTAL LABOR COST				6.19

RETURNS TO LAND, OVERHEAD, RISK AND MANAGEMENT				89.48

THIS BUDGET PREPARED BY WINKELBAUER FROM DATA BY JAMES DUNN

CORN 45 BU.
ALLEN
9-15-73

BUDGET IDENTIFICATION NUMBER --- 72 5000 102 1
ANNUAL CAPITAL MONTH 10

Table 3. Example Printout of Stored Data for a Crop Budget

BUDGET IDENTIFICATION NUMBER 72 5000 102 1													ANNUAL CAPITAL MONTH 10			BUDGET RECORD NUMBER 0		
CORN PRODUCTION 45 BUSHEL YIELD													EASTERN SOUTH DAKOTA					
LINE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
PRODUCTION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	PRICE	WEIGHT	UNIT	ITEM	TYPE	CONT
	NUMBER OF UNITS														CODE	CODE		
1 CORN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.00	0.0	0.0	3.000	0.0	2.	72.	2.	0.
OPERATING INPUTS	RATE/UNIT												PRICE	NUMBER	UNIT	ITEM	TYPE	CONT
														UNITS	CODE	CODE		
11 CORN SEED	0.0	0.0	0.0	0.0	0.13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.000	0.0	2.	172.	3.	0.
12 2-4-D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.75	0.0	0.0	0.0	0.0	1.000	0.0	12.	251.	3.	0.
13 INSECTICIDE	0.0	0.0	0.0	0.0	0.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.000	0.0	12.	240.	3.	0.
14 NITROGEN	0.0	0.0	0.0	0.0	45.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.180	0.0	12.	211.	3.	0.
15 CROP INSURANCE	0.0	0.0	0.0	0.0	1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.500	0.0	7.	452.	3.	0.
MACHINERY REQUIREMENTS	TIMES OVER												XXXXX	XXXXX	POWER	MACH	TYPE	CONT
															UNIT	CODE		
38 TANDEM DISK	0.0	0.0	0.0	1.00	1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.	43.	4.	0.
39 M. B. PLOW 4	0.0	0.0	0.0	0.0	1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.	41.	4.	0.
40 SPRING TOOTH	0.0	0.0	0.0	0.0	2.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.	46.	4.	0.
41 PLANTER	0.0	0.0	0.0	0.0	1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.	52.	4.	0.
42 ROTARY HOE	0.0	0.0	0.0	0.0	1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.	48.	4.	0.
43 ROW CULTIVATOR	0.0	0.0	0.0	0.0	0.0	2.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.	57.	4.	0.
44 CORN PICKER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.00	0.0	0.0	0.0	0.0	4.	74.	4.	0.

THIS BUDGET PREPARED BY WINKELBAUER FROM DATA BY JAMES DUNN

CORN 45 BU.
ALLEN
9-15-73

Table 9. Example Printout of a Livestock Budget

DAIRY COW, 14,000 POUNDS MANUFACTURING MILK SOLD PER
COW, REPLACEMENTS PURCHASED, FOUR YEARS IN HERD

PRODUCTION	UNITS	QUANTITY	WEIGHT	PRICE	VALUE/UNIT	VALUE
MFG MILK	CWT.	140.00	1.00	6.500	6.50	910.00
DAIRY CALVES	HD.	0.92	1.00	70.000	70.00	64.40
CULL COWS	CWT.	0.25	11.00	28.000	308.00	77.00
TOTAL RECEIPTS						1051.40
OPERATING INPUTS	UNITS	RATE PER UNIT	NUMBER OF UNITS	TOTAL UNITS	PRICE	VALUE
DY. REPLACE HFR.	HD.	0.31	1.00	0.310	400.00	124.00
CORN	BU.	60.00	1.00	60.000	3.00	180.00
OATS	BU.	55.00	1.00	55.000	1.30	71.50
CORN SILAGE	TONS	4.75	1.00	4.750	20.00	95.00
ALFALFA HAY	TONS	3.00	1.00	3.000	30.00	90.00
PASTURE	AUMS	1.00	1.00	1.000	7.50	7.50
CATTLE SUPP.	CWT.	4.00	1.00	4.000	8.15	32.60
SALT & MIN.	LBS.	100.00	1.00	100.000	0.03	3.00
COW BREED CHGE.	HD.	1.00	1.00	1.000	10.00	10.00
VET. MEDICINE	HD.	1.75	1.00	1.750	5.00	8.75
HAULING MILK	CWT.	140.00	1.00	140.000	0.20	28.00
DAIRY TESTING	HD.	1.25	1.00	1.250	12.00	15.00
HAULING & MKTG.	HD.	1.13	1.00	1.130	4.00	4.52
EQUIPMENT FUEL AND LUBE						3.33
EQUIPMENT REPAIR						3.38
TOTAL COST						676.58
RETURNS TO LAND, LABOR, CAPITAL MACHINERY, OVERHEAD, RISK, AND MANAGEMENT						374.92
CAPITAL COST			PRICE	AMOUNT		VALUE
ANNUAL OPERATING CAPITAL			0.085	269.075		22.87
EQUIPMENT INVESTMENT			0.085	159.995		13.60
TOTAL INTEREST CHARGE						36.47
RETURNS TO LAND, LABOR, MACHINERY, OVERHEAD, RISK AND MANAGEMENT						338.35
OWNERSHIP COST (DEPRECIATION, TAXES, INSURANCE)						
EQUIPMENT	DOL.					17.63
TOTAL OWNERSHIP COST						17.63
RETURNS TO LAND, LABOR, OVERHEAD, RISK AND MANAGEMENT						320.73
LABOR COSTS			PRICE	HOURS		
EQUIPMENT LABOR			2.000	0.143		0.29
LIVESTOCK LABOR			2.000	60.000		120.00
TOTAL LABOR COST						120.29
RETURNS TO LAND, OVERHEAD RISK AND MANAGEMENT						200.44
THIS IS THE SAME AS BUDGET TABLE 47 IN THE GUIDEBOOK				DAIRY COW ALLEN 048 JAN. 1975		
BUDGET IDENTIFICATION NUMBER		20 5301 11048				
ANNUAL CAPITAL MONTH		12				

