

Research Methods and Communication

Lecture 12-15

Record Keeping and Data collection
Manuals, Hand Books,
Research Materials

AEM 301 Research Methods and Communication

- CAT: Held on 16.05.2018 – Well attended Thanks
- Revision on CAT in next two weeks
- Presentation of Research Proposals by individual class members? Pending
- 2nd CAT is Proposal Presentations
- Formal lectures to end around 20 May 2018
- Revision: To start soon Because
- **Final Examinations Starts from 25 June 2018**
- QUESTIONS/DISCUSSIONS WELCOME

Preamble

Record Keeping and
Data collection

Reference

Responsible Conduct of Research
Education Consortium (RCREC)

Importance of Record Keeping

- You should keep a formal record of your work in a notebook,
- Where appropriate, data generated in the course of research should be kept securely in paper or other electronic mode.
- Key data collection dates e.g. biological samples, research, clinic, farm, experiment attendance etc

Importance of record keeping Contd

- It is important to keep good records in scientific research;
- Good record keeping is necessary for data analysis, publication, collaboration, peer review, and other reasons
- Labeling of experiments and plots help to keep good records
- Have a research Note Book for each project

Best Practice

- Good research records encompass much more than just research data.
- Scientists on their record-keeping practices. Observe, ask questions, discuss etc
- All these is to aid in the analysis of the responses, results.
- It is a best practice to keep records
- Do not rely on your memory because it can fail you.

Content of records

- Records can include information about research data,
- Raw data and finally analyzed data ,
- Audio, photos, drawings specimens, Soil monoliths, frozen sample, lyophilized cultures
- Background and plans for retention, retrieval and storage of the data?
- Gene banks in agricultural research

Data Management

- Data management varies depending upon each topic under investigation;
- Record-keeping is critical for monitoring and evaluation
- It is vital for research implementation and management
- Contribution of Agroecosystem can be enhanced by good research data collection and management at County and Country level

Responsible Data management

- Good record keeping promotes esteem of individual/organization, eg. Land Registration records, Maps
- It enhances accountability and integrity in research.
- Necessary for data analysis, report writing publication, collaboration, peer review
- Improves the validity of the data collected
- Some regulatory authorities require that research records be kept for at least three years

Consistency in data collection & record keeping

Important aspect of data quality are:

1. Ensure data are collected consistently across different sites and different data collectors.
2. Institute vigorous staff training;
3. Use processes that ensure consistency.

Processes for Data Collection

- Ensure staff and team members involved in the data collection and recording are centrally and consistently trained;
- Put checks in place to ensure all data recording equipment is working and has adequate backup power supplies
- Establish checklists for tasks involved in data collection
- Keeping strong and consistent records about data collection methods

Elements of consistent records data collection methods

Record the following:

1. Events and situations involving people
2. Methods and processes that interviewers followed
3. Any discrepancies or problems that interviewers encountered, such as missing data or unexpected changes that needed to be made;
4. Any other information

Relevant records in Agroecosystem

- Whether records e.g. daily rainfall, temperature, solar radiation
- Flora and Fauna, Vegetation, soil types
- Agroecologies, Farming systems, Rangelands, Agroforestry, water bodies, wetlands, deserts,
- Occurrences e.g. landslides, floods, droughts, Pest invasion, Aflatoxin, armyworm/stalk borer
- Domesticated and wild species
- Alien and introduced species
- Local and Latin names of species
- Official Data and current material
- Custodians of information
- Indigenous knowledge
- Gazette forest
- Restricted species, Controlled movement of animals

Consistent Record Keeping

- Record keeping can be made consistent:
 - between data collectors and locations
 - Ensuring that forms available with specific questions about the data collection to be filled out
- Provide data collectors with:
 - ✓ clear, written instructions about data collection protocols.

