Use of Computers in Cow-Calf Herd Management

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Although computers are already commonly used by bovine practitioners for dairy and beef feedlot ration formulation, little attention has been given to potential use of computers in cow-calf herd health management. Computers offer the veterinarian working in a progressive beef cow-calf herd health practice an opportunity to expand the services offered to his beef cow-calf clients and to increase his depth of involvement in cow-calf herd management.

Computers do not replace our ability to think, but they are extremely fast at making accurate calculations and can efficiently store and manipulate large amounts of data. These qualities lend themselves well to the decision-making applications necessary in cow-calf herd management. Computer-generated data is only as good as the proficiency of the person who operates the computer, the accuracy and reliability of data entered, and the utility of the software program used. A prerequisite to the addition of a computer to a practice is the desire to work with and the ability to enjoy computers. A computer can take some of the monotony out of practice and increase one's enjoyment of practice.[1] Progressive clients usually welcome the addition of a computer to their veterinarian's practice and take pride that their veterinarian is on the leading edge of practice techniques.[1] If a practitioner does not enjoy computing, however, then the extra time and effort required to set up, operate, and maintain a computer system will be an unwelcome burden rather than a new and rewarding challenge.

Guidelines for Software and Hardware Selection

A practitioner considering purchasing a computer for the first time should shop for software first, then find the physical components of the computer system compatible with the software selected. Most practitioners will find it best to consider software packages that operate on a stand-alone microcomputer. Systems are available in which the microcomputer does not stand alone but serves only as a terminal to access a larger computer (usually a mini or mainframe computer) via a modem, which connects the computers through telephone lines. Software programs and data are stored and processed on the main computer. Such systems have some advantages (particularly accessibility of very large databases and comparison of data from many users) but have serious disadvantages of excessive operating costs due to telephone and main computer fees, possible unavailability due to busy phone lines, and limitations of slow and sometimes unreliable telephone line data transmission. The only mainframe-based systems likely to be useful to cow-calf practitioners are the Consultant program from Cornell University (a very large database for computer-assisted diagnosis) and on-line literature-searching programs.

Software for stand-alone microcomputers is written so that a program will work in only one of the many different types of disk operating systems on the market. Thus, it is necessary to select programs that all work under the same disk operating system, which must also be the same disk operating system used by the microcomputer. One machine cannot usually operate more than one disk operating system without special hardware additions. One disk operating system (known as MS-DOS, which is essentially equivalent to PC-DOS) is becoming the standard of the microcomputer industry and is the system for which most new software programs are being written. MS-DOS operates on IBM and IBM-compatible microcomputers, which are widely available on the computer market.

Hardware selection is based mainly on the requirements of the software program chosen for the practice. A microcomputer with at least 128K central memory, a monitor, and an 80-column or wider printer are the minimal requirements and usually can be purchased for approximately $2000 to $10,000. Since much of the computing done for cow-calf herd management requires processing of large amounts of data, it is advisable to purchase a system that includes a fixed (hard disk) drive in addition to one or more floppy disk drives. Hard disk drives store much more data than floppy disks and allow for much faster data retrieval and processing. Addition of a hard disk drive to most computer systems costs less than $1000.

One important factor in selecting a software package and accompanying hardware is the technical support provided by the vendor. Few individuals are able to make a program and hardware system work without outside support. Frustration becomes extreme when a computer system or program does not work and technical support from the vendor is not prompt and professional.

Types of Software Packages

1. *Practice management systems*

Practice management systems have been available for many years and have been a common motivation for veterinarians to add a computer to their practices. The

TABLE 1. List of Beef Herd Management Software Programs[a] (Listed Alphabetically).