Table 10. Example Printout of Stored Data for a Livestock Budget

BUDGET IDENTIFICATION NUMBER 20 5301 11048													ANNUAL CAPITAL MONTH 12			BUDGET RECORD NUMBER 40		
DAIRY COW, 14,000 POUNDS MANUFACTURING MILK SOLD PER COW, REPLACEMENTS PURCHASED, FOUR YEARS IN HERD																		
LINE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	PRICE	WEIGHT	UNIT	ITEM	TYPE	CONT
PRODUCTION																		
	NUMBER OF UNITS																	
1 MFG MILK	11.00	12.00	12.00	12.00	13.00	14.00	13.00	9.00	10.00	12.00	11.00	11.00	6.500	1.000	16.	5.	2.	0.
2 DAIRY CALVES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.92	70.000	1.000	1.	21.	2.	0.
3 CULL COWS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.25	28.000	11.000	16.	7.	2.	0.
OPERATING INPUTS																		
	RATE/UNIT																	
													PRICE	NUMBER	UNIT	ITEM	TYPE	CONT
														UNITS	CODE	CODE		
11 DY. REPLACE MFR.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.31	400.000	1.000	1.	25.	3.	0.
12 CORN	20.00	0.0	0.0	0.0	20.00	0.0	0.0	0.0	20.00	0.0	0.0	0.0	3.000	1.000	2.	72.	3.	0.
13 OATS	20.00	0.0	0.0	0.0	20.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.300	1.000	2.	74.	3.	0.
14 CORN SILAGE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.75	0.0	0.0	0.0	20.000	1.000	3.	161.	3.	0.
15 ALFALFA HAY	0.0	0.0	0.0	0.0	0.0	3.00	0.0	0.0	0.0	0.0	0.0	0.0	30.000	1.000	3.	81.	3.	0.
16 PASTURE	0.0	0.0	0.0	0.0	1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.500	1.000	10.	150.	3.	0.
17 CATTLE SUPP.	2.00	0.0	0.0	0.0	0.0	0.0	2.00	0.0	0.0	0.0	0.0	0.0	8.150	1.000	16.	105.	3.	0.
18 SALT & MIN.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.00	0.030	1.000	12.	103.	3.	0.
19 COW BREED CHGE.	1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.000	1.000	1.	417.	3.	0.
20 VET. MEDICINE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.75	5.000	1.000	1.	413.	3.	0.
21 HAULING MILK	11.00	12.00	12.00	12.00	13.00	14.00	13.00	9.00	10.00	12.00	11.00	11.00	0.200	1.000	16.	484.	3.	0.
22 DAIRY TESTING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.25	12.000	1.000	1.	407.	3.	0.
23 HAULING & MKTG.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.13	4.000	1.000	1.	485.	3.	0.
MACHINERY REQUIREMENTS																		
	HOURS																	
													XXXXX	XXXXX	POWER	MACH	TYPE	CONT
														UNIT	CODE	CODE		
EQUIPMENT REQUIREMENTS																		
													NUMBER	PROPORT	XXX	EQUIP	TYPE	XXXX
													UNITS	OF COST		CODE		
38 MILK COOLER													0.033	1.000	0.	31.	5.	0.
39 MILKING EQUIP.													0.010	1.000	0.	32.	5.	0.
40 MILKING PARLOR													0.010	1.000	0.	13.	5.	0.
41 LOAFING SHED													0.040	1.000	0.	12.	5.	0.
49 LIVESTOCK LABOR	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00						

THIS IS THE SAME AS BUDGET TABLE 47 IN THE GUIDEBOOK

DAIRY COW
ALLEN 048
JAN. 1975

Table 11. Printout of an Example List of Item Names and Prices

FOLLOWING IS A LIST OF ALL ITEM NAMES AND THE PRICES FOR THOSE THAT HAVE PRICES FROM PRICE VECTOR NUMBER 1

NUMBER	ITEM	PRICE	NUMBER	ITEM	PRICE
1	WOOL	0.70	51	LAMB WOOL INCENT	1.50
2	CREAM	0.0	52	WOOL SUPPORT	0.30
3	QUALITY EGGS	0.0	53		0.0
4	EGGS	0.50	54	HORSES	0.0
5	MFG MILK	6.50	55	STUD COLT	0.0
6	GRADE A MILK	7.50	56	FILLY FOAL	0.0
7	CULL COWS	28.00	57	CULL MARE	0.0
8	FAT HFR CHOICE	0.43	58	STALLION	0.0
9	FAT STR CHOICE	0.45	59	MARE	0.0
10	FAT STR GOOD	43.00	60	WEANLING COLT	0.0
11	BULL CALVES	0.0	61	BROILERS	0.0
12	HEIFER CALVES	0.51	62	CULL PULLETS	0.10
13	STEER CALVES	0.55	63	OLD HENS	0.10
14	BULLS	0.0	64	PULLETS	2.00
15	YRLG HEIFER	0.45	65	SEXED CHICK	0.50
16	YRLG STEER	0.50	66	CHICK MASH	6.00
17	BEEF REPLACE HFR	350.00	67	LAYING MASH	5.00
18	BEEF COWS	0.0	68	OYSTER SHELLS	2.00
19	BRED HEIFER	375.00	69	YIELD	0.0
20	DAIRY ANIMALS	0.0	70	GRAIN	0.0
21	DAIRY CALVES	70.00	71	BARLEY	2.25
22	HFR CALVES DY	65.00	72	CORN	3.00
23	STR CALVES DY	50.00	73	MILO	0.0
24	DAIRY BULLS	0.0	74	OATS	1.30
25	DY. REPLACE HFR.	400.00	75	RYE	0.0
26	YRLG DAIRY STR	18.00	76	WHEAT	0.0
27	CULL DAIRY HFR.	35.00	77	GRAIN SORGHUM	0.0
28	DAIRY COWS	0.0	78	CLOVER HAY	0.0
29	FEEDER LAMBS	40.00	79	SECONDARY PROD.	0.0
30	SHEEP	0.0	80	HAY	0.0
31	RAM LAMBS	0.0	81	ALFALFA HAY	30.00
32	EWE LAMBS	40.00	82	BROME HAY	0.0
33	WETHER LAMBS	0.0	83	MIXED GRASS HAY	0.0
34	YOUNG RAMS	0.0	84	TAME GRASS	0.0
35	CULL EWES	0.08	85	PRAIRIE HAY	25.00
36	OPEN EWES	45.00	86	SILAGE	0.0
37	RAMS	0.0	87	SUDAN HAY	0.0
38	REPLACEMENT EWE	25.00	88	FORAGE SORGHUM	0.0
39	SLAUGHTER LAMBS	40.00	89	GRAZING	0.0
40	SWINE	0.0	90	CASH CROPS	0.0
41	OPEN GILTS	0.0	91	BROOMCORN	0.0
42	BRED GILTS	0.0	92	FLAX	0.0
43	BARROWS	0.0	93	SUNFLOWERS	0.0
44	YOUNG BOAR	0.0	94	GUAR	0.0
45	YOUNG SOWS	0.0	95	MILLET	0.0
46	FEEDER PIG 40 LB	35.00	96	PECANS	0.0
47	AGED BOAR	0.0	97	FRUIT	0.0
48	AGED SOW	32.00	98	SOYBEANS	0.0
49	SLAUGHTER HOGS	38.00	99	VEGETABLES	0.0
50	BOO IA STOCK STR	0.44	100	FEED ADDITIVES	0.0