Examples of good data collection-1

Interviewers conducting structured interviews or questionnaires should:

- Be given clear, written instructions and question scripts which include things such as:
What should and shouldn't be read out loud
- What order to read questions in
- What words to emphasize

Examples of good data collection-2

- Interviewers conducting structured interviews or questionnaires should:
 - Read scripts and questions as written
 - Read every question, even if they feel the participant has already answered the question in a previous answer

Examples of good data collection -3

Interviewers conducting unstructured or semi-structured interviews should:

- Have a checklist of topics that should be covered
- Have a list of example questions to address these questions, including likely follow-up questions
- Be made aware of how much detail is necessary to obtain in these interviews for the purposes of the study

Manuals, Handbooks

- What is Manual?
- What is a Hand Book

Examples of Manual an Hand Books

- Soil Science Manual by American Society of Agronomy
- MIROBES IN ACTION – A LABORATORY MANUAL OF MICROBIOLOGY BY Harry W Seeley and Paul J. VanDemark Cornell University Published by W. H. Freemans and Company San Fransisco USA
- Okalebo et al Soil Analysis Manual

CONTENT OF MIROBES IN ACTION

- 16 Major topics
- 90 Sub topics
- Descriptive Charts
- A Selection of the 16 Topics include
 - ❖ The Microscope
 - ❖ Culture of Microorganisms
 - ❖ Staining of Microorganisms
 - ❖ Preparation of media and methods of sterilization

Sample Content Cntd

- ❖ Determination of microbial numbers
- ❖ Environmental influences
- ❖ Microbial interrelationships
- ❖ Enzyme reactions
- ❖ Isolation and identification of bacterial cultures
- ❖ Bacterial Variation, Mutation and Recombination
- ❖ The Viruses
- ❖ The Funngi, Molds and yeasts

Bergey's manual of determinative bacteriology,

- <https://en.wikipedia.org/wiki/Bergey>
- **Bergey** may refer to: Bill **Bergey** (born 1945), a former American collegiate and Professional
- **Bergey's Manual of Systematic Bacteriology**, the main resource for determining the identity of bacteria species, utilizing every characterizing aspect .

Manuals Contd

SOIL AND PLANT ANALYSIS:

A Working **Manual**.

The Second Edition by. J. **Robert Okalebo**.
Department of **Soil** Science, Moi University,
Chepkoilel Campus,
[Now The University of Eldoret]

TROPICAL SOIL MANUAL

Edited by: J.R.LANDON

Published by: Booker
Agriculture International
limited 1984

Longman Incorporated
–New York USA

CONTENTS

- ❖ TYPES OF LAND RESOURCE FIELD STUDIES
- ❖ SURVEY ORGANISATION AND PRACTISE
- ❖ CLASSIFICATION AND MAPPING OF SOILS
- ❖ LAND EVALUATION
- ❖ SOIL PHYSICS
- ❖ SOIL CHEMISTRY
- ❖ SOIL AND WATER SALINITY AND SOLIDITY
- ❖ SOIL AND LAND SUITABILITY REPORTS AND MAPS

Sample Contents contd

- ❖ Water microbiology, Sanitation and Pollution
- ❖ Food Microbiology
- ❖ Soil Microbiology
- ❖ Medical Microbiology and Immunology

Manual for Identification

- Plant Species
- Insect Species
- Fish Species
- Livestock
- Soil Survey
- Berge's Manual for Determinative Microbiology
- Medicinal Plants of East Africa – This is a Book by Prof John Kowaro PhD,D.SC

Gene Banks of Cultivated crops

- Ex Situ vs In situ

Microbial Gene Banks

- Lyophilized cultures
- Cultures on slants
- Dried cultures

Handling of Research Materials

- Material Transfer Agreements
- Quarantines

Disposal of Research materials

- Radioactive materials
- Invasive weeds
- Toxic material
- Poisonous material
- Genetically Modified Organisms GMO
- Importation of research materials

Options for Manuals

- Write Project Specific Manual
- Training Course Manual
- Adapt Existing Manual for Specific Project
- Consult Standard Experimental Procedures
- Adapt Standard research Protocols

Report Writing

- Technical Report
- Financial Report
- Journal Articles
- Manuscripts
- Policy Briefs

Sharing out of Research Product

- IPR
- Patents
- Copyrights
- Privacy Policy
- Who owns the product of research

Protection of Research

- Research Permit
- Ethical issues