Food and Agriculture Organization of the United Nations

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Revision of FAO Bulletin 74 “Guidelines For Quality Management in Soil and Plant Laboratories” Using the Material Produced by the GLOSOLAN as A Reference

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GLOSOLAN

GLOBAL SOIL LABORATORY NETWORK

GLOBAL SOIL PARTNERSHIP

Guidelines for Quality Management in Soil and Plant Laboratories. (FAO Soils Bulletin - 74)

- A detailed document created to assist soil and plant laboratories with the support of (FAO) and developed practical guidelines for effective quality management.
- Emphasis on achieving an improvement of performance by adopting a limited number of relatively simple rules and inexpensive measures based on the principles of **Good Laboratory Practice**.

- written 25 years ago in 1998 and requires a comprehensive update in line with the today's global perspectives of science, technology, methodology and policy relevant to soil resources

Guidelines for Quality Management in Soil and Plant Laboratories. (FAO Soils Bulletin - 74)

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INTERNATIONAL SOIL REFERENCE AND INFORMATION CENTRE

Food and Agriculture Organization of the United

Rome, 1998

FOREWORD

PREFACE

1 INTRODUCTION

1.1 What is Quality?
1.2 Quality Management
1.3 Quality Assurance

Table of Contents

1.4 Quality Control
1.5 Good Laboratory Practice (GLP)

2 STANDARD OPERATING PROCEDURES

2.1 Definition
2.2 Initiating a SOP
2.3 Preparation of SOPs
2.4 Administration, Distribution, Implementation
2.5 Laboratory notebook
2.6 Relativization as encouragement
SOPs

F 002 - Administration of Standard Operating Procedures
PROT 005 - The Use of Laboratory Notebooks
Model page of Laboratory Notebook

3 ORGANIZATION AND PERSONNEL

3.1 Function and aims of the institute
3.2 Scope of the laboratory
3.3 Organigram
3.4 Description of processes
3.5 Job descriptions, personnel records, job allocation, replacemen

3.5.1 Job descriptions
3.5.2 Personnel records
3.5.3 Substitution of staff

4 FACILITIES AND SAFETY

4.1 Housing facilities

4.1.1 The scientific block
4.1.2 The storage block
4.1.3 Climate

4.2 Safety

4.2.1 Equipment
4.2.2 Chemicals, reagents, and gases
4.2.3 Waste disposal
4.2.4 General rules to observe
4.2.5 First Aid
4.2.6 Fire fighting

4.3 Admittance to the laboratory
SOPs

PROT 051 - The replacement of a gas cylinder
SAF 011 - Safety Logbook (Laboratory)
RF 031 - Stock record of chemicals

5 MATERIALS: APPARATUS, REAGENTS, SAMPLES

5.1 Introduction
5.2 Apparatus

5.2.1 Registration

5.2.1.1 Instrument Identification List
5.2.1.2 Instrument Maintenance List. Instrument Calibration List

5.2.2 Operation

5.2.2.1 Operation Instruction Manual

6 BASIC STATISTICAL TOOLS

6.1 Introduction
6.2 Definitions

6.2.1 Error
6.2.2 Accuracy
6.2.3 Precision
6.2.4 Bias

6.3 Basic Statistics

7 QUALITY OF ANALYTICAL PROCEDUR

7.1 Introduction
7.2 Calibration graphs

7.2.1 Principle
7.2.2 Construction and use
7.2.3 Error due to the regression line
7.2.4 Independent standards
7.2.5 Measuring a batch

7.3 Blanks and Detection limit

8 INTERNAL QUALITY CONTROL OF DATA

able of Contents

8.1 Introduction
8.2 Rounding and Significant figures

8.2.1 Rounding
8.2.2 Significant figures

8.2.2.1 Rounding of test results
8.2.2.2 Rounding of means and standard deviations

8.3 Control charts

9 EXTERNAL QUALITY CONTROL OF DATA

9.1 Introduction
9.2 Check-analyses by another laboratory

9.2.1 Single value - single value check
9.2.2 Replicate data - single value check
9.2.3 Replicate data - replicate data check

9.2.3.1 Comparison of replicate results on one sample
9.2.3.2 Comparison of replicate results on multiple samples

A guidelines is creation of;

- **Clarity and Simplicity**
  - A Simple language that's easy to understand.
  - Avoiding overly technical terms (unless necessary).
- **Purpose and Scope**
  - Defining the aims to achieve and their intended audience.
  - Clearly stating what it covers (and the limitations, too).
- **Structure and Format**
  - Logical organization (headings, subheadings, bullet points, or numbered lists etc).

