International Workshop and Steering Committee Meeting
Murten, Switzerland
26 August – 2 September 1997

WORLD OVERVIEW
OF CONSERVATION, APPROACHES
AND TECHNOLOGIES (WOCAT)

Proceedings of International Workshop & Steering Committee Meeting

Progress, Preparation of Outputs,
Development of Methodology, Plan of Action,
Institutional Organisation

World Association of Soil and Water Conservation (WASWC)
Centre for Development and Environment (CDE)
Institute of Geography, University of Berne
Berne, Switzerland

1997

Editors: Hanspeter Liniger, Gudrun Schwilch, Hans Hurni, Karin Kipfer

Address: Centre for Development and Environment
Institute of Geography, University of Berne
Hallerstrasse 12
3012 Berne
Switzerland
Tel. +41 31 631 88 22
Fax +41 31 631 54 44
e-mail: wocat@giub.unibe.ch

WORLD OVERVIEW
OF CONSERVATION, APPROACHES
AND TECHNOLOGIES (WOCAT)

Proceedings of International Workshop & Steering Committee Meeting

Table of Contents

Foreword

These proceedings were prepared mainly for the core group of WOCAT collaborators and institutions in order to present the results of the Workshop and Steering Committee meeting, held in Murten, Switzerland in August / September 1997. This document is not addressed to a wider public and therefore has not been edited for such a purpose. It is a working document for the further development of WOCAT. Please let us know your comments in order to improve the programme and the results presented in this document.

WOCAT would like thank all participants and collaborating institutions for their contribution and considerable commitment before, during and after the workshop and Steering Committee meeting (see attached list of participants).

Summary

The aim of the annual international WOCAT workshop and the 2nd Steering Committee meeting was to review the progress and further develop the WOCAT programme and to plan the future activities.

22 participants from 4 continents and 12 countries were representing the main collaborating institutions involved so far such as SDC, FAO, ISRIC, CDCS, OSS, GTZ, DLD-Thailand, RSCU- Eastern Africa and CDE, and newly collaborating institutions as ICIMOD, ICARDA, IBSRAM, CIAT and ADB.

Main issues were discussed and decisions made for the continuation about:

1. Database (DB) and Decision Support System (DSS): further development of the new ACCESS-DB as initiated by FAO-CDE, including user-friendly DB-Management System to allow easy analysis through a query system (selection by criteria)to produce automated analysis and reports (e.g. 2-page summaries for the handbook of Technologies and Approaches.)
2. Map methodology and outputs: revision of methodology (use of GLASOD or SOTER as baseline map, data collection, questionnaire, immediate presentation of results, correlation of results) and presentation of map outputs.
3. Technologies and Approaches methodology and outputs: revision of questionnaires and revision of proposed 2 page summary sheets for Ts and As
4. Quality control procedures: of already collected data and for future data collection through the development of guidelines.
5. Links: national, regional and global DB: Definition of the activities and responsibilities at the national, regional and global level. Proposals for rules and regulations.
6. New initiatives and continuation of data collection: identification of future activities and institutional involvement in Africa, Asia, Latin and Central America, Mediterranean region.
7. Consortium development and funding strategy, planning till August 1998 and vision for WOCAT in 4 and 10 years time.

Schedule for International WOCAT Workshop 26 - 30.8.97 and Steering Committee Meeting 1 – 2 September 1997, Murten, Switzerland

