COWBOSS: A Microcomputer Record Keeping System for Cow/Calf Herds

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Abstract

COWBOSS is a cow/calf record keeping system designed to aid the manager in rational decision making by providing rapid and flexible analytical capability.

Program Design

COWBOSS consists of cow, sire, and one or more calf files. Calf records are saved in a master file which is linked to the cow and sire files. Each cow or sire card shows individual cow/sire information, summary data, and a list of her/his calves (Figure 1). There are built-in electronic scale and carcass modules.
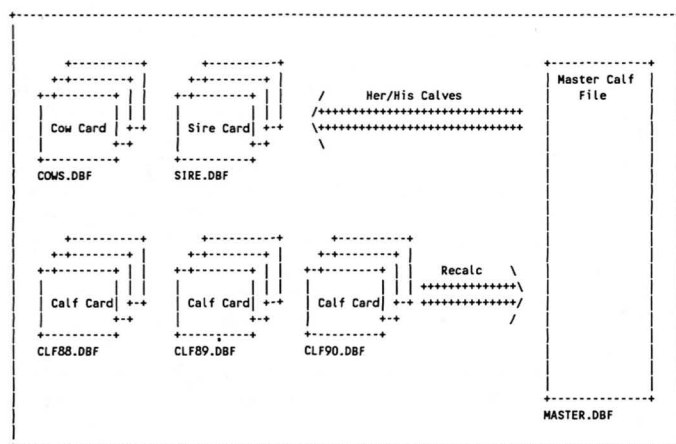

Figure 1. COWBOSS structure.

COWBOSS allows flexible data entry, error checking, searching, sorting, printing, and statistical analysis. This feature allows the user to customize procedures for a particular cow/calf herd.

COWBOSS is written in the dBASE programming language and compiled using the FOXBASE compiler.

COWBOSS runs on any IBM compatible computer with a hard disk and 512 K memory.

Data Entry

The data can be entered through a full card format (Figure 2), or the user can select pertinent fields from a list of all possible fields and enter data in a tabular format (Figure 3). The user can change the data entry format at will. COWBOSS has built-in options for frequently entered data: birth, weaning, and yearling weights, bull-in date, and pregnancy check. COWBOSS can directly read the weaning and yearling data from computerized scale head.

Figure 2. Data entry: Full card format

COWID	BTHDT	BREED
E59	11/30/79	PH
N40	10/23/81	PH
N90	10/01/81	PH
C101	10/01/78	PH
F51	11/05/80	PH
P85	12/04/82	PH
R192	11/19/83	PH
S22	10/18/84	PH
S59	10/30/84	PH
T104	10/01/85	PH

Figure 3. Data entry: Tabular format.

COWBOSS has a set of preprogrammed data entry forms which can be printed to organize data collection. The user can also specify the format of the data entry forms by selecting a few fields from a list of all possible fields by using a user-defined entry form writer.

Sorting

The user can sort the data on a field or combination of fields up to four levels deep. In Figure 4, the user selected four fields for sorting: management code, sex, breed, and calf ID. The data will be sorted first on the management code, then on the sex, then on the breed, and finally on the calf ID. The user can change the sorting format at any time. The user can browse, list, or print the data in the sorted order. Sorting can be used for error checking as well. For example, the calving data can be sorted on the weaning weight to detect out of range values.

```
+-------------------------------------------------------------+
|                         CLF87.DBF      Rec:    3 OF 28      |
| Index on what fields? ZL ZB ZC ZA    (or enter AA to index on Rec No) |
+-------------------------------------------------------------+
| ZA  Calf Id           ZQ. Birth Wt Ratio Adj   YG. Yearling ADG     |
| ZB. Sex               ZR. Weaning Mgt Code      YH. Post-Weaning ADG |
| ZC. Breed             ZS. Weaning Date          YI. Hidden Key       |
| ZD. Calving Ease      ZT. Weaning Wt Actual     YJ. Comments         |
| ZE. Dam Id            ZU. Weaning Wt Adj        YK. Bull-in Date     |
| ZF. Sire Id           ZV. Weaning Wt Ratio Act  YL. Preg Check Date  |
| ZG. Dam Age Days      ZW. Weaning Wt Ratio Adj  YM. Preg Check Code  |
| ZH. Dam Age Years     ZX. Weaning Age           YN. Numeric1         |
| ZI. Dam Age Group     ZY. Weaning ADG           YO. Numeric2         |
| ZJ. History Date      ZZ. Yearling Mgt Code     YP. Alpha1          |
+-------------------------------------------------------------+
```

Figure 4. Sorting on birth management code, sex, breed, and calf ID.

Searching

Flexibility in searching is one of the many advantages of COWBOSS. For example, the user can select weaning weight, breed, and sex fields for searching. Figure 5 shows a list of possible operators: less than, greater than, equal to, not equal to, starts with, and contains. It also shows the search criteria which asks for all Longhorn (LH) heifer calves that weigh more than 120 lbs. The user can count, browse, or print the selected records.

```
+-------------------------------------------------------------+
|                         CLF87.DBF      Rec:    3 OF 28      |
|                                                             |
| Weaning Wt Actual     greater than 120            and       |
| Breed                 starts with  LH             and       |
| Sex                   equal to     H                        |
|                                                             |
|E)qual to  N)ot equal to  L)ess than  G)reater than  C)ontains  S)tarts with|
+-------------------------------------------------------------+
```

Figure 5. Searching for Longhorn heifer that weigh more than 120 lbs.

