

**Indian Farmer**

Volume 10, Issue 04, 2023, Pp. 149-152
 Available online at: www.indianfarmer.net
 ISSN: 2394-1227 (Online)

Original Article

Importance of data collection in animal farm

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Received:02/04/2023

Published:08/04/2023

Abstract

Dairy enterprise is dynamic in nature with modification occurring every moment. Proper management as well as planning is therefore required for the synchronization and smooth working of all the farm activities without experiencing any kind of loss in daily earnings of farm. Data can be used to measure/record a wide range of farm activities - both internal and external. Although the data itself may not be very insightful, it serves as the foundation for all reporting and is therefore essential to the operation of an enterprise. If farmers keep track of their operations, they can compare their management to that of other farmers. They are able to identify the upsides and downsides of their farming operations. Additionally, it's critical to have precise data when submitting tax returns, applying for government assistance, and borrowing money.

Key words: Data, Record Keeping, Farm Profit, Data correction, Standardization

Introduction

Animal farm is characterised by continuous change in its activity with the clear objective of rising profits and productivity from the same. It is often considered to be a complex venture because of the modification in the farm occurring every moment including change in the number of animals in each age group or of particular sex, number of lactating animals and dry animals, change in workforce of the farm, amount of feed and fodder available in the farm, number of mortality and birth etc. So proper management as well as planning is required for the synchronization and smooth working of all the farm activities without experiencing any kind of loss in daily earnings of farm. Main role of keeping a track on all the activities of the farm, changes associated and requirements is generally played by an efficient farm manager for which he needs to record the information in the form of data and get useful information for taking needful and useful decisions about animal selection on the basis of breeding value.

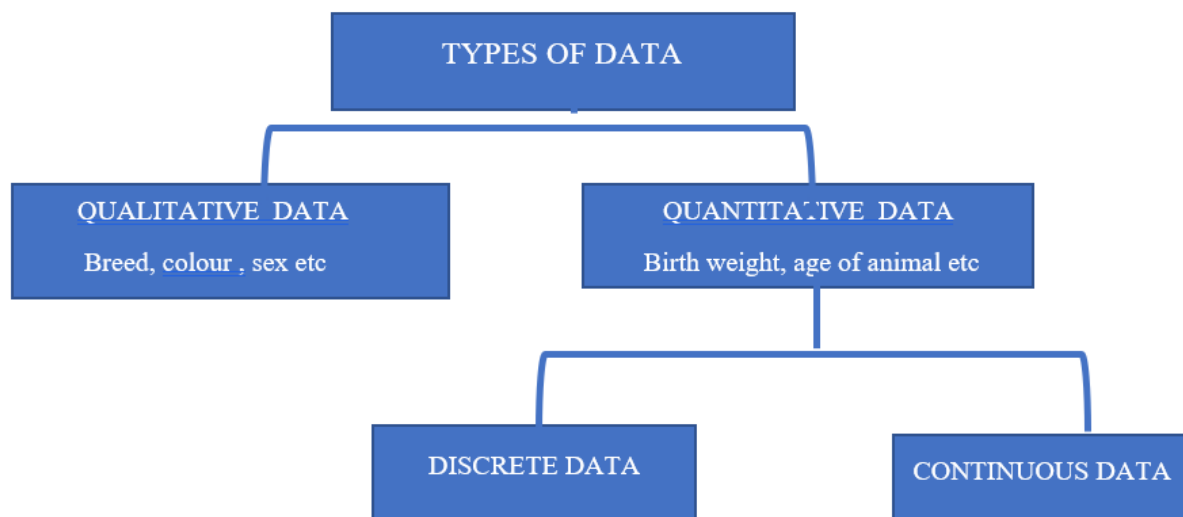
2. DATA: Data comes from the plural of a Latin word 'datum' which means 'to give' and is essentially the plain facts and statistics collected during the operations of a business. These can be used to measure/record a wide range of farm activities - both internal and external. Although the data itself may not be very insightful, it serves as the foundation for all reporting and is therefore essential to the operation of an enterprise. There are mostly two forms of data, quantitative data and qualitative data. The information that can be measured, recorded, or otherwise quantified—and assigned a numerical value—is what is referred to as quantitative data. Discrete data and continuous data are the two basic categories of quantitative data. Data that is descriptive but not numerically expressed is considered qualitative data surveys and questionnaires are frequently used in both qualitative and quantitative research.