Tuesday, 26/08/97	**WOCAT WORKSHOP**	**Presenters**
09:30 - 10:00	*Welcome coffee, administrative issues*	
10:00 - 12:00	Introduction, review of WOCAT highlights, expectations of workshop, approval of agenda, administrative information	H.P. Liniger
	TOPIC 1: Decision support system and database	Chairman: H. Hurni Rapporteur:W. Prante
12:00 - 12:15	Introduction to the Workshop	H.P. Liniger
12:15 - 12:45	WOCAT expert system	A. Vlaanderen
12:45 - 14:15	*Lunch break*	
14:15 - 14:30	WOCAT hypertext	G. Schwilch
14:30 - 15:00	WOCAT database on approaches/technologies	W. Prante/G. Schwilch
15:00 - 15:15	DSS experiences in SE-Asia	M. Rais
15:15 - 15:45	Brainstorming (plenary)	
15:45 - 16:15	*Coffee break*	
16:15 - 18:30	Group work	
18:30	*Apéro*	
19:00	*Dinner*	
evening	Social evening	
Wednesday, 27/08/97	**TOPIC 1:** continued	Chairman: W. Critchley Rapporteur:W. Prante
08:30 -10:00	Presentation of group work (15 min per group)	
10:00 - 10:30	Discussion of results	
10:30 - 11.00	*Coffee break*	
11.00 - 11:30	Planning / requirements	
11:30 - 12:30	Finalization of results (group work)	
12:30 - 14:00	*Lunch break*	
14:00 - 15:00	Presentation of final results	
	TOPIC 2: Map	Chairman: D. Thomas Rapporteur:G. v.Lynden
15:00 - 15:30	Introduction and presentation	G. v.Lynden
15:30 - 15:45	Proposal for new questionnaire on "results" (by Cahill)	R. Gallacher
15:45 - 16:30	Discussion	
16:30 - 17:00	*Coffee break*	
	TOPIC 3: Output Technologies/Approaches	Chairman: G. v.Lynden Rapporteur: D. Thomas
17:00 - 17:30	Results of analysis, review of outputs technologies/approaches	H.P. Liniger
17:30 - 18:00	Discussion	
19:00	*Dinner*	
Thursday, 28/08/97		
08:30 - 10:00	Group discussions on topics 2 and 3	
10:00 - 10:30	*Coffee break*	
10:30 - 11:30	Presentation of results, discussion and planning	
11:30 - 12:30	Finalization of results by groups (topics 2 and 3)	
12:30 - 14:00	*Lunch break*	

	TOPIC 4: Quality control (Procedures and QC for existing data)	Chairman: J. Mburu Rapporteur: G. Schwilch
	TOPIC 5: National/regional/global WOCAT	Chairman:R. Gallacher Rapporteur:W. Critchley
14:00 - 14:30	Introduction to topic 4	R. Gallacher
14:30 - 14:45	Introduction to topic 5	W. Critchley
14:45 - 15:00	Short discussion on topics 4 and 5	
15:00 - 16:00	Group work on topics 4 and 5	
16:00 - 16:30	*Coffee break*	
16:30 - 17:00	Group work on topics 4 and 5	
17:00 - 17:45	Presentation of results, discussion and planning	
17:45 - 19:00	*City tour*	
19:30	*Dinner*	
evening	Report writing by rapporteurs, individual preparations	
Friday, 29/08/97	**TOPIC 6: New initiatives / data collection**	Chairman: H.P. Liniger Rapporteur: M. Douglas /M. Zoebisch
08:30 - 09:00	Africa: East, South, West, North	J. Mburu / W. Critchley
09:00 - 09:30	Thailand	S. Sombatpanit
09:30 - 10:00	Asia/Pacific (CLASP)	G. Englisch
10:00 - 10:30	China	M. Douglas
10:30 - 11:00	*Coffee break*	
11:00 - 11:15	South- and Central America	R. Knapp/H.P. Liniger
11:15 - 11:30	ICARDA	M. Zoebisch
11:30 - 11:45	ICIMOD	T. Partap
11:45 - 12:00	IBSRAM	M. Rais
12:00 - 12:15	Other initiatives	H.P. Liniger / H. Hurni
12:30 - 14:00	*Lunch break*	
14:00 - 16:00	Group work	
16:00 - 16:30	*Coffee break*	
16:30 - 17:30	Presentation of results, discussion and planning	
17:30 - 18:30	Finalization of topics 4, 5 and 6 by groups	
19:00	*Dinner*	
evening	Report writing by rapporteurs, individual preparations	
Saturday, 30/08/97	**TOPIC 7: WOCAT Consortium**	Chairman: H. Hurni Rapporteur: R. Knapp
08:30 - 09:30	Introduction, proposals	
09:30 - 10:30	Group work on topic 7 (and others if needed)	
10:30 - 11:00	*Coffee break*	
11:00 - 11:30	Continuation of group work	
11:30 - 12:30	Presentation of results, discussion and planning	
12:30 - 14:00	*Lunch*	
14:00 - 15:00	Finalization of topic 7 results by groups	
15:00 - 16:00	Any other business	
16:00 - 16:30	*Coffee break*	
16:30 - 18:30	Report writing, preparation of Steering Committee Meeting	
18:30	*Dinner*	
evening	Social evening	
Sunday, 31/08/97	Sightseeing, individual/group trips Arrival of additional Steering Committee members	

