Dairy production

Level -II

Learning Guide 62

Unit of Competence: Collect and record dairy farm data

Module Title: Collecting and recording dairy data

LG Code: AGR DRP2 M17 L01 LG62

TTLM Code: AGR DRP2 TTLM 1219v1

LO1. Identify data to be collected

Instruction Sheet	Learning Guide 62

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics –

- Determining and collecting specific requirements of the data.
- Obtaining and calibrating materials or tools required for data collection.
- Identifying and advice seeing difficulties in collecting the data
- Communicating required advice about proposed data collection

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- Determine specific requirements of the data to be collected.
- Obtain and calibrate materials or tools required for data collection.
- Identify and advise seeing difficulties in collecting the data.
- Communicate required advice about proposed data collection.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 1 to 6.
3. Read the information written in the “Information Sheet (1, 2,3 and 4) in page 2,5,9 and 11 respectively
4. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
5. Accomplish the “Self-check (1, 2, 3 and 4) in page, 4, 8, 10 and 12 respectively.
6. If you earned a satisfactory evaluation proceed to “the next topic”. However, if your rating is unsatisfactory, see your teacher for further instructions or read back the Learning guide information sheets **1-3**. Submit your accomplished Self-check. This will form part of your training portfolio.

Information sheet -1	Determining and collecting specific requirements of the data

1.1. Definition of terminologies

Data: factual information (such as measurements or statistics) used as a basis for reasoning, discussion, or calculation.

Data collection is the process of gathering and measuring information on targeted variables in an established system, which then enables one to answer relevant questions and evaluate outcomes

Farm record: is a document (in most cases a book) that is used to keep account of different activities, events, materials regarding the farm operations

Record keeping system: Systematic procedure, by which the records of an organization are created, captured, maintained, and disposed of.

Milk recording: is the process of making measurements of the yield and composition of milk produced by individual animals and recording them

1.2. Importance of keeping farm records

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.

Keeping farm record has the following importance:

- Provide a farmer with enough information needed for proper planning and budgeting at every point in time.
- provides basis for evaluation of animals from past records hence helps in selection and culling animals
- Helps in analyzing feeding cost and benefits from animal product outputs.

- Helps in detection of abnormal conditions or disease status of the herd that leads to loss in body weight, loss in milk production etc.
- Helps in finding the commonly occurring diseases in the herd and thus to formulate in time precautionary measures like vaccination, deworming etc.
- Helps in estimating the cost of milk production.
- Helpful in comparing the efficiency of labour and herd with other farms.

1.3. Criteria of good record

The following are criteria used for record keeping:

- They must be useful
- Records must be kept in such a form that they can be easily converted into information
- Record keeping systems must be simple
- Duplication must be avoided as much as possible
- Records must lead to actions being taken
- Easily understandable
- Easy to update Summarized
- Easily accessible

Self check-1	Written test

Directions: Answer all the questions listed below. Use the Answer sheet provided in this page:

1. Define data (2 points)

2. List down importance of record keeping (5 points)

Note: Satisfactory rating - 7points Unsatisfactory - below 7 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

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Information Sheet -2	Calibrating required tools and equipment for data collection

2.1. Methods and tools required for data collection

Data collection tools: Are referring to the devices/instruments used to collect data, such as a paper questionnaire or computer-assisted interviewing system.

Table .1. Data collection methods and tools

Data Collection Methods	Data Collection Tools
Interview	Audio Recorder Digital Camera Camcorder
Questionnaires	Paper Questionnaire
Reporting	Governmental Organizations (NGO) Reports, Newspapers, Website Articles,
Existing Data	Research Journals Surveys
Observation	Checklists Direct Observation
Focus groups discussion	Two-Way Dueling-Moderator

2.2. Calibration of tools and equipment

Calibration is the comparison of measurement values delivered by a device under test with those of a calibration standard of known accuracy. Such a standard could be another measurement device of known accuracy, a device generating the quantity to be measured such as a voltage, a sound tone, or a physical artefact, such as a meter ruler.

The calibration process begins with the design of the measuring instrument that needs to be calibrated. Basically, the purpose of calibration is for maintaining the quality of measurement as well as to ensure the proper working of particular instrument. To prevent unauthorized access to an instrument tamper-proof seals are usually applied after calibration. There also are labels showing the date of the last calibration and when the calibration interval dictates when the next one is needed. Some organizations also assign unique identification to each instrument to standardize the record keeping and keep track of accessories that are integral to a specific calibration condition. When the instruments being calibrated are integrated with computers, the integrated computer programs and any calibration corrections are also under control.