Program Name	Operating System	Cost	Approx. Number of Copies Sold	Program Features: Error Recog.[b]	Bull Records	Input Forms	Flexible Reports	Vendor Name and Address
1. "Beartooth Sysdeco" Herd Mgt. Program	MS-DOS[c]	$1800	10	no	yes	no	yes[d]	Beartooth System Designs Star Route 2, Box 26 Columbus, Montana 59019 406/322-5386
2. Beef Herd Improvement Program	MS-DOS	$250	0	yes	yes	yes	no	D. Owen Rae, DVM University of California Vet. Med. Teaching Hospital Davis, CA 95616 916/752-0292
3. "Beefware"	MS-DOS, CP/M, Apple, or TRSDOS[f]	*	0	no	yes	yes	yes	Robert W. Field, DVM Large Animal Med. & Surg. Texas A&M University College Station, TX 77843 409/845-9135
4. Cow-Calf Herd Manager	CP/M	$350	*	no	no	no	no	Concepts Unlimited, Inc. 1820 East 17th Street Suite No. 130 Idaho Falls, ID 83401 208/529-3350
5. Cow-Calf Production System	MS-DOS	$595 $395[g]	125	no	yes	yes	yes	Red Wing Business Systems 610 Main Street P. O. Box 19 Red Wing, MN 55066 612/388-1106
6. "Cowherd"	MS-DOS or TRSDOS	$100	100	no	no[h]	no	no	Larry Burditt, Programmer Animal Science Department Stillwater, OK 74074 405/624-6070
7. Cowpower!™	MS-DOS or Apple	$275	80	no	yes	yes	yes[d]	Northwest Nutrition-Management Consultants 138 Dehaven Street Milton-Freewater, OR 97862 503/938-5362
8. Herdsman Management Information System	MS-DOS or CP/M	$425	0*	yes	yes	yes	yes	Jean S. Vogel P. O. Box 1017 Bartow, FL 33803 813/533-8313 904/588-2580
9. Homestead Farm Mgt.: Cow/Calf Record Keeping	MS-DOS	$275	*	no	yes	no	no	Delta Farming Systems, Inc. P. O. Box 660 Fort Collins, CO 80522 303/223-8804

[a] This list is as complete as the authors could practically make it; however, other programs (of which the authors are unaware) are probably available as well.

[b] Refers to the ability of a program to immediately recognize an obviously incorrect data entry.

[c] This program requires a fixed (hard) disk drive.

[d] Special custom reports are also available at additional cost by consultation with the vendor.

[e] Program expected to begin marketing in early 1986; no copies sold at the time this article was written.

[f] "Beefware" runs on the MUMPS operating system, which can be function on almost any microcomputer that has at least 128K central memory.

[g] The additional $395 purchases a custom reports generator system.

[h] Calf records may be used to record and process some portions of bull records.

* indicates that this information was not available at the time the article was written.

market for practice management software is mature and information about specific packages is readily available from their vendors. Most of these programs have the capability to generate billings, keep track of patient records, handle some financial records for the practice, monitor drug and supply inventories, generate vaccination reminders, and generate business analysis of the practice.

2. Word Processing

Word processing programs allow the operator to create and then modify, print, or store textual material. They are particularly useful for documents that need numerous and frequent revision. Address lists may be automatically merged with a document to create personalized form letters using a word processing program. Prices for good programs vary from about $250 to $750. Word processing does not eliminate the need for a typewriter, which is faster and more efficient in typing single letters, typing memos, and filling in forms.

3. Cow-calf herd management

Cow-calf herd management software programs may be used to manage information about herd records such as sire, dam, birth weight, weaning weights, etc.; to calculate individual animal indexes and adjusted weights; to manage information about herd health and reproduction; and to generate management reports and worksheets useful to both veterinarian and producer. Some large cow-calf ranches already own computers and utilize their own herd management programs. The average cow herd in the U.S. is less than 50 cows[2], which is too small to justify the time and expense required to use a computer. These producers are the market a veterinarian may draw from as customers for a herd health management program. A bureau system can be implemented in which producers bring or mail completed record input forms to the veterinarian, who enters them into the computer and mails or delivers the final reports to the producer. Charges for this service could be made per hour of computer operator time or for the specific type of function performed. The veterinarian is a logical person to operate such a multiple-herd management program, because he will likely have other uses for a computer and also because he is able to assist the producer in interpreting his records. When large cattle operations have their own computer systems, the veterinarian should still be involved in data interpretation and resulting management decisions.