Monday, 1/09/97	**WOCAT STEERING COMMITTEE MEETING**	Chairman: R. Oldeman Rapporteur: Hurni/ Liniger
09:30 - 10:00 10:00 - 12:30 *12:30 - 14:00* 14:00 - 18:30	*Welcome coffee, administrative issues* Introduction, approval of agenda and SC meeting *Lunch* SC meeting	
Tuesday, 2/09/97		Chairman: R. Oldeman Rapporteur: Hurni/Liniger
08:30 - 10:30 *10:30 - 11:00* 11:00 - 12:30 *12:30 - 14:00* 14:00 - 17:30	SC meeting *Coffee break* SC meeting: Closing of official meeting *Lunch* MB meeting and small group discussions, finalization of reports	

Introduction to the WOCAT Workshop

Welcome

The workshop was opened by the coordinator of WOCAT, Hanspeter Liniger of CDE, followed by:

- An introduction to Murten a small historic town in the lake region forming the vegetable garden of Switzerland. It was noted with interest that the woCat came to a place with a lion in its flag.
- An appreciation for the high turn-up to this event: All the "old" collaborating institutions (such as FAO, ISRIC, CDCS, RSCU, SoCoX) involved in WOCAT from the beginning were present, except UNEP. New institutions that participated for the first time in a WOCAT workshop were CIAT from Columbia, DLD from Thailand, ICARDA from Syria, ICIMOD from Nepal and IBSRAM from Thailand. Several additional institutions were joining for the Steering Committee meeting: OSS from Paris, GTZ from Bonn and the main donor, SDC from Bern.
- An explanation as to why the originally planned SC meeting in Madagascar had to be changed to Murten.

Aim of the workshop:

- to review the progress and further develop the WOCAT programme and to plan the future activities
- to prepare for the SC meeting (repeat Sigriswil 1996 experience)

Review of major WOCAT highlights May 1996 to August 1997:

The following major activities were carried out (see also WOCAT highlights 1992-97):

1. Workshop and Steering Committee, Sigriswil, May 1996
2. ISCO Bonn August 1996: Paper, Presentations, Meetings and Dare to Share Fair contribution (see Annex 2).
3. National WOCAT workshop Thailand September 1996 (DLD)
4. Revision of QT, QA (CDE)
5. Data collection Western and Northern Africa (OSS)
6. GTZ – FAO – CDE meeting, Bonn, March 1997
7. Production of the WOCAT brochure
8. Presentation of WOCAT in the Desertification Atlas of UNEP
9. New development of database and data query (CDE – FAO)
10. New initiatives:
    Latin America Initiative (GTZ – CIAT – RIMISP – FAO – others)
    China initiative (ADB and TA)
    CLASP (Vietnam)
    ASOCON
    ICARDA Eastern Europe

Who is who and who expects what?