The outcome of the comparison can result in one of the following:

- no significant error being noted on the device under test
- a significant error being noted but no adjustment made
- an adjustment made to correct the error to an acceptable level

Calibration may be required for the following reasons:

- a new instrument
- after an instrument has been repaired or modified
- when a specified time period has elapsed
- when a specified usage (operating hours) has elapsed
- before and/or after a critical measurement
- after an event, for example
- after an instrument has been exposed to a shock, vibration, or physical damage, which might potentially have compromised the integrity of its calibration
- sudden changes in weather
- whenever observations appear questionable or instrument indications do not match the output of surrogate instruments
- As specified by a requirement, e.g., customer specification, instrument manufacturer recommendation.

In general use, calibration is often regarded as including the process of adjusting the output or indication on a measurement instrument to agree with value of the applied

standard, within a specified accuracy. For example, a thermometer could be calibrated so the error of indication or the correction is determined, and adjusted (e.g. via calibration constants) so that it shows the true temperature in Celsius at specific points on the scale. This is the perception of the instrument's end-user. However, very few instruments can be adjusted to exactly match the standards they are compared to. For the vast majority of calibrations, the calibration process is actually the comparison of an unknown to a known and recording the results.

Self check-2	Written test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List down method required for data collection? (6 pts)

2. Mention purpose of instrument calibration (2pts.)

Note: Satisfactory rating – 13 points Unsatisfactory - below 8 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date _____

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Information sheet -3	Identifying and advice seeing difficulties in collecting the data

Main problems in collecting and recording data are (developing countries)

- language of data collection instrument
- Low educational level of farmers.
- Lack of qualified extension workers and recorders.
- Small average herd size.
- Poor communications.
- Poor data collection and processing facilities.
- location
- duration of data collection

In order to minimize these problems, the following principles should be observed:

- Collect primary information using an approach that is appropriate to the assessment objectives
- Undertake thorough secondary data review to ensure that questionnaires and checklists are as relevant as possible
- Train the enumerators and interviewers well.
- Use a variety of informants. Ensure that the perspectives of both women and men are included.

Self check-3	**Written test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List down problems encountered during data collection, especially in developing country? (5 pts)

Note: Satisfactory rating – 5 points Unsatisfactory - below 5 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date _____

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Information sheet-4	Communicate required advice about proposed data

It is important to understand the context in which you are communicating. The way in which audiences consume media is constantly changing. There are also distinct differences between generations, in their technical abilities and understanding of statistics.

Developments in communications technology open a new of possibilities with regard to the distribution of data. Whenever possible and appropriate, the Data Base Management System design should consider structures that will facilitate distribution, or allow direct access of the data from remote locations. Communication between Action participants and other stakeholders is crucial for the network. This network is highly interdisciplinary, ranging from theoretical to practitioners pursuing field work.

Computer technology will be used to support this communication on various levels:

- Mobile devices can be used to collect data in the field studies
- Data bases provide collected data for further analysis
- Interactive simulators help to understand properties of the derived models
- Visualization techniques help to communicate results to scientific journals

Self check-4	Written test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Mention various level of communication in which computer support is used (4 points)

Note: Satisfactory rating - 10points Unsatisfactory - below 10 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date _____

1.

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References

R. E. Hodgson, “Keeping Production Records on Dairy Farms Is the Key to Greater Efficiency and Profits”, *Journal of Dairy Science* , Vol. 40(2), pp.200–202, 1957.

Bouloc, N., J. Delacroix and V. Dervishi. 2002. Milk recording and automatic milking systems: features and simplification possibilities of recording procedures. Presented at the 33th biennial Session of ICAR, Interlaken, Switzerland, May 26-31, 2002.

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Dairy production

Level -II

Learning Guide 63

Unit of Competence: Collect and record dairy farm data

Module Title: Collecting and recording dairy data

LG Code: AGR DRP2 M17 L02 LG63

TTLM Code: AGR DRP2 TTLM 1219v1

LO2. Recording dairy farm data

Instruction Sheet	Learning Guide 63

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics –

- Determining data recording systems
- Recording dairy farm data in the correct format
- Keeping records as legible, accurate and complete

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- Determining data recording systems
- Recording dairy farm data is in the correct format.
- Keeping records as legible, accurate and complete

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 1 to 6.
3. Read the information written in the “Information Sheet (**1, 2, and 3**) in page **2, 9, and 13** respectively
4. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
5. Accomplish the “Self-check (**1,2and 3**) in page (**8, 12 and 14**) respectively.
6. If you earned a satisfactory evaluation proceed to “the next topic”. However, if your rating is unsatisfactory, see your teacher for further instructions or read back the Learning guide information sheets **1-3.** Submit your accomplished Self-check. This will form part of your training portfolio.

Information sheet 1	Determining data recording systems

Record-keeping system of a farm should provide precise and required information. It needs to be easily obtainable for quick and effective decision-making. Good record keeping means noting down all important details and events, in a simple and clear manner. It can also be used to provide and record information for future activities.