Table 11. (continued)

NUMBER	ITEM	PRICE	NUMBER	ITEM	PRICE
101	SALT	0.0	151	WHEAT PASTURE	0.0
102	MINERALS	0.0	152	BARLEY PASTURE	0.0
103	SALT & MIN.	0.03	153	BR. ALF PASTURE	0.0
104	HOG SUPPLEMENT	12.00	154	SUDAN PASTURE	0.0
105	CATTLE SUPP.	8.15	155	LEGUME PASTURE	7.50
106	SHEEP SUPP.	8.15	156	NATIVE PASTURE	6.50
107	MILK REPLACER	20.00	157	AFTERMATH	7.50
108	CALF STARTER	12.00	158	IMP. GRASS PAST.	0.0
109	CALF GROWER	10.00	159	BERMUDA PASTURE	0.0
110	PIG CREEP RATION	10.00	160	SILAGE	0.0
111	21-25(PRO. SUP.	0.0	161	CORN SILAGE	20.00
112	26-30(PRO. SUP.	0.0	162	SORGHUM SILAGE	0.0
113	31-35(PRO. SUP.	0.0	163	S. G. SILAGE	0.0
114	36-40(PRO. SUP.	0.0	164	SUDAN SILAGE	0.0
115	41-45(PRO. SUP.	0.0	165	GRASS SILAGE	0.0
116	46-50(PRO. SUP.	0.0	166	LEGUME SILAGE	0.0
117	51-60(PRO. SUP.	0.0	167	OAT SILAGE	0.0
118	60(+ PRO. SUP.	0.0	168	LEGUME HAYLAGE	0.0
119		0.0	169		0.0
120	MIXED FEED 1	0.0	170	GRAIN SEED	0.0
121	8-10(PRO. FEED	0.0	171	BARLEY SEED	0.0
122	11-12(PRO. FEED	0.0	172	CORN SEED	30.00
123	13-14(PRO. FEED	0.0	173	MILO SEED	0.0
124	15-16(PRO. FEED	0.0	174	OAT SEED	3.00
125	17-18(PRO. FEED	0.0	175	RYE SEED	0.0
126	19-20(PRO. FEED	0.0	176	WHEAT SEED	0.0
127	21-25(PRO. FEED	0.0	177	VETCH SEED	0.0
128	26(+ PRO. FEED	0.0	178	CLOVER SEED	0.0
129		0.0	179	SUNFLOWER SEED	0.0
130	MIXED FEED 2	0.0	180	HAY SEED	0.0
131	8-10(PRO. FEED	0.0	181	ALFALFA SEED	1.75
132	11-12(PRO. FEED	0.0	182	BROME SEED	0.0
133	13-14(PRO. FEED	0.0	183	CR WHTGRAS SD	0.0
134	15-16(PRO. FEED	0.0	184	GRASS SEED	0.0
135	17-18(PRO. FEED	0.0	185	NATIVE PAST SEED	0.0
136	19-20(PRO. FEED	0.0	186	SILAGE SEED	0.0
137	21-25(PRO. FEED	0.0	187	SUDAN SEED	0.0
138	26(+ PRO. FEED	0.0	188	SORGHUM SEED	0.0
139		0.0	189	FLAX SEED	0.0
140	MIXED FEED 3	0.0	190	SEED	0.0
141	8-10(PRO. FEED	0.0	191	RUSS WILD RYE SD	0.0
142	11-12(PRO. FEED	0.0	192	BLUEGRASS SEED	0.0
143	13-14(PRO. FEED	0.0	193	INTERMED WHTGRAS	0.0
144	15-16(PRO. FEED	0.0	194	SWITCHGRASS SEED	0.0
145	17-18(PRO. FEED	0.0	195	PEANUT SEED	0.0
146	19-20(PRO. FEED	0.0	196		0.0
147	21-25(PRO. FEED	0.0	197		0.0
148	26(+ PRO. FEED	0.0	198	SOYBEAN SEED	0.0
149		0.0	199	VEGETABLE SEED	0.0
150	PASTURE	7.50	200	FERT,LIME&CHEM.	0.0

Table 11. (continued)