A partial listing of the commercial software programs available for cow-calf herd management is presented in Table 1. A practitioner may also consider having a program custom-written for his practice, either from scratch or as a template written for a commercially-available database management program. The custom software approach offers greater flexibility than most commercial programs but does require that the practitioner know beforehand and in detail the type of program that will meet the needs of his cow-calf clients.

4. Spreadsheets

Commercially-available spreadsheet programs may be useful in evaluating management relationships in cow-calf operations. Cost of these programs ranges from about $200 to $500. Although spreadsheets cannot manage the large amounts of data required for record-keeping, they can be fairly easily programmed to perform a series of calculations or to graph relationships between management factors. For example, economic implications of management decisions could be rapidly analyzed and evaluated, or production data could be plotted over time to allow for rapid appraisal of production trends. Programs written for spreadsheets are limited by accurancy of formulas programmed into the spreadsheet and by accuracy of data entered.

Templates to be used with a spreadsheet are commercially available for monitoring dairy production. Such templates

TABLE 2. List of Beef Cow-Calf Ration Formulation Packages.

Program Name	Operating System	Cost	Vendor Name and Address
1. Feedpower!™	MS-DOS	$275	Northwest Nutrition-Management Consultants 138 Dehaven Street Milton-Freewater, OR 97862 503/938-5362
2. Homestead Farm Mgt.: Cow/Calf Planner	MS-DOS	$125	Delta Farming Systems P. O. Box 660 Fort Collins, CO 80522 303/223-8804
3. Professional Ration Package	MS-DOS or CP/M	$2000	Loren Bennett Agricultural Computer Applications P. O. Box 8 Davis, CA 75616 916/756-8946
4. Mixit-2	MS-DOS, CP/M, or Apple	$595	Agricultural Software Consultants, Inc. 1706 Santa Fe Kingsville, TX 78363 512/595-1937
5. Mixit-2+	MS-DOS, CP/M, or Apple	$995	Agricultural Software Consultants, Inc. 1706 Santa Fe Kingsville, TX 78363 512/595-1937
6. RationCalc	MS-DOS	$300	Farmhand Software, Inc. 10220 River Road Potomac, MD 20854 301/983-0643
7. The Consulting Nutritionist	MS-DOS or Apple	$1250	Dalex Computer Systems Box 334 Stanhope, IA 50246 515/826-3244

[a] This list is as complete as the authors could practically make it; however, other programs (of which the authors are unaware) are probably available as well.

make it unnecessary for the practitioner to program the spreadsheet at all; however, templates are not yet available for monitoring of beef cow-calf production.

5. Ration formulation programs

Software programs are available for formulation of beef cow rations on a least-cost basis (Table 2). Such programs are most useful when the producer has the option of using several different feedstuffs and wants to determine what combination will meet the cows' nutritional requirements at the least possible cost. Potential use of alternative feedstuffs may also be rapidly evaluated by a ration formulation program. When all feedstuffs are grown by the producer, often there is no consideration as to what feeds could be more economically utilized. Rations in which there is no option in the feedstuffs used can be nearly as easily calculated by hand as by computer. Forages should be analyzed for nutritional content before ration formulation is attempted, since quality may vary greatly between forages that look very similar. Reliance on book values alone for nutrient content of forages may lead to rations that look right on the computer but result in poor cow or calf performance.

Summary

Computers offer considerable potential to veterinarians in enlarging and enhancing the services they offer to cow-calf clients. Computers can also give the veterinarian a more comprehensive role in cow-calf herd health management. Computers are limited by the applicability of software available, accurancy of data entered, and computer operator skill. With these limitations in mind, cow-calf veterinarians may find a computer system and software a very worthwhile and enjoyable investment.

References

1. Meller, J.D.: Our practical experience with the computer. *The Bovine Proceedings - No. 17,* pp 159-162, 1985. 2. Brown, J.R.: The future use of computers in practice. *The Bovine Proceedings - No. 17, pp 157-158, 1985.*