1.1. Record keeping systems

Record keeping systems will vary from one farm to another depending on the type of association (farm), its activities and size.

Each activity should decide on a record-keeping system that suits its particular needs, circumstances and resources (availability of space or computers). The system should be functional, accurate, reliable and user-friendly.

Record-keeping systems need to consider the following points:

- nature of information to be stored and retrieved
- security and access of files and information (particularly computer records);
- validity and reliability of the information collected and the system on which it is recorded;
- resources and training required; and
- Length of time that the records should be kept (general legal requirement is seven years)

Record-keeping can be accomplished through a variety of methods, from a basic hand record-keeping method to an elaborate computerized system. The farm manager decides on the system that best fits his/her situation. Advantages to both hand records and computer records are listed below;

1.1.1. Hand-Recording System

Fig.1. manual recording

1.1.2. Advantage of Hand-Recording System

- low initial out-of-pocket expense
- easy to start
- requires only pencil & paper
- Simple for identifying documents.

1.2.2. Electronic recording system

Fig. 2.Computer recording

Fig.3.mobile recording

Electronic records include document files, databases, spreadsheets, electronic mail and internet documents.

Advantage of electronic recording system

- more accurate & faster retract
- tax deductible as an expense
- much easier to create analysis
- kept securely and at the same time
- easily accessible for retrieval

1.2. Types of Records

The major types of records which are all described below:

1.2.1. Production (Performance)

This includes activities such as calves born, amount of milk produced, drying date, lactation length butterfat, etc. These records are valuable in estimating the performance of the cows and the herd. It contributes incredibly to the monetary evaluation of the undertaking.

For dairy farm, the important production records are:

- Daily milk yield
- Milk content (Butter fat content, protein, Solid Non Fat)
- Lactation length
- Milk fed to calves
- Milk consumed at home
- Milk sold
- Milk spoilt

1.2.2. Feeding

This record help farmers keep a track of the amount of feed that is provided for the animals. It could be anything like the amount of supplements fed to a cow, or the total amount of concentrate fed for pasture-grazed cows, and so on.

Feeding records can be utilized both for every day administration and change of the feed proportion. If a milking cow requires more concentrate, or help in choices about inspecting animals which appear to not develop, but rather still eat a lot.

1.2.3. Health records

What disease, what type of ill it is, the date and the vaccination, treatment required or done; all that and more can be tracked using this method. It gives data about the well-being status of every individual animal and the entire herd. The records form the basic platform for monitoring this, e.g. keeping a track of the point when this withdrawal time is finished. In natural creature farming, the withdrawal time is regularly longer than the common withdrawal time (twofold, or three times).

1.2.4. Financial records

Financial records should total costs of production including costs of equipment, land and facilities. Records should include the price of the milk per hundredweight and allow manipulation of the data to calculate costs per hundredweight of milk.

The records of the costs and earnings related to the animal. Moreover they are of great help in decision making at the right time. For example, is it profitable to feed concentrates, is it advisable to apply for a loan or credit to invest in a machinery or technology.

1.2.5. Breeding

It helps in confirmation of pregnancy, breeding date, date of calving, etc. The significance of rearing records is to quantify the profitable effectiveness of the herd and to empower determination. For instance, numerous farmers might want a cow which conceives an offspring yearly. Subsequently, an exact updated reproducing record of every individual female is important.

1.2.6. Workers records

This type is used to keep the record of staffs, their salaries, and payment. It is also known as labour record.

1.3. Specific data maintained at a dairy farm

Animal register : This register records the number of the animals at the farm along with their identification number, date of birth, sire number, dam number, calf and its sex, date of calving, date of purchase, date of sale/auction/death.

Calving register: This register maintains the records of calving that take place in the farm. It maintains dam and sire number of the calf, calf number, sex and its date of birth and any other remarks like type of calving (normal/abnormal).

Daily milk yield register: This register records the daily milk yield performance of the cows.

Calf register: maintains the records of calf at the farm, calf number, sex of the calf, sire number, dam number, birth weight etc.

Growth record of young stock: this record maintains the weight of the young stocks at different intervals.

Daily feeding register: This register records the amount concentrate, dry fodder, green fodder and other feeds given to the animals daily.

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.

Cattle breeding register : This register maintains the details of breeding practices in the farm such as cow number, date of calving, date of heat and services along with the bull number, date of successful service, pregnancy diagnosis records, expected date of calving, actual date of calving, calf number etc.