All participants presented themselves and listed their expectations on a pin wall. The expectations could all be assigned to the topics listed below. The following participants / institutions had planned to come but had to cancel their participation: Dennis Cahill from Australia, Jenny Wilson from Portugal, UNEP from Kenya/Switzerland, Sandra Brown / Hans Schreier from University of British Columbia, Canada.

Agenda / Programme for Workshop 1997: 7 topics:

Specific Objectives for the WS were to further develop:

TOPIC 1: Database (DB) and Decision Support System (DSS)
TOPIC 2: Map: methodology and outputs
TOPIC 3: Technologies and Approaches: methodology and outputs
TOPIC 4: Quality control procedures
TOPIC 5: Links: national, regional and global DB
TOPIC 6: New initiatives and continuation of data collection
TOPIC 7: Consortium development and funding strategy, planning till August 1998 and vision for WOCAT in 4 and 10 years time

In these proceedings, topics 1 to 6 are presented in the results from the workshop, whilst topic 7 is included in the results of the Steering Committee meeting.

WOCAT Milestones 1992-97

1992	**Berne**	**Proposal for funding to SDC:** WOCAT funded by SDC: from 1.9.92 - 31.8.95
1 October	Sydney; Australia	**ISCO Conference:** 24 SWC specialists from 16 countries 1st international meeting to define overall goals
1993		
October 11-15	Riederalp Switzerland, CDE	**International Workshop:** 19 specialists from 13 countries Definition of WOCAT objectives, methodology; splitting up into three Qs: QT, QA, AM, to be developed by 3 task forces.
1994		
January 13-14	Thika, Kenya RSCU	**Task force meeting: Approaches** 1st draft of report on approaches (guidelines)
March, 13-15	Wageningen ISRIC	**Task force meeting: Technologies** 1st draft of questionnaire on Technologies
June	Berne at CDE	**Finalizing 1st drafts of QT/QA**
August	Berne at CDE	**Task force map.** 1st draft of QM
August	Berne CDE	**CDE coordination.** Drafts of QT, QA, QM compiled
August - November	Kenya, Ethiopia, Niger, S.A.	**Testing of QT, QA by WOCAT task force members** Feedback from testing in Africa, suggestions for improvements
October 20-21	Wageningen, ISRIC	**Meeting on database and expert system,** ISRIC, CDE, SOCOX. First version of D-CAT (database of WOCAT) and development of X-CAT (expert system of WOCAT)
December 12-15	Berne, CDE	**Workshop for Core Group Members** Final draft of Qs, change of methodology: towards regional workshops.
1995		
March 13-14	Rome, FAO	**Meeting on map with ISRIC and CDE** Further development of objectives and outputs of the map
May	Berne, CDE	**Finalizing QT, QA and QM** / Printing of 1st version of QT, QA and QM
June/July 26-1	Machakos, Kenya collaboration RSCU - CDE	**1st Regional Workshop (East Africa):** 27 SWC specialists from 7 countries and 10 facilitators: 30 Technologies and 19 Approaches and regional map; sponsored by RSCU, CDE, FAO, GTZ
August	CDE-UNEP	**Proposal for funding of Regional Workshop.** UNEP approval for funding of Southern African workshop
November 6-11	Ouagadougou Burkina Faso, OSS/GTZ	**2nd Regional Workshop (Western Africa):** 30 participants from 4 countries: Launching of WOCAT and testing of methodology in Western Africa: sponsored by OSS/GTZ, FAO and SDC
December 11-15	Magoebaskloof, South Africa	**3rd Regional workshop (Southern Africa)** 28 SWC specialists from 8 countries, 4 facilitators, collection of 22 Technologies and 17 Approaches and regional map
1996		
January	Berne, CDE	**Proposal for funding to SDC.** 2nd phase of WOCAT funding approved by SDC: from 1.9.95 - 31.8.98
Febr.- May	Berne, CDE	**Meetings:** Evaluation of results, drafting of outputs, revision of method
May 6-14	Sigriswil	**International workshop and Steering Committee (SC) meeting** with main collaborating institutions and donors: Development of the programme, finalizing outputs of WOCAT, **Formation of a WOCAT Consortium and Steering Committee**
June	Tunis, Tunisia; OSS	**4th Regional workshop (Northern Africa):** Including Tunisia, Algeria, Morocco and Mauritania. Organized by OSS.
August 26-30	Bonn	**ISCO Conference:** Presentation of WOCAT Africa to date (paper), Poster presentations in Dare to Share Fair, meetings to and feed-back from SWC specialists worldwide
September 15-21	Thailand (DLD)	**National WOCAT Workshop**: Launching Asian data collection with national funding: 21 Technologies and 14 Approaches
1997		
March	Bonn (GtZ)	**Meeting: GtZ – FAO – CDE:** Discussion of progress and issues to be addressed during Next SC meeting
- May	Berne, CDE	**Revision of questionnaires** on Technologies and Approaches
May	Berne, CDE	Production of **WOCAT brochure**
May - Aug	FAO and CDE	Development of **new database** and **data analysis** system
May	CDE and ISRIC	Presentation of WOCAT in **Desertification Atlas** of UNEP
June	Paris OSS and CDE	Entry of **N-Africa and W-Africa data** into old DB: 26 Technologies, 16 Approaches
July	GtZ, CDE	New initiative: **Latin and Central America**: Translation into Spanish, Contacting institutions, starting process
July	ADB, CDE	New initiative: **China**: Preparing translation into Chinese, proposal for WS in Nov'97
Aug-Sept	Murten, CDE	International **Workshop** and **2nd Steering Committee** meeting