Importance of data collection

- I. **DECISION MAKING:** It helps to make correct decisions for the enterprises. By looking at the financial status of the farm and the requirement farmer can adjust its resources accurately. This will save time and stop the wastage of resources at any stage.
- II. **IMPROVE ANIMAL'S WELFARE:** It improves animal's live by giving more importance to useful traits in breeding experiments. Through genetic selection, many recessive traits which are detrimental to the life of animal are now eliminated from the population. Further, by using A.I record use of many sires in a herd is now shifted to the one possessing excellent breeding characteristics.
- III. **GETTING DESIRED RESULTS:** It encourages us to get our desired results in the form of increasing economic returns through genetic improvement of animal using statistical and molecular method. Progeny testing is such a brilliant example under this category which

gives best and most reliable information about the genetic merit of parent in estimating true breeding value of individual. Data enables firms to assess the success of a certain plan. When strategies are put in place to address a problem, gathering data will enable you to assess how well your solution is working and whether your strategy needs to be adjusted or changed over time.

- IV. **FIND SOLUTIONS TO THE PROBLEM:** Data organisation makes it easier for us to identify the root of major problems experienced by the farm. It enables organisations to see connections between what's happening in various places, offices, and systems.
- V. **TO KEEP A TRACK:** Establishing baselines, benchmarks, and targets with the use of good data enables farm enterprises to advance. Data gives you the ability to measure, so you can create baselines, locate benchmarks, and set performance objectives
- VI. **KNOW WHAT YOU ARE DOING WELL:** Data enables you to expand your areas of strength across your entire farm business. You can use data analysis to find high-performing animal, services, and programmes. Once we have identified our top performers, we can analyse and implement them to create plans for low-performing animals and service areas.
- VII. **MAKES US STRATEGIC IN OUR APPROACHES:** Data improves productivity. By properly collecting and analysing data, we can distribute limited resources where they are most needed. If there is a noticeable increase in serious occurrences in a given service area, it is possible to further analyse the data to identify whether the increase is general or limited to a specific location. If the issue is isolated, it may be possible to focus training, staff, or other resources where they are most needed rather than distributing them throughout the entire system. Data will also help businesses determine which tasks should be prioritised above others.



Record keeping

From a very long time, records are generally maintained by using different registers and sheets for different category of animal such as birth register, growth register, AI register etc. Now a days, there has been increasing trend of using modern technology and recording data directly into computer by making different sheets on Excel. It has an upper edge as compared to the other for it enables faster analysis and quick results for monitoring different farm activities. However, keeping in view the drawbacks of the same in the form of typing errors or others, there is still importance of recording data on registers.

Objectives of record-keeping

- To compare breeds while also comparing the herd performances within each breed.
- Keeping track of regular treatment to monitor health status
- To know the financial status by keeping sale register, death register, cash books etc.
- To calculate input/output relationship by keeping record on expenditure on feed and fodder
- To know the pedigree and history of each animal pertaining to production, reproduction and health performances.
- The breeding value of different economic trait can be estimated which helps in culling and selection of animals for breeding purposes

- To improve the genetic potential of the farm by keeping highly heritable traits in breeding strategies and improving traits of low heritability.
- To avoid duplication in allotment of numbers to young or new born animal
- To know the proper growth of young stock by weighing the animals at proper intervals and recording the body weight. This will help in culling the animals with poor growth and late maturity.
- This also helps in research and development field
- Feeding requirements or any other medical treatment required by the animal can be easily estimated.
- Animal with optimum level of performance can be registered in herd book and further maintained for future breeding experiments
- This also helps in price fixing of animal at the time of sale.
- Helps in progeny testing of bulls.
- Helps in detection of abnormal conditions or disease status of the herd that leads to loss in body weight, loss in milk production etc.
- Aids in identifying the most prevalent diseases affecting the herd and assists in the timely development of preventative measures like vaccination, deworming, etc.
- Aids in better overall herd management and supervision.
- Assists in cost estimation for milk production.
- Comparing the productivity of the labour force and the herd to other farms is useful.
- To compare the herd performances in different years to determine the amount of profit/loss each year and setting future goals/directions for the farm.