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

1.4. Milk recording

In milk recording, the following data have to be recorded, wherever available:

- Identification of each cow in the herd, even if they remain in the herd for a very short time
- Birth date, sex, breed and parents of each animal
- All services
- All animal deaths and movements between farms and owners
- Recording dates and locations
- Milk yields for each cow and recording date.
- Fat content in milk for each cow and sampling date

- Protein content in milk for each cow and sampling date.
- Milk somatic cell count for each cow and sampling date.
- Other results obtained from milk analysis.
- Milking duration and milking speed where possible.
- Milking times during recording.
- Recording methods and respective symbols used in records.

Fig.3. Taking weight of milk

Self check-1	Written test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List down types of record kept in dairy farm (5 points)

2. Mention at least 7 data included in milk recording (7 points)

Note: Satisfactory rating - 12points Unsatisfactory - below 12 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

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Information sheet-2	Recording dairy farm data is in the correct format.

Records can be kept by filling in special forms or recording in specially designed ledger book and computer. The advantage of using forms is ledger books records are entered in a predetermined and systematic way, but the main drawback is that they are easily lost or misplaced. Ledger books are handy in the office but not easy to carry around. Whatever method chooses to use, records need to be entered daily. From forms, ledger books and other books of accounts, the data may be entered into a computer for further analysis and reporting.

2.1. Dairy farm recording format

For successful record keeping, there should be some software or registers for different records. Table (excel) format for different types of record are given below:

2.1.1. Production record format

Table .2.cow history sheet

Cow No.	Service		Calving			Lactation						Service Period	Calving Interval
	Date	Method	Date	Calf Sex	Weight of Dam at Calving	Length	Production	Date Dried	Days Dry	Peak Yield	Date of Peak Yield	Days	Days

2.1.2. Breeding record format

Table.3.cow service history sheet

Animal No.	Date of Calving	Method of Insemination	Calf No.	Calf Sex	Birth Weight	Remarks

Table.4.Calf history sheet

Calf number	Date of Birth	Date of Numbering	Sire/Dam	Sex of Calf	Birth Weight	Disposal		Remarks
						How	Date	

2.1.3. Health record format

Table.5.Health record format

Date	Animal No.	History	Symptoms	Diagnosis	Treatment	Result	Name of Veterinarian	Cost of Treatment	Remarks

2.1.4. Feeding record format

Table.6.Feeding record format

Date	No. of Animals	Silage/Green Fodder (Kg)			Concentrate (Kg)			Any other Feed Ingredient		
		Received	Issued	Balance	Received	Issued	Balance	Received	Issued	Balance

self check-2	Written test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Advantage and disadvantage of filling record on ledger (4pts)

Note: Satisfactory rating – 4points Unsatisfactory - below 4 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date _____

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Information sheet -3	Keeping records as legible, accurate and complete

All records that you keep and documentation must adhere certain standards to ensure that they are fit for purpose. In short any records should be up to date, complete, accurate and legible.

Accurate records

It is essential that all records are 100% accurate. This means sticking to the facts and writing in an objective manner. You should not include your personal feelings or opinions. If records are not accurate, it could result in incorrect conclusions being drawn and an individual receiving the wrong care and support.

Legible records

All records must be legible so that anyone reading them can understand and comprehend them. This may mean slowing down your writing or writing in block capitals to ensure clarity. If others cannot read the records you write then they will not be of any use.

Up to date records

Records should always be up to date. Documentation such as care plans are constantly changing and should be regularly reviewed to ensure that they are not outdated. Old documents could result in a member of staff performing tasks that are no longer required and possibly even harmful to an individual (e.g. administering medication that is no longer needed).

Complete records

All records should be fully completed to ensure that no information is missed. You should aim to include as much detail as possible. Incomplete records could result in staff not being aware of the whole picture or having to use guesswork.

Self-Check -3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What do mean legible, accurate and complete records?

Note: Satisfactory rating – 5 points Unsatisfactory - below 5 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date _____

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References

Dimond, B 2005, 'Exploring common deficiencies that occur in record keeping', *British Journal of Nursing*, vol. 14, pp. 568-70, viewed 28 May

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Dairy production

Level -II

Learning Guide 64

Unit of Competence: Collect and record dairy farm data

Module Title: Collecting and recording dairy data

LG Code: AGR DRP2 M17 L03 LG64

TTLM Code: AGR DRP2 TTLM 1219v1

LO3. Presenting and storing dairy farm data

Instruction Sheet	Learning Guide 64

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics –

- Presenting dairy farm data in the correct format
- Storing dairy farm data sheets
- Analyzing and interpreting production data

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- Present dairy farm data in the correct format
- Store dairy farm data sheets
- Analyze and interpreting production data

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 1 to 7.
3. Read the information written in the “Information Sheet (**1, 2 and 3**) in page **2, 6 and 11** respectively
4. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
5. Accomplish the **“Self-check (1,2 and 3)** in page**, 5, 9 and13** respectively.
6. If you earned a satisfactory evaluation proceed to “Operation Sheet 1 and 2 in page 14 and 15 in page respectively.
7. Do the “LAP test” in page 16 (if you are ready). Request your teacher to evaluate your performance and outputs.