NUMBER	ITEM	PRICE	NUMBER	ITEM	PRICE
201		0.0	251	2-4-D	1.00
202		0.0	252	BROAD LEAF HERB	0.0
203		0.0	253	GRASS KILLER	0.0
204		0.0	254	PRE-MERGE HERB	0.0
205		0.0	255	SOIL STERILANT	0.0
206		0.0	256	ATRAZINE	1.00
207		0.0	257		0.0
208		0.0	258		0.0
209		0.0	259		0.0
210	FERTILIZER	0.0	260	CHEMICALS	0.0
211	NITROGEN	0.18	261	FUMIGANT	0.0
212	N&P	0.0	262	SEED TREATMENT	0.0
213	N&P&K	0.0	263	RODENT CONTROL	0.0
214	PHOSPHATE	0.15	264		0.0
215	P&K	0.0	265		0.0
216	POTASH	0.10	266		0.0
217	COMPLETE FERT	0.0	267		0.0
218	N&K	0.0	268		0.0
219		0.0	269		0.0
220	TRACE ELEMENTS	0.0	270	SOIL TEST	0.0
221	BORON	0.0	271		0.0
222	COBALT	0.0	272		0.0
223	IRON	0.0	273		0.0
224	SULFER	0.0	274		0.0
225	ZINC	0.0	275		0.0
226		0.0	276		0.0
227		0.0	277		0.0
228		0.0	278		0.0
229		0.0	279		0.0
230	LIME&GYPSUM	0.0	280	BAGS,TAGS,ETC.	0.0
231	LIME	0.0	281		0.0
232	GYPSUM	0.0	282		0.0
233		0.0	283		0.0
234		0.0	284		0.0
235		0.0	285		0.0
236		0.0	286		0.0
237		0.0	287		0.0
238		0.0	288		0.0
239		0.0	289		0.0
240	INSECTICIDE	2.00	290		0.0
241	DDT	0.0	291		0.0
242	METHOXYCHLOR	0.0	292		0.0
243	MALATHION	0.0	293		0.0
244	PARATHION	0.0	294		0.0
245		0.0	295		0.0
246		0.0	296		0.0
247		0.0	297		0.0
248		0.0	298		0.0
249		0.0	299		0.0
250	HERBICIDE	0.0	300	MACHINE HIRE	0.0

Table 11. (continued)

NUMBER	ITEM	PRICE	NUMBER	ITEM	PRICE
301	CAR RENTAL	0.0	351	DRILL	0.0
302	TRUCK HIRE	0.0	352	2-ROW PLANTER	0.0
303	TRACTOR HIRE	0.0	353	4-ROW PLANTER	0.0
304	POWER UNIT HIRE	0.0	354	6-ROW PLANTER	0.0
305	CUSTOM COMBINE	7.00	355	LISTER	0.0
306	CUSTOM HAULING	0.0	356	G-DEVIL	0.0
307	HAYING&STACKING	0.0	357	2-ROW CULTIVATOR	0.0
308		0.0	358	4-ROW CULTIVATOR	0.0
309		0.0	359	6-ROW CULTIVATOR	0.0
310	LIVESTOCK FD EQ	0.0	360	IRRIG&CHEM APPL.	0.0
311	FEEDERS	0.0	361	FERT. SPREADER	0.0
312	WATERERS	0.0	362	LIQUID FERT SPRD	0.0
313	GRINDER	0.0	363	ANHYDROWS APPL.	0.0
314	HAMMER MILL	0.0	364	SPRAYER	0.0
315	ROLLER	0.0	365	IRRIGATION WELL	0.0
316	PELLETER	0.0	366	IRRIGATION PUMP	0.0
317	GRINDER MIXER	0.0	367	IRRIGATION PIPE	0.0
318	FEED WAGON	0.0	368	IRRIG DAMS,TUBES	0.0
319	AUTO FEEDING	0.0	369	IRRIG DITCHER	0.0
320	OTHER LVSTK EQP	0.0	370	HARVEST EQUIP.	0.0
321	MILKER	0.0	371	COMBINE,PULL TYP	0.0
322	BULK TANK	0.0	372	SILAGE CUTTER	0.0
323	MILK EQUIPMENT	0.0	373	CORNPICKER	0.0
324	BRANDING EQUIP.	0.0	374	COTTONPICKER	0.0
325	VET EQUIPMENT	0.0	375	SHAKER	0.0
326	SEPARATOR	0.0	376	DIGGER	0.0
327	CHUTES	0.0	377		0.0
328	SADDLES, BRIDLES	0.0	378		0.0
329	SCALES	0.0	379		0.0
330	MATERIALS HNDLNG	0.0	380	HAYING EQUIP.	0.0
331	ELEVATOR	0.0	381	SICKLE MOWER	0.0
332	AUGER	0.0	382	ROTARY MOWER	0.0
333	BLOWER	0.0	383	COND.-CRIMPER	0.0
334		0.0	384	RAKE	0.0
335	MANURE LOADER	0.0	385	WINDROWER	0.0
336	MANURE SPREADER	0.0	386	SWEEP	0.0
337	GRADR-LAND PLANE	0.0	387	STACKER	0.0
338	POSTHOLE DIGGER	0.0	388	BALER	0.0
339		0.0	389	BALE-LOADER	0.0
340	TILL MACHINERY	0.0	390	STORE&PROC. EQPT	0.0
341	PLOW	0.0	391	HAND HOEING	0.0
342	ONEWAY	0.0	392		0.0
343	DISK	0.0	393		0.0
344	ROD WEEDER	0.0	394		0.0
345	SPIKE HARROW	0.0	395		0.0
346	SPRING TOOTH	0.0	396		0.0
347	SWEEP	0.0	397		0.0
348	ROTARY HOE	0.0	398		0.0
349	SUBSCILER-CHISEL	0.0	399		0.0
350	PLANT&CULTIVATE	0.0	400	ELECT,FUEL,LITER	200.00

Table 11. (continued)