Record keeping types for a dairy farm

- Animal register: The number of animals on the farm, together with their identification number, date of birth, sire number, dam number, calf's gender, date of calving, date of purchase, and date of sale/auction/death are all listed in this register.
- Calving register: This register keeps track of every calving that occurs on the farm. It keeps track of the calf's dam and sire numbers, number, sex, birthdate, and any additional comments like calving type (normal/abnormal).



- a) Daily milk yield register: This register keeps a list of the cows' daily milk production performance 305 days milk, peak yield, days to attain peak yield, persistency of lactation, dry period, lactation length, total lactation milk yield are the parameters which are required in this register.
- b) Calf register: maintains the records of calf at the farm, calf number, sex of the calf, sire number, dam number, birth weight etc.
- c) Growth record of young stock: this record maintains the weight of the young stocks at different intervals.
- d) Daily feeding register: This register records the amount concentrate, dry fodder, green fodder and other feeds given to the animals daily.

- e) Herd health register: This register maintains the record of the diseased animals along with history, symptoms, diagnosed disease, treatment given and name of the veterinarian who treated.
- f) Pedigree Sheets: This will contain information regarding animal, its dam and sire, grand dam and sire, date of purchase/sale, lactation information, reproduction details so as to select the animal on the basis of its pedigree record. Along with this, there is separate provision of recording birth weight, sex, dam weight, dry period, service period etc.
- g) Register for breeding cattle: This register keeps track of information on the farm's breeding methods, including cow numbers, calving dates, heat dates, and services, as well as bull numbers, successful services, pregnancy diagnosis records, predicted calving dates, actual calving dates, and calf numbers.
- h) Animal History sheet: This maintains animal number, breed, date of birth, sire and dam number, lactation yield records, date of drying, date of disposal/death, cause of disposal etc.
- i) Sales Register: This will maintain record of all sales made in a farm during particular period of time in the form of milk products, animal by products, farm compost etc
- j) Purchase Register: This will separately maintain the list of all the purchases made during a period of time e.g., to buy machinery, raw materials etc.
- k) Mortality Register: To record the loss in production potential of the farm when animal dies there is separate register which tells us all about the reason, age and other necessary details related to animal.
- l) Cash Book: It is there to record all transactions.

Correction of data

It forms a very critical factor in analysis of data. The phenotype of the animal for milk, egg, wool etc is dependent on two major factors, the genetic makeup of animal and the environment associated with the animal during its course of development. It can be majorly grouped as under:

- Random environment including sampling error and recording error
- Environmental factors which may include year and season when production management starts, during feeding of animal, its health condition, any kind of stress etc
- Physiological status e.g., service period, dry period, body condition etc.

Aim of data correction

This leads to masking of true breeding value of animal influencing its ability to produce and reproduce. It is thus logical and important to remove the effect of any environmental sources of variation and after eliminating or minimising the factors, data should be subjected to genetic analysis so as to obtain accurate estimate of genetic parameters. This is known to be correction or adjustment of data for environmental factors. Thus, main purpose of data correction is to reduce the variation associated with environment to the minimum. The reduction will thereby increase the heritability and the accuracy to selection. Therefore, error variance should be less in any statistical test on adjusted data. There are various methods of data correction such as

- ✓ Least square constant
- ✓ Ration method
- ✓ Difference method
- ✓ Regression method

Data standardization

The records on some animals are excluded before applying any statistical method to study the effects of various environmental factors like year, period, season and parity. Following is the list of animals whose records are generally removed.

- The incomplete records due to death or culling reason
- The record on animal which dried up before 100 days of lactation, depending upon the nature of traits under study.
- The milk records following abnormal calvings.

Conclusion

Record keeping is a necessary element of good livestock business management. With no written records, farmers have to depend on their memory while making decisions regarding their farm practices. But memories can become unreliable after a few days, months or years. Thus, recording of the performances of the animals can be done easily if animals have some identifications / numberings. Thus, both animal recording and identification are always required.