A guidelines is creation of;

- **Visual material**:
  - Charts, graphs, diagrams or info-graphics where appropriate.
- **Accessibility**:
  - Being accessible to everyone in different formats (word, PDF, web pages, or printed copies etc).
  - Complying with accessibility standards for people with disabilities, if possible
- **Review and Update**:
  - Regular review and update guidelines to keep it relevant and aligned with any changes in methods, technologies or some other practices.
- **Feedback Mechanism**:
  - Provide a way for users to offer feedback or ask questions about the guidelines. (through a contact information or designated person to contact).

Guidelines for Quality Management in Soil and Plant Laboratories. (FAO Soils Bulletin - 74)

GLOSOLAN Areas of work

Standard Operating Procedures

Quality Assurance /Quality Control

Equipment

& Safety

development

Spectroscopy (GLOSOLAN-Spec)

- GLOSOLAN as the reference covering all revisional aspects to create a new FAO Guideline for soil resources.

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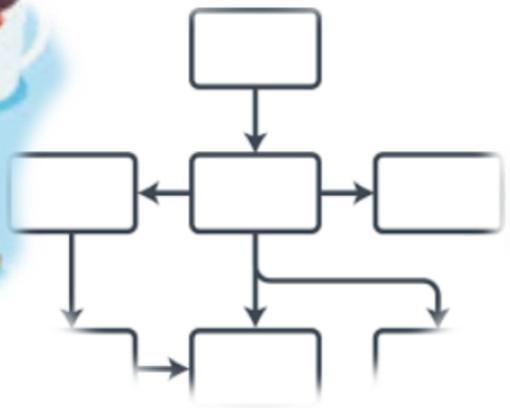
Revision of FAO Bulletin 74 using GLOSOLAN material can be based on four main approaches;

VISUALITY

CONTENT

CONCEPTUAL



LANGUAGE

Revision of FAO Bulletin 74 from Visuality Perspective

- Making graphical representations for the written content where possible
- Updating all figures, labels as appropriate.
- Drawing flow charge of procedure for the preparation of a SOP
- ….?

Needs hands of professional

For example pictures showing the relations among;

- Quality Management
- Quality Assurance
- Quality Control
- Good Laboratory Practice (GLP)

Revision of FAO Bulletin 74 from Content Perspective

- Updating laboratoy organizations by redefining/adding roles (organization chart, job description, "Who can do what", etc.
- Checking with technology level of the sections to reflect new and current technology (ie. personal computers, mainly Lotus 123, dBASE, and Excel programs).

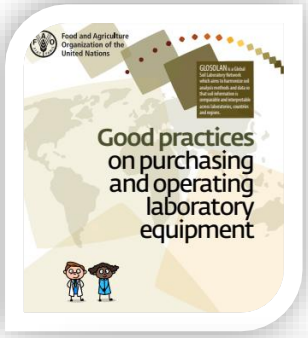
. ….?

Revision of FAO Bulletin 74 from Content Perspective

- Reordering and handling chapters;
  - Introduction (subsections can be rewritten)
  - Safety (needs a hand of expert)
  - Facilities (can be defined and organized from general to specific)
  - Equipement (can be defined and organized from general to specific)
  - SOPS (can be a smaller chapter)
  - basic stats --> (more examples with pre-filled excel sheets can be provided
  - quality of procedures (can be included in statistic section)
  - quality Controls

Revision of FAO Bulletin 74 from Conceptual Perspective

- Categories can be organized with a letter or combination of letters
- Standart SOP terminology should be provided (validation and verification, Calculation of uncertainty, etc.)
- How about presenting a GLOSOLAN SOP template as an appendix?
- Section of statistical tools should be updated according to the new terminology that GLOSOLAN
- Sections related to lab equipment should be reorganized according to GLOSOLAN
- Sections related to sample prep for quality control, according to GLOSOLAN



Revision of FAO Bulletin 74 from Conceptual Perspective

- Section of statistical analysis should include updated recommendations on statistical softwares (e.g. R software, etc.)
- The safety sections should be reviewed/updated by a professional (e.g. İndustrial hygienist, fire safety specialist etc.)
  - Which standards ? (Safety standards vary by country)

Revision of FAO Bulletin 74 from Language Perspective

- The language should be rewritten with simpler sentences, easy to understand (needs hands of native english speaker)
- The new bulletin should be translated into all GLOSOLAN languages

العربية 中文 English Русский Español

CONCLUSION-For a proper revision of FAO Bulletin 74;

- Hands of professionals for a new and modern visual imagination are necesssary
- The content and conceptual revisions of the new guideline can be evaluated by an expert individually
- It would be better to confirm these revisions by a group of soil scientists/experts, first, and then the revisions should be applied to the context of the guideline.

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