NUMBER	ITEM	PRICE	NUMBER	ITEM	PRICE
401	ACCOUNTING	0.0	451	HAIL INSURANCE	0.0
402	CHECKING CHGS	0.0	452	CROP INSURANCE	2.50
403	OTHER BK CHGS	0.0	453	LIVESTOCK INS.	0.0
404	LEGAL FEES	0.0	454	VEHICLE INS.	0.0
405	SALES COMM.	0.0	455	EQUIPMENT INS.	0.0
406	PAPERS®IS.	0.0	456	BUILDING INS.	0.0
407	DAIRY TESTING	12.00	457	LIABILITY INS.	0.0
408	MEDICATIONS	9.00	458		0.0
409	VET MEDICINE	3.50	459		0.0
410	VET MEDICINE	17.00	460	UTILITIES	0.0
411	VET. MEDICINE	0.70	461	PHONE	0.0
412	VET. MEDICINE	0.50	462	TELEGRAPH	0.0
413	VET. MEDICINE	5.00	463	RADIO-TWO-WAY	0.0
414	EQUIPMENT	0.0	464	ELECTRICITY	0.0
415	VET SUPPLIES	0.0	465	NAT GAS FRM PL.	0.0
416	VET. MEDICINE	1.75	466	WATER	0.0
417	COW BREED CHGE.	10.00	467	SEWER&WASTE DISP	0.0
418	DEATH LOSS	0.0	468		0.0
419	SOW BREED CHGE.	4.00	469		0.0
420	GAS,FUEL	0.0	470	RENT PAID OUT	0.0
421	GASOLINE	0.0	471	BEEF RENTAL	0.0
422	LP GAS	0.0	472	DAIRY RENTAL	0.0
423	DIESEL	0.0	473	SHEEP RENTAL	0.0
424	KEROSENE	0.0	474	SWINE RENTAL	0.0
425	NAT. GAS IRRE&PWR	0.0	475	OTHER LVST. RENT	0.0
426	GREASE	0.0	476	VEHICLE&MOTOR RT	0.0
427	OIL	0.0	477	MACHINERY RENT	0.0
428	FILTERS,ETC.	0.0	478	BUILDING RENT	0.0
429	ANTIFREEZE,ADD.	0.0	479	LAND RENT	0.0
430	STORAGE	0.0	480	TRUCKING&TRAVEL	0.0
431	WAREHOUSING	0.0	481	TRUCKING	184.00
432	BAILMENTS	0.0	482	FREIGHT	0.0
433	COLD STORAGE	0.0	483	ADVERTISING	0.0
434	BROKERAGE	0.0	484	HAULING MILK	0.20
435	CUSTOM KILL	0.0	485	HAULING & MKTG.	4.00
436	SHEARING	1.00	486	LODGING	0.0
437		0.0	487	MEETING FEES	0.0
438		0.0	488		0.0
439		0.0	489		0.0
440	TAXES	0.0	490	CONSERVATION EXP	0.0
441	REAL ESTATE TAX	0.0	491	TERRACING	0.0
442	PERSONAL TAXES	0.0	492	WATERWAYS	0.0
443	LICENSES	0.0	493	LEVELING	0.0
444	PERMITS	0.0	494	SEEDS	0.0
445	SALES TAX	0.0	495	TREES	0.0
446		0.0	496	DAMS	0.0
447		0.0	497	BRUSH CLEARING	0.0
448		0.0	498		0.0
449		0.0	499		0.0
450	INSUR. PREMIUMS	0.0	500		0.0

Table 12. Printout of an Example Machinery Complement

MACHINERY COMPLEMENT(1)		BUDGET IDENTIFICATION NUMBER--- 0 0000 000 0														
NAME OF MACHINE	COLUMN CODE	1 WIDTH (FEET)	2 INITIAL LIST PRICE	3 SPEED (MPH)	4 FIELD EFFIC-ENCY	5 RC1	6 RC2	7 RC3	8 HOURS USED ANNUALLY	9 YEARS OWNED	10 RFV1	11 RFV2	12 PURCHASE PRICE	13 FUEL TYPE	14 HOURS OF LIFE	15 HP
TRACTOR (1) G	1.	0.0	4600.	0.0	0.0	1.20	0.000031	1.60	600.	10.0	0.680	0.920	4140.	1.	12000.	31.
TRACTOR (2) G	2.	0.0	5100.	0.0	0.0	1.20	0.000031	1.60	600.	10.0	0.680	0.920	4590.	1.	12000.	46.
TRACTOR (3) D	3.	0.0	6800.	0.0	0.0	1.20	0.000031	1.60	600.	10.0	0.680	0.920	6120.	3.	12000.	60.
TRACTOR (4) D	4.	0.0	9100.	0.0	0.0	1.20	0.000031	1.60	600.	10.0	0.680	0.920	8190.	3.	12000.	80.
TRACTOR (5) D	5.	0.0	10900.	0.0	0.0	1.20	0.000031	1.60	600.	10.0	0.680	0.920	9810.	3.	12000.	100.
TRACTOR (6) D	6.	0.0	11800.	0.0	0.0	1.20	0.000031	1.60	600.	10.0	0.680	0.920	10620.	3.	12000.	125.
TRACTOR (7) D	7.	0.0	14100.	0.0	0.0	1.20	0.000031	1.60	600.	10.0	0.680	0.920	12690.	3.	12000.	150.
TRACTOR (8) D	8.	0.0	17100.	0.0	0.0	1.20	0.000031	1.60	600.	10.0	0.680	0.920	15390.	3.	12000.	175.
	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.
TRUCK	10.	2.0	8210.	20.0	0.88	0.80	0.000031	1.60	500.	8.0	0.670	0.860	7800.	1.	4000.	85.
PICKUP	11.	0.5	4500.	25.0	0.88	0.80	0.000031	1.60	500.	8.0	0.600	0.885	4050.	1.	4000.	60.