Information sheet-1	Presenting dairy farm data in the correct format

Various methods of data presentation can be used to present data and facts. Widely used format and data presentation techniques are mentioned below:

1. As text – Raw data with proper formatting, categorization, indentation is most extensively used and very effective way of presenting data. Such format is widely found in books, reports, research papers and in this article itself.

2. In tabular form – Tabular form is generally used to differentiate, categories, relate different datasets. It can be a simple pros & cons table, or a data with corresponding value such as annual GDP, a bank statement, monthly expenditure etc.

GP of referral	Number of patients referred
10577	1
15498	4
13457	9
15468	4
41324	2
15846	1
44532	5
12546	4
12489	8
25432	2
68542	5
54798	6
	51

Fig. 1.Tabular form of data presentation

3. In graphical Form – Data can further be presented in a simpler and even easier form by means of using graphical form. The input for such graphical data can be another type of data itself or some raw data. For example, a bar graph & pie chart takes tabular data as input. The tabular data in such case is processed data itself but provides limited use. Converting such data or raw data into graphical form directly makes it quick and easier to interpret.

Fig.2. graph presentation of data

A recording format is a format for encoding data for storage on storage medium. The format can be container information such as sectors on a disk, or user/audience information (content) such as analog stereo audio. Multiple levels of encoding may be achieved in one format. In electronic media, the primary format is the encoding that requires hardware to interpret (decode) data; while secondary encoding is interpreted by secondary signal processing methods, usually computer software

A container format is a system for dividing physical storage space or virtual space for data. Data space can be divided evenly by a system of measurement, or divided unevenly with meta data. A grid may divide physical or virtual space with physical or virtual (dividers) borders, evenly or unevenly. Just as a physical container (such as a file

cabinet) is divided by physical borders (such as drawers and file folders), data space is divided by virtual borders. Meta data such as a unit of measurement, address, or meta tags act as virtual borders in a container format. A template may be considered an abstract format for containing a solution as well as the content itself.

Self check-1	Written test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List down the common method of data presentation (6pts)

2. Mention example of graphic data presentation (3)

Note: Satisfactory rating – 9points Unsatisfactory - below 9 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date _____

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Information sheet 2	Storing dairy farm data sheets.

To keep records, use a notebook or exercise book and computer. Making regular entries and putting effort on the task is significant for productive management of a farm. There are various manual (filing cabinets) and electronic (computer-aided and online) ways to record, store and retrieve information. This system also ensures their preservation for evidential purposes, accurate and efficient updating, timely availability, and control of access to them only by authorized personnel

Records should be stored in accordance with legislation, company policies and best practices. This means ensuring they are stored in a safe place that cannot be accessed by anyone unauthorized. This may mean in a locked room or a locked drawer. Records should not be removed from the workplace unless absolutely necessary and returned to secure storage as soon as they've been updated. Electronic records should be stored securely as well with password protection and permissions so that only authorized personel can access them. Records should be kept only for as long as needed and then disposed of properly.

