

Society for Theriogenology

"Bovine Sessions"

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Field Collection of Reproductive Data

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Introduction

Data collection for the veterinarian performing reproductive services is critical. The methods to attain a high degree of accuracy and timeliness of data collection must be considered on individual herd basis. Some facilities are very suited to automated methods of collecting data while others require manual methods due to restraints of facilities and current data collection technology. Research related to reproductive data collection techniques for commercial dairy farms is sparse. However many techniques currently available appear to be very successful.

Advantages of Field Collection

Automated methods of collecting reproductive data have many potential advantages. Duplication of data entry occurs commonly when data is written and then later transferred to computerized databases or "cow cards". Transposition errors are a significant potential hazard of the duplication of data entry techniques.¹ A method which minimizes duplication of data entry could have financial benefits as well as controlling potential transposition errors.

Many farm record systems are not as complete as they should be for optimal reproductive management purposes. However, the time and skills required to manually collect and maintain the data is often the limiting factor for expanding the amount of data maintained by many farmers and practitioners. A simple yet efficient method of collecting and maintaining data could potentially promote the implementation of more comprehensive and effective reproductive management services.

The implementation of computerized reproductive data collection affords an opportunity to integrate reproductive and production information. The data entry screens can display key information which may effect the management of individual cows. Examples of such information are udder health and milk production information as well as the genetic indicators calculated by breed associations and available through DHIA records. This information can be evaluated and included in the reproductive management decision making process of a cow as the reproductive data is entered.

Disadvantages of Field Collection

Most systems being utilized to improve the efficiency of data collection are based on microcomputer technology. Many of the techniques utilized by the author are based on the capabilities of microcomputers to collect, maintain and manipulate reproductive data. However, the knowledge required to operate and maintain a microcomputer has limited the implementation of such a system. As with other highly technical equipment utilized in veterinary medicine there is a learning curve which must be completed before the utility of that equipment is realized. The basic skills required to operate a microcomputer and other data collection equipment can be viewed as a weakness of such systems. The ability and desire of each practitioner to develop microcomputer skills will eventually determine the degree this equipment is incorporated into routine dairy reproductive management services. Other considerations such as cost and reliability of computer equipment must also be considered. However, the volatility of the microcomputer industry has resulted in very powerful computers at a very reasonable cost. The out-

look for the future is that this trend will continue.

Types of Data Collected

The amount of data collected in the field can be very extensive. To be successful, only the data which meets the requirements of each dairy practitioner should be collected. This requirement can vary from practitioner to practitioner. Therefore any system should have the flexibility to meet the requirements of most potential users. The basic reproductive information which must be collected are individual palpation findings and the events which change the animal's reproductive status, i.e. calving, heats, breedings, and culling.

Methods of Collection

The basic components of field reproductive data collection which the author has evaluated utilize:

1. Barcode data entry technology
2. Hand held pocket computer
3. Laptop computer data entry

The reproductive status information maintained by the farmer on DHIA in the southeastern United States is accessible through a computer and modem.² The records processing center at Raleigh, North Carolina provides the software and documentation necessary.

The method of data collection on each farm is determined by the facilities available. If there is a palpation facility such as the one described by Elmore *et al.*^{3,4} a laptop computer is used to enter the data directly into the reproductive database utilized by the author in monitoring reproductive performance. Alternatively, the data could be entered into other databases under such circumstances. One of the advantages of direct entry into a computer cowside is the availability of production data. This aids in the decision making process when each individual cow is examined.

Herds with lock-up facilities in freestalls require the practitioner to move from cow to cow. A barcoder system has been developed to collect the reproductive findings.¹ The barcoder is connected to a computer for transfer to the database after palpations are completed. The barcoder utilizes specific codes which conform to

the database requirements. In addition, new barcodes can be developed as reproductive code requirements change.

In some instances a hand held pocket computer has been utilized to collect reproductive data. This system was developed on a Sharp pocket computer to provide a means of entering reproductive palpation findings. This data is then transferred to the microcomputer by cable and imported into the reproductive database. The limitations of such a system revolve around the Basic computer programming language and its restriction of 256 entries. In most cases this will not be a serious restriction but results in less flexibility and limits its potential use in large dairy herds.

Summary

Many methods of field reproductive data collection on dairy farms have a very limited application. The methods outlined in this paper have been utilized for many years and have proven to be effective. The reason for the different methods as described is due to the diverse nature of dairy farms and their facilities. Any method developed may not apply to all situations. Natural language processing or voice recognition technology has progressed significantly during the last several years. **Though there are descriptions of applying this technology on dairy farms, none have specifically addressed the collection of reproductive data during routine herd visits. As this technology is refined it may solve many of the problems encountered with current techniques. For the present, keypunch methods appear to have the broadest application.**

References

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