S.P. COMBINE	12.	12.0	14500.	3.0	0.67	0.33	0.000251	1.80	100.	10.0	0.635	0.895	13050.	1.	2000.	65.
FORAGE HARVESTER	13.	6.0	12500.	4.0	0.60	1.20	0.002510	1.30	75.	10.0	0.560	0.885	11250.	3.	1500.	134.
S.P. SWATHER	14.	12.0	4320.	5.4	0.77	1.00	0.002510	1.30	75.	10.0	0.660	0.880	3672.	1.	1500.	45.
S.P. BALER	15.	12.0	7500.	3.0	0.74	0.85	0.002510	1.30	100.	10.0	0.560	0.885	6750.	3.	2000.	65.
COTTON PICKER	16.	6.0	19500.	3.0	0.63	0.75	0.000251	1.80	75.	15.0	0.585	0.875	16575.	3.	2500.	0.
	17.	16.0	8000.	5.0	0.77	1.00	0.000251	1.30	100.	8.0	0.660	0.880	7200.	1.	1500.	0.
SP COMBINE-GRAIN	18.	16.0	21800.	3.0	0.67	0.33	0.000251	1.80	100.	10.0	0.635	0.895	19620.	1.	2000.	85.
S.P. BALE WAGON	19.	24.0	15200.	11.5	0.40	0.85	0.002510	1.30	200.	10.0	0.560	0.885	12900.	1.	2500.	45.
COTTON STRIPPER	20.	12.0	18000.	3.0	0.63	0.75	0.000251	1.80	100.	10.0	0.585	0.875	14500.	3.	2500.	0.
SP COMBINE-CORN	21.	14.0	16000.	3.0	0.67	0.33	0.000251	1.80	100.	10.0	0.635	0.895	14400.	1.	1500.	75.
SP 2ROW STRIPPER	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	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	0.0	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.	0.0	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.	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.
	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	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	0.0	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.	0.0	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.	0.0	0.0	0.0	0.	0.	0.	0.
FIELD CULT.,MTD.	32.	16.5	1410.	3.8	0.76	1.00	0.000251	1.80	100.	10.0	0.600	0.885	1290.	0.	2000.	0.
ROLL. CULTIVATOR	33.	11.0	1135.	4.5	0.76	1.00	0.000251	1.80	150.	8.0	0.600	0.885	1100.	0.	2000.	0.
M. B. PLOW 3	34.	4.0	700.	4.5	0.80	2.00	0.002510	1.30	100.	10.0	0.600	0.885	630.	0.	2000.	0.
OFFSET DISK	35.	16.0	3000.	4.8	0.83	0.65	0.000251	1.80	100.	10.0	0.600	0.885	2700.	0.	2000.	0.
SPRINGTOOTH FOLD	36.	27.0	1350.	5.3	0.70	0.65	0.000251	1.80	175.	10.0	0.600	0.885	1215.	0.	2000.	0.
SPRINGTOOTH FOLD	37.	33.0	1509.	5.3	0.70	0.65	0.000251	1.80	175.	10.0	0.600	0.885	1358.	0.	2000.	0.
M. B. PLOW 5	38.	6.6	2010.	4.5	0.80	2.00	0.002510	1.30	250.	10.0	0.600	0.885	1950.	0.	2000.	0.
M. B. PLOW 7	39.	9.3	4389.	4.5	0.80	2.00	0.002510	1.30	300.	6.0	0.600	0.885	3950.	0.	2000.	0.
LARGE SWEEP	40.	25.0	4400.	5.5	0.76	1.00	0.000251	1.80	400.	5.0	0.600	0.885	3960.	0.	2000.	0.
M. B. PLOW 4	41.	5.3	1435.	4.1	0.80	2.00	0.002510	1.30	167.	15.0	0.600	0.885	1390.	0.	2000.	0.
ONEWAY	42.	12.0	1682.	4.8	0.83	0.65	0.000251	1.80	100.	10.0	0.600	0.885	1514.	0.	2000.	0.
TANDEM DISK	43.	14.0	1729.	4.8	0.83	0.65	0.000251	1.80	100.	10.0	0.600	0.885	1556.	0.	2000.	0.
ROD WEEDER	44.	22.0	1530.	4.8	0.83	0.65	0.000251	1.80	100.	10.0	0.600	0.885	1377.	0.	2000.	0.
SPIKE HARROW	45.	20.0	745.	5.3	0.70	0.65	0.000251	1.80	100.	10.0	0.600	0.885	670.	0.	2000.	0.
SPRING TOOTH	46.	20.0	745.	5.3	0.70	0.65	0.000251	1.80	100.	10.0	0.600	0.885	670.	0.	2000.	0.
SWEEP	47.	15.0	2660.	5.5	0.76	1.00	0.000251	1.80	300.	6.0	0.600	0.885	2390.	0.	2000.	0.
ROTARY HOE	48.	14.0	920.	5.0	0.76	1.00	0.000251	1.80	100.	10.0	0.600	0.885	828.	0.	2000.	0.
CHISEL	49.	12.0	995.	4.1	0.80	0.65	0.000251	1.80	100.	10.0	0.600	0.885	897.	0.	2000.	0.
OFFSET DISK	50.	14.0	1729.	4.8	0.83	0.65	0.000251	1.80	100.	10.0	0.600	0.885	1556.	0.	2000.	0.