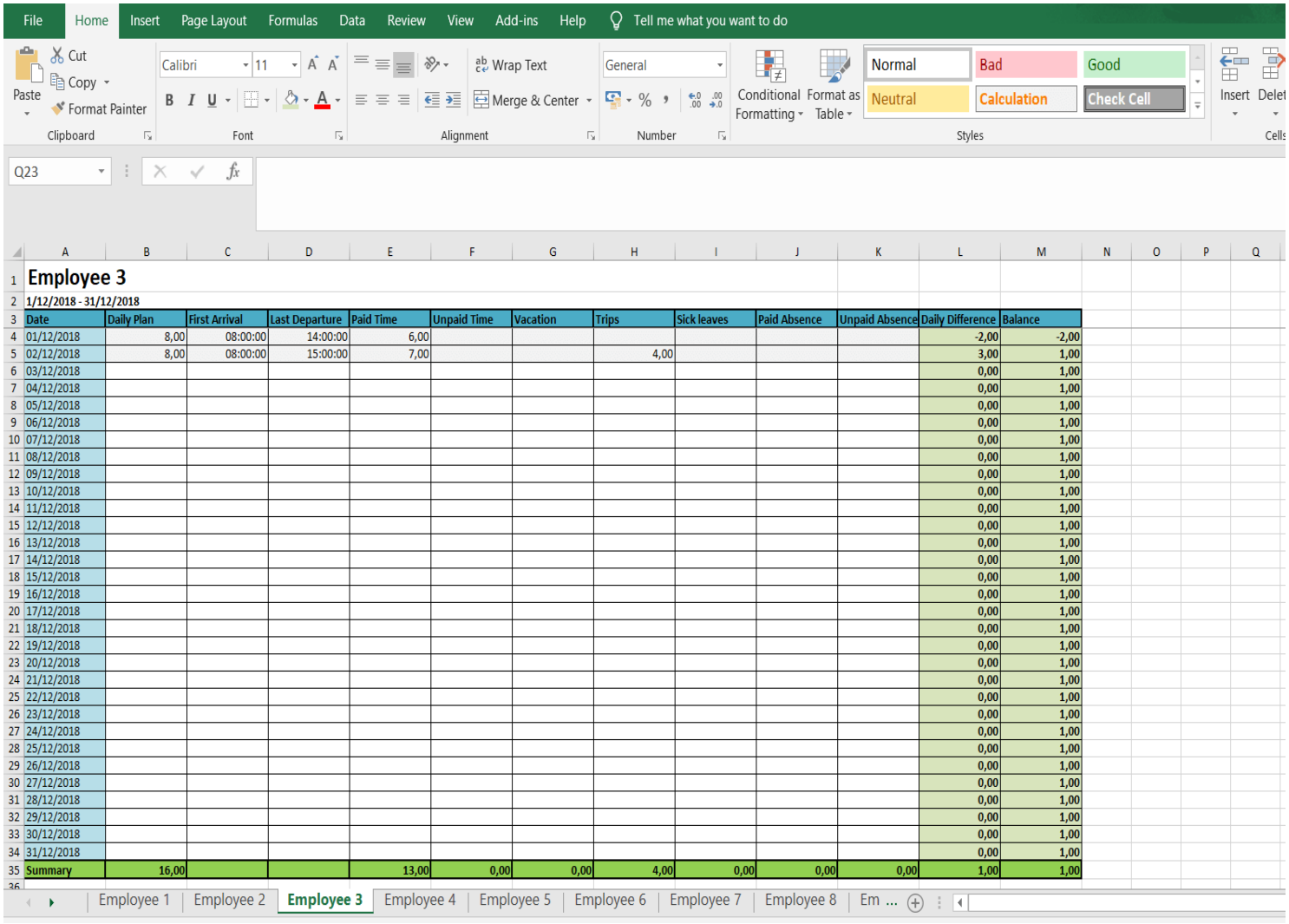
Table and excel spreadsheets used for record keeping. Excel and notepad are more preferable for keeping record.

2.1. Ms Excel

Excel is an electronic spreadsheet program that is used for storing, organizing and manipulating data.

Data is stored in individual cells that are usually organized in a series of columns and rows in a worksheet; this collection of columns and rows is referred to as a table. Spreadsheets programs can also perform calculations on the data using formulas. To help make it easier to find and read the information in a worksheet, Excel has a number of formatting features that can be applied to individual cells, rows, columns, and entire tables of data.

Fig.3. Diagram of Excel



Ribbon: File | Home | Insert | Page Layout | Formulas | Data | Review | View | Add-ins | Help | Tell me what you want to do

Cut / Copy / Format Painter / Paste — Clipboard
Calibri 11 — Font
Wrap Text / Merge & Center — Alignment
General — Number
Conditional Formatting / Format as Table
Normal | Bad | Good | Neutral | Calculation | Check Cell — Styles
Insert / Delet — Cells