Printing

COWBOSS has preprogrammed reports for basic data analysis. These include reports on: birth weight, weaning weight, yearling weight, herd summary, dam progeny, and sire progeny. COWBOSS has a built-in report generator that allows the user to design custom reporting of interest. For example, the user can select only the Longhorn heifer calves, sort them on the calf ID field and then print only four fields, calf ID, sex, breed, and weaning weight (Figure 6). It is also possible to print summary reports with totals and subtotals for different groups.

```
+-------------------------------------------------------------+
|  File Name     : CLF87                                       |
|  Date         : 01/25/90                                     |
|  Search for   : Breed starts with LH                        |
|                 and Sex equal to H                          |
|  Index on     : Calf Id                                     |
|                                                             |
|  CLFID     SEX       BREED       WNWT                        |
|  W17       H         LH          364                         |
|  W2        H         LH          378                         |
|  W31       H         LH          313                         |
|  W34       H         LH          211                         |
|  W37       H         LH          435                         |
|  W38       H         LH          414                         |
|  W42       H         LH          355                         |
|  W45       H         LH          0                           |
|  W46       H         LH          442                         |
|  W63       H         LH          350                         |
+-------------------------------------------------------------+
```

Figure 6. Printing user-specified columns.

Calculation

COWBOSS calculates birth, weaning, and yearling weight ratios, and average daily gain. COWBOSS also calculates average calving interval, number of calves born, weaned, and raised to yearling, and average calving ease score. A life-time summary of these data will be posted to each cow and sire card. The carcass module calculates percent cutability, total retail yield, dressing percent, age at slaughter, growth factor and overall rank.

Statistics

COWBOSS has a statistical option for calculating mean, variance, range, analysis of variance, and regression. In Figure 7, the user selected the weaning weight from a list of 47 fields and wants to calculates average weaning weight for different sexes. It is easy to select any other field for this purpose. COWBOSS allows the user to group the data on any arbitrary criteria. For example, the data can be grouped on the dam age at last calving.

COWBOSS also allows the user to filter the data before calculation. For example the calving data can be filtered for breed equal to LH (Longhorn) and sex equal to H (Heifer). Performing an analysis of variance allows the user to compare weaning weights for different management groups and determine if they are statistically different.

```
+----------------------------------------------------------+
|                                             CLF87.DBF     |
| Mean for?  ZT      Group on? ZB                           |
+----------------------------------------------------------+
| ZA. Calf Id          ZQ. Birth Wt Ratio Adj  YG. Yearling ADG      |
| ZB. Sex              ZR. Weaning Mgt Code     YH. Post-Weaning ADG  |
| ZC. Breed            ZS. Weaning Date         YI. Hidden Key        |
| ZD. Calving Ease     ZT. Weaning Wt Actual    YJ. Comments         |
+----------------------------------------------------------+
|          Mean and Variance for Weaning Wt Actual          |
|                                                           |
|Treatment       N      Mean    Minimum    Maximum   Variance  |
|H              10   372.2000   211.0000   460.0000  5405.7333  |
|S              14   380.0714   305.0000   446.0000  2267.9175  |
|***Grand Total*** 24  376.7916   211.0000   460.0000  3412.8677  |
+----------------------------------------------------------+
```

Figure 7. Mean, range, and variance for actual weaning weight.

Other Built-In Options

COWBOSS has built-in options for selecting and copying replacement heifer records from a calf file to the cow file. It also has option for marking and culling cows to a cull file. COWBOSS also has built-in error checking routines which allow the user to browse and correct errors.

Conclusions

COWBOSS is a flexible and user-friendly package for cow calf herds. Like other programs in the market, it calculates standard ratios and values according to Beef Improvement Federation guidelines (1986), but gives the user control over the format of data entry, sorting, searching, and printing. COWBOSS also allows the user to perform data manipulation and analysis when it is convenient for them. This feature is the main advantage of COWBOSS over other programs in the market.

ORDER FORM FOR COWBOSS

CowBoss is a microcomputer record-keeping system for cow/calf herds. It consists of cows, calves, sires, carcass and electronic scale modules.

LICENSE FOR:
	Regular	Educational
____ 1 Computer	$ 250	$ 150
____ Site license	$ 750	$ 450

DISK SIZE: ____ `3¹/₂" ____ 5¹/₄"

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SIGNATURE:_____**DATE:** _____

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> Davis, California   95616-8521
> USA   **TELEPHONE: (916) 752-1278**

Reference

Beef Improvement Federation. 1986. Guidelines for Uniform Beef Improvement Programs. North Carolina State University, Box 7621, Raleigh, NC 27695-7621.