Table 12. (continued)

MACHINERY COMPLEMENT (1)			BUDGET IDENTIFICATION NUMBER--- 0 0000 000 0													
COLUMN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
NAME OF MACHINE	CODE	WIDTH (FEET)	INITIAL LIST PRICE	SPEED (MPH)	FIELD EFFIC-ENCY	RC1	RC2	RC3	HOURS USED ANNUALLY	YEARS OWNED	RFV1	RFV2	PURCHASE PRICE	FUEL TYPE	HOURS OF LIFE	HP
PLANTER	51.	13.3	1583.	4.0	0.72	0.65	0.00251	1.80	100.	10.0	0.600	0.885	1424.	0.	1000.	0.
PEANUT PLANTER	52.	12.0	1380.	5.0	0.67	0.80	0.00631	1.60	60.	10.0	0.600	0.885	1240.	0.	1200.	0.
FLOAT	53.	12.0	2660.	5.0	0.67	0.80	0.00631	1.60	70.	10.0	0.600	0.885	2395.	0.	1200.	0.
LISTER	54.	10.0	765.	3.0	0.83	0.60	0.00251	1.30	50.	10.0	0.600	0.885	688.	0.	2000.	0.
CHICKEN PICKER	55.	12.0	1380.	4.0	0.67	0.80	0.00631	1.60	60.	10.0	0.600	0.885	1240.	0.	1200.	0.
ROW CULTIVATOR	56.	15.0	350.	5.5	0.76	1.00	0.00251	1.80	100.	10.0	0.600	0.885	315.	0.	2000.	0.
FIELD CULTIVATOR	57.	12.0	1150.	3.8	0.76	1.00	0.00251	1.80	100.	10.0	0.600	0.885	1035.	0.	2000.	0.
HILLER	58.	12.0	1150.	3.8	0.76	1.00	0.00251	1.80	100.	10.0	0.600	0.885	1035.	0.	2000.	0.
LAND PLANE	59.	12.0	1197.	4.0	0.67	0.80	0.00631	1.60	60.	10.0	0.600	0.885	1077.	0.	1200.	0.
DRY FERT SPREAD	60.	12.0	5320.	3.5	0.42	1.00	0.00251	1.80	100.	10.0	0.600	0.885	4788.	0.	2000.	0.
LIQUID FERT SPRD	61.	25.0	665.	5.3	0.67	1.00	0.00251	1.80	50.	10.0	0.560	0.885	600.	0.	1000.	0.
ANHYDROUS APPLIC	62.	25.0	665.	5.3	0.67	1.00	0.00251	1.80	50.	10.0	0.560	0.885	600.	0.	1000.	0.
SPRAYER	63.	12.0	690.	4.0	0.67	1.00	0.00631	1.60	60.	10.0	0.600	0.885	620.	0.	1000.	0.
CULTIBEDDER TILL	64.	12.0	400.	3.8	0.60	0.65	0.00251	1.80	50.	10.0	0.600	0.885	360.	0.	1000.	0.
CULTIBEDDER PLNT	65.	18.0	2520.	5.0	0.80	1.00	0.00251	1.80	200.	10.0	0.600	0.885	2268.	0.	2000.	0.
HOE DRILL W/FERT	66.	18.0	1950.	4.5	0.67	0.80	0.00631	1.60	100.	8.0	0.600	0.885	1753.	0.	1200.	0.
MULCH TREADER	67.	8.3	1815.	4.0	0.60	0.65	0.00251	1.80	100.	10.0	0.600	0.885	1634.	0.	1000.	0.
HOE DRILL W/FERT	68.	15.0	1995.	5.0	0.83	1.00	0.00251	1.80	100.	10.0	0.600	0.885	1795.	0.	2000.	0.
ORILL W/FERT	69.	8.3	1582.	4.0	0.72	0.65	0.00251	1.80	100.	10.0	0.600	0.885	1424.	0.	1000.	0.
PULL COMBINE	70.	13.3	1815.	4.0	0.72	0.65	0.00251	1.80	100.	10.0	0.600	0.885	1634.	0.	1000.	0.
SILAGE CUTTER	71.	8.0	3059.	3.0	0.67	0.33	0.00251	1.80	100.	10.0	0.635	0.895	2753.	0.	2000.	0.
STRIPPER	72.	3.0	2660.	4.0	0.60	1.20	0.00251	1.30	75.	10.0	0.560	0.885	2394.	0.	1500.	0.
CORN PICKER	73.	6.0	11305.	3.0	0.63	0.50	0.00631	1.60	75.	15.0	0.600	0.885	10174.	0.	2500.	0.
SHAKER-DIGGER	74.	6.0	4655.	3.0	0.63	0.50	0.00631	1.60	75.	10.0	0.600	0.885	4190.	0.	1500.	0.
PEANUT COMBINE	75.	6.0	918.	3.0	0.76	1.00	0.00251	1.80	100.	10.0	0.600	0.885	826.	0.	1500.	0.
CORNHEAD	76.	5.0	6650.	3.0	0.67	0.80	0.00631	1.60	100.	6.0	0.660	0.880	5985.	0.	2500.	0.
GRAINHEAD	77.	13.3	6583.	3.0	0.67	0.50	0.00251	1.80	100.	10.0	0.635	0.895	5925.	0.	1500.	0.
DIGGER-INVERTER	78.	16.0	1995.	3.0	0.67	0.33	0.00251	1.80	100.	10.0	0.635	0.895	1796.	0.	2000.	0.
BED SHAPER	79.	6.0	1695.	3.0	0.76	1.00	0.00251	1.60	100.	8.0	0.600	0.885	1526.	0.	1500.	0.
SICKLE MOWER	80.	12.0	2660.	3.0	0.70	0.80	0.00631	1.60	50.	8.0	0.600	0.885	2394.	0.	2000.	0.
ROTARY MOWER	81.	7.0	997.	4.3	0.81	1.80	0.00251	1.30	50.	10.0	0.600	0.885	898.	0.	1000.	0.
CRIMPER	82.	6.0	765.	4.8	0.81	0.65	0.00251	1.30	50.	10.0	0.560	0.885	688.	0.	1000.	0.
RAKE	83.	7.0	1303.	4.3	0.77	1.00	0.00251	1.30	80.	8.0	0.560	0.885	1173.	0.	1000.	0.
WINDROWER	84.	8.0	997.	5.4	0.75	1.00	0.00251	1.30	80.	8.0	0.600	0.885	890.	0.	1000.	0.
BALE LOADER	85.	9.0	4123.	5.4	0.77	1.00	0.00251	1.30	80.	8.0	0.560	0.885	3710.	0.	1500.	0.
PTO BALER	86.	14.0	665.	5.0	0.40	1.00	0.00251	1.30	100.	8.0	0.600	0.885	598.	0.	1000.	0.
BALE WAGON PULL	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.
TRAILER	88.	14.0	4190.	3.0	0.67	0.85	0.00251	1.30	100.	8.0	0.560	0.885	3770.	0.	2000.	0.
STALK SHREDDER	89.	24.0	5752.	5.0	0.40	0.85	0.00251	1.30	150.	10.0	0.560	0.885	5177.	0.	2000.	0.
6 ROW PLANTER	90.	3.0	1064.	20.0	0.90	0.85	0.00251	1.30	50.	10.0	0.635	0.895	957.	0.	1000.	0.
6 ROW LISTER	91.	12.0	765.	4.8	0.81	0.65	0.00251	1.30	80.	8.0	0.560	0.885	688.	0.	1000.	0.
6 ROW CULTIVATOR	0.	19.0	3000.	5.0	0.68	0.80	0.00631	1.60	60.	10.0	0.600	0.885	1880.	0.	1200.	0.
0.	0.	19.0	6370.	4.0	0.67	0.80	0.00631	1.60	60.	10.0	0.600	0.885	5733.	0.	1200.	0.
0.	0.	20.0	2780.	3.8	0.76	1.00	0.00251	1.80	100.	10.0	0.600	0.885	2500.	0.	2000.	0.
0.	0.	19.0	6100.	7.0	0.66	0.80	0.00631	1.60	60.	10.0	0.600	0.885	5500.	0.	1200.	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	0.0	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.	0.0	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.
MANURE SPREADER	99.	5.0	1500.	4.0	0.50	0.85	0.00251	1.40	150.	10.0	0.635	0.895	1300.	0.	1000.	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.