Q23

Employee 3

1/12/2018 - 31/12/2018

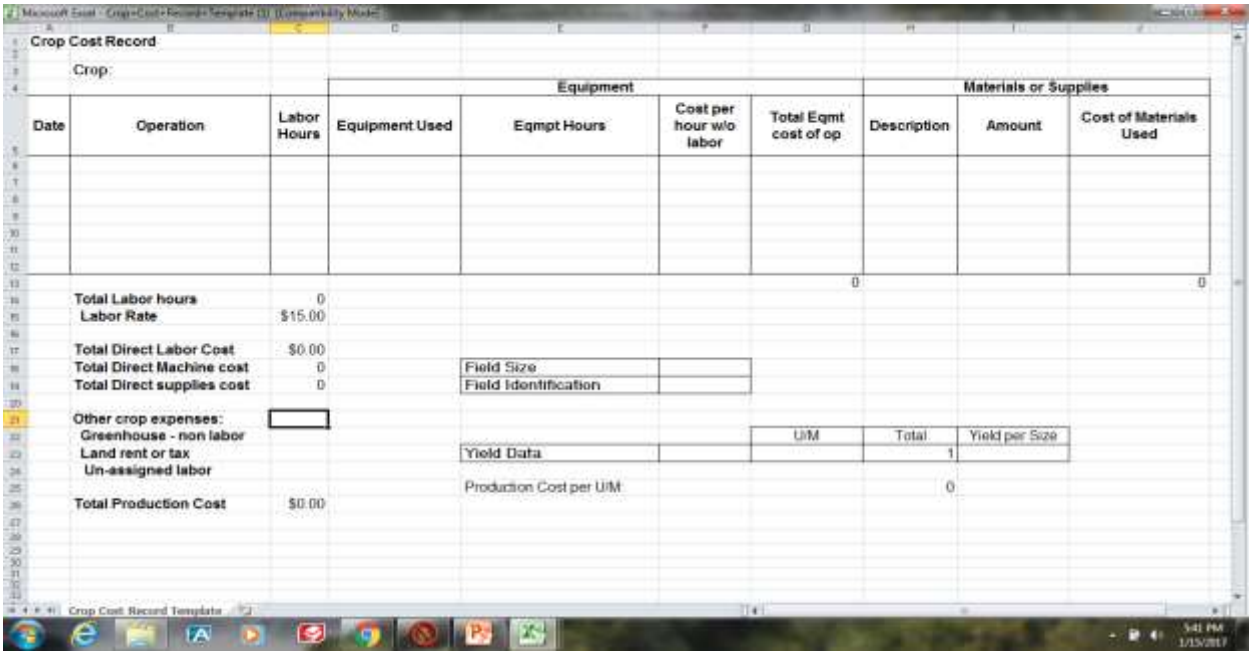
Date	Daily Plan	First Arrival	Last Departure	Paid Time	Unpaid Time	Vacation	Trips	Sick leaves	Paid Absence	Unpaid Absence	Daily Difference	Balance
01/12/2018	8,00	08:00:00	14:00:00	6,00							-2,00	-2,00
02/12/2018	8,00	08:00:00	15:00:00	7,00			4,00				3,00	1,00
03/12/2018											0,00	1,00
04/12/2018											0,00	1,00
05/12/2018											0,00	1,00
06/12/2018											0,00	1,00
07/12/2018											0,00	1,00
08/12/2018											0,00	1,00
09/12/2018											0,00	1,00
10/12/2018											0,00	1,00
11/12/2018											0,00	1,00
12/12/2018											0,00	1,00
13/12/2018											0,00	1,00
14/12/2018											0,00	1,00
15/12/2018											0,00	1,00
16/12/2018											0,00	1,00
17/12/2018											0,00	1,00
18/12/2018											0,00	1,00
19/12/2018											0,00	1,00
20/12/2018											0,00	1,00
21/12/2018											0,00	1,00
22/12/2018											0,00	1,00
23/12/2018											0,00	1,00
24/12/2018											0,00	1,00
25/12/2018											0,00	1,00
26/12/2018											0,00	1,00
27/12/2018											0,00	1,00
28/12/2018											0,00	1,00
29/12/2018											0,00	1,00
30/12/2018											0,00	1,00
31/12/2018											0,00	1,00
Summary	16,00			13,00	0,00	0,00	4,00	0,00	0,00	0,00	1,00	1,00

Employee 1 | Employee 2 | Employee 3 | Employee 4 | Employee 5 | Employee 6 | Employee 7 | Employee 8 | Em ...

2.2. Computer Data base

Storing the recorded data in database is an indispensable part of the recording. It is recommended to use the quickest possible means to store the data in the database in order to ensure up-to-date breeding values and management applications. Where computerized data capture is possible, it should not take more than five days after the recording to have the complete recording data set in the database. E.g. Milk recording data base, the guidelines on storage of data collected by the milk recording process are: a. For every recording, cow identification (ID), 24-hour milk yield or individual milk yields with a minimum of 0.2 kg (or the equivalent thereof) milk accuracy and recording date have to be stored.

Fig.4.diagrm of computer data base



Crop Cost Record

Crop:

Date	Operation	Labor Hours	Equipment Used	Eqmpt Hours	Cost per hour w/o labor	Total Eqmt cost of op	Materials or Supplies: Description	Amount	Cost of Materials Used
						0			0

Total Labor hours	0
Labor Rate	$15.00
Total Direct Labor Cost	$0.00
Total Direct Machine cost	0
Total Direct supplies cost	0
Other crop expenses:	
Greenhouse - non labor	
Land rent or tax	
Un-assigned labor	
Total Production Cost	$0.00

Field Size			
Field Identification			
	U/M	Total	Yield per Size
Yield Data		1	
Production Cost per U/M		0	

Fig.5. filling data into data base

Self-Check -2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List down important format for storage of data (5pts)
2. write importance of excel in farm data (3)

Note: Satisfactory rating – 8 points Unsatisfactory - below 8 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date _____

1. _____

._____

._____

2._____

._____

._____

Information sheet-3	**Analyzing and interpreting production data**

3.1. Analyzing production data

Record analysis refers to evaluating farm records. The evaluation process allows a farm manager to make informed decisions based on actual (or projected) farm performance. Obviously, record analysis cannot take place without first keeping records. Therefore, establishing and using an effective farm record-keeping system for an ongoing farm operation aids in farm planning, informed decision-making and analysis of both production and financial records.