Table 14. Printout of Horsepower Fuel Multipliers

FOLLOWING ARE FUEL MULTIPLIERS IN GALLONS PER HORSEPOWER FOR THE FIRST 29 MACHINES

NUMBER	NAME	GAS	LPG	DIESEL
1	TRACTOR (1) G	0.069	0.081	0.048
2	TRACTOR (2) G	0.069	0.081	0.048
3	TRACTOR (3) D	0.069	0.081	0.048
4	TRACTOR (4) D	0.069	0.081	0.048
5	TRACTOR (5) D	0.069	0.081	0.048
6	TRACTOR (6) D	0.069	0.081	0.048
7	TRACTOR (7) D	0.069	0.081	0.048
8	TRACTOR (8) D	0.069	0.081	0.048
9		0.069	0.081	0.048
10	TRUCK	0.069	0.081	0.048
11	PICKUP	0.069	0.081	0.048
12	S.P. COMBINE	0.069	0.081	0.048
13	FORAGE HARVESTOR	0.069	0.081	0.048
14	S.P. SWATHER	0.069	0.081	0.048
15	S.P. BALER	0.069	0.081	0.048
16	COTTON PICKER	0.069	0.081	0.048
17		0.069	0.081	0.048
18	SP COMBINE-GRAIN	0.069	0.081	0.048
19	S.P. BALE WAGON	0.069	0.081	0.048
20	COTTON STRIPPER	0.069	0.081	0.048
21	SP COMBINE-CORN	0.069	0.081	0.048
22	SP 2ROW STRIPPER	0.069	0.081	0.048
23		0.069	0.081	0.048
24		0.069	0.081	0.048
25		0.069	0.081	0.048
26		0.069	0.081	0.048
27		0.069	0.081	0.048
28		0.069	0.081	0.048
29		0.069	0.081	0.048

Table 15. Job Control Language for the BUDLIV Program

```

JOB CARD is the first card in the deck
//STEP EXEC PGM=BUDLIV
//STEPLIB DD DSN=SYS1.SDSULIB,DISP=SHR
//FT06F001 DD SYSOUT=A,DCB=(RECFM=FA),OUTLIM=10000
//FT07F001 DD SYSOUT=B
//FT08F001 DD DSN=ROD1.PRICE.FILE,UNIT=3340,VOL=SER=VS1203,DISP=OLD
//FT09F001 DD DSN=GRIF.BUDGET.FILE,UNIT=3340,DISP=OLD,VOL=SER=VS1203
//FT10F001 DD DSN=ROD1.MACH.COMPFIL,UNIT=3340,DISP=OLD,VOL=SER=VS1203
//FT11F001 DD DSN=ROD1.PARM.FILE,VOL=SER=VS1203,UNIT=3340,DISP=OLD
//FT13F001 DD DSN=GRIF.EQUP,UNIT=3340,VOL=SER=VS1203,DISP=OLD
//FT14F001 DD DSN=GRIF.MENAME.SEASON,UNIT=3340,VOL=SER=VS1203,DISP=OLD
//FT05F001 DD *

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Table 16. Job Control Language for the MODIFY Program

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JOB CARD is the first card in the deck
//STEP EXEC PGM=MODIFY
//STEPLIB DD DSN=SYS1.SDSULIB,DISP=SHR
//FT06F001 DD SYSOUT=A,DCB=(RECFM=FA),OUTLIM=10000
//GO.FT08F001 DD DSN=ROD1.PRICE.FILE,SPACE=(2004,(9)),
//   DCB=(RECFM=F,DSORG=DA,LRECL=2004,BLKSIZE=2004),UNIT=3340
//   VOL=SER=VS1203,DISP=(OLD,KEEP)
//GO.FT10F001 DD DSN=ROD1.MACH.COMPFIL,SPACE=(6404,(15)),UNIT=3340,
//   DCB=(RECFM=F,DSORG=DA,LRECL=6404,BLKSIZE=6404),VOL=SER=VS1203,
//   DISP=(OLD,KEEP)
//GO.FT11F001 DD DSN=ROD1.PARM.FILE,SPACE=(TRK,(5)),VOL=SER=VS1203
//   DCB=(BLKSIZE=7249,LRECL=10524,RECFM=VS),UNIT=3340,DISP=(OLD,KEEP)
//GO.FT13F001 DD DSN=GRIF.EQUP,SPACE=(6004,(15)),UNIT=3340
//   DCB=(RECFM=F,DSORG=DA,LRECL=6004),VOL=SER=VS1203,
//   DISP=(OLD,KEEP)
//GO.FT14F001 DD DSN=GRIF.MENAME.SEASON,SPACE=(TRK,(2)),
//   DCB=(BLKSIZE=4968,LRECL=4964,RECFM=VS),UNIT=3340,VOL=SER=VS1203
//   DISP=(OLD,KEEP)
//FT05F001 DD *

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Table 17. Example of Printout Received From the LUT2 Agendum

ANNUAL COST SUMMARY FOR EQUIPMENT AND LIVESTOCK--BUDGET NUMBER 20 5301 11048

LINE NO.	ITEM	SIZE	UNIT	LIST PRICE	DEPREC- IATION	INTEREST	INSUR- ANCE	TAXES	REPAIRS	FUEL AND LUBE	HOURS LABOR	TOT OWN- ERSHP/YR	TOT OPER- ATING/YR
31	MILK COOLER	1000.00	GAL.	2500.00	200.00	127.50	9.00	15.00	62.50	100.00	1.00	224.00	162.50
32	MILKING EQUIP.	6.00	HC.	2000.00	180.00	93.50	6.60	11.00	6.00	0.0	1.00	197.60	6.00
13	MILKING PARLOR	800.00	SQFT	6000.00	300.00	280.50	19.80	33.00	83.33	0.0	2.00	352.80	83.33
12	LOAFING SHED	2000.00	SQFT	3000.00	50.00	140.25	9.90	16.50	10.00	0.0	2.00	116.40	10.00

ANNUAL CHARGES MADE IN THIS BUDGET FOR EQUIPMENT AND LIVESTOCK

LINE NO.	ITEM	SIZE	UNIT	NUMBER ITEMS	PROPOR. CHARGED	OWNERSHP CHARGES	OPERATING CHARGES	INTEREST CHARGES	LABOR HOURS CHARGED
31	MILK COOLER	1000.00	GAL.	0.033	1.000	7.47	5.42	4.25	0.03
32	MILKING EQUIP.	6.00	HC.	0.010	1.000	1.98	0.06	0.93	0.01
13	MILKING PARLOR	800.00	SQFT	0.010	1.000	3.53	0.83	2.80	0.02
12	LOAFING SHED	2000.00	SQFT	0.040	1.000	4.66	0.40	5.61	0.08