Once a farm record-keeping system has been established, analyzing the records can begin. Decision-making can be greatly enhanced by analyzing both production and financial records and their impact on profitability.

A number of financial analysis tools can be used when accurate and complete farm records are available. These tools include the balance sheet, income statement and projected monthly cash flow statement (including family living expenses). These three financial statements provide information for making short and long term financial decisions.

Keeping and analyzing farm financial records are essential to the efficient management of a farm business. Accurate records and resulting analyses help farmers make financial and production decisions, comply with tax laws and other governmental regulations and support loan applications. Traditional hand record-keeping systems continue to work well for many farmers. Developing and using a farm record-keeping system will allow the farm manager to make more informed decisions affecting the profitability of the farm.

While there are several different types of processes that are implemented based on individual data nature, the two broadest and most common categories are “quantitative analysis” and “qualitative analysis”

Summary of simple statistical quantities

Mean: an average of "**n"** numbers computed by adding some function of the numbers and dividing by some function of n

Median: the value below which 50% of the cases fall adjective: relating to or situated in or extending toward the middle

Mode: the most frequent value of a random variable

Percentage: a proportion multiplied by 100

Mean

Mean = "Arithmetic average" of the scores

Example: scores = 64, 70, 80, 80, 90, 98, 100

Mean = Sum of values divided by number of scores:

64 + 70 + 80 + 80 + 90 + 98 + 100 = 582

582 ÷ 7 = 83.14

Median

Median = score in the middle; 50th percentile

Example #1:

Median scores = 64, 70, 80, 80, 90, 98, 100

If # scores = odd: Find the score in the middle

64, 70, 80, [80], 90, 98, 100

Median = 80

Example #2:

Median scores = 64, 70, 80, 80, 90, 98, 100, 100

If # scores = even: Average the 2 in the middle

64, 70, 80, [80, 90,] 98, 100, 100

80 + 90 = 170

170 ÷ 2 = 85

Median = 85

3. Mode

Mode = largest number of scores

Example #1:

Example: scores = 64, 70, 80, 80, 90, 98, 100

Mode = 80

Example #2:

Example: scores = 64, 70, 80, 80, 90, 98, 100, 100

Modes = 80, 100

3.2. Interpretation farm production data

Data interpretation refers to the implementation of processes through which data is reviewed for the purpose of arriving at an informed conclusion. The interpretation of data assigns a meaning to the information analyzed and determines its signification and implications.

The importance of data interpretation is evident and this is why it needs to be done properly. Data is very likely to arrive from multiple sources and has a tendency to enter the analysis process with random ordering. Data analysis tends to be extremely subjective. That is to say, the nature and goal of interpretation will vary from business to business, farm to farm likely correlating to the type of data being analyzed.

Self check-3	Written test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Mention importance of farm data analyzing? (3 points)

2. Calculate average milk yield and lactation length of the following four Borana cows (6points)

Cow ID	Milk yield/lactation(L)	Lactation length(Day)
056	860	289
045	767	270
032	989	267
043	805	280
Average		

3. Define data interpretation (1points)

Note: Satisfactory rating – 10points Unsatisfactory - below 10points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date _____

1._____

_____

2._____

_____

._____ .

3_____

Operation Sheet 1	Entering dairy farm data into a computer

Steps

1: Create a Workbook

2: Plan Your Needed Data

3: Create Heading

4: Label the Row

5: Add Boundaries

6: Create a Results Table

7: Format and Write Formulas

8: Script Conditional Formatting

9: Enter Data and Watch the Calculations

10: Create a Pie Chart

Operation Sheet 2	Analyzing and interpreting production data

Step

1. Determine which records you want to keep.
2. Calculate all data according specific methods (calculation formulas).
3. Use targets/parameters which applicable in your situation and compare the achieved results with the targets.
4. Identify significant differences and analyze them. Find possible reasons for negative items, but surely also for the positive items.
5. Make concrete what you really can do to avoid the negative factors.
6. Check whether your parameters have to be adapted for future herds.

LAP Test	Practical Demonstration

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within 2 hours.

Task 1. Entering data into worksheet cells

Task 2. Analyzing production data

Reference

Pena, Jose, “Financial Record-Keeping Software Review,” Texas Agricultural Extension Service Bulletin B-5089, Texas A&M University System, May, 1994.

Trainers prepared the TTLM with their full address

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