Review of Activity Plan 1996/7

ACTIVITIES	Planned timetable (May 1996)	Achieved by August 1997
Follow-up of Sigriswil workshop		
Revision of QT, QA and Reprint.	August 96 (1 revision)	August 97 (3 revisions)
Layout proposal for handbook onTechnologies, Approaches (inventory) Part A	August 96	Aug 96, revision necessary
Analysis for Technologies and Approaches: first analysis of results E- and S-Africa	August 96	August 96
Map: • Data 'harmonisation' E-Africa, S-Africa • Presentation for ISCO • Proposal for Desertification Atlas and finalizing presentation	 Depending on funding July 96 Sept. 96	 Still open August 96 May 97
Presentation for ISCO conference	25-30 Aug 96	25-30 Aug 96
Dare to share: • Overview WOCAT results Africa T, A, M • Database • X-Cat. New hypertext version • Maps		
Papers: • Overview of WOCAT • Results E- & S-Africa • X-Cat Demo version		
WOCAT meetings within ISCO		
Other Initiatives		
Continuation/finalizing data collection for Africa, provided that funding can be made available in time: • Preparation of guidelines for facilitators. • Anglophone WS • 2 francophone WS • National Workshop in Thailand	 Jan – March 97 Jan – March 97 Sept. 96	 No funding Partly through OSS Sept. 96
Development of a funding and collaboration strategy	May to Dec 96	May-Dec 96-Aug 97
Workshop for analysis/presentation and 2nd Steering Committee	May 97	August 97

Additional activities that were necessary but not planned in the 1st Steering Committee Meeting of May 1996

1. Further development of methodology
   Additional revision of Qs (required additional revision after Thai Workshop)
   DB/DBMS: new system in Access including data query, analysis tools
2. Support to additional initiatives: Latin America, China, ASOCON, others.

TOPIC 1: Database and Decision Support System

Introduction

- An MS-WORD 'database' was developed to store the information collected and was implemented parallel to the development of the questionnaires. After the entry of the first questionnaires from E. and S. Africa, several constraints indicated the need for improvements/changes to the system the necessity to improve/change the system. CDE and FAO reassessed the situation and through the support of FAO and CDE, the system is currently being changed to an MS-ACCESS based relational database.
- Growing demand has been expressed for flexible queries and analysis according to individual interests and needs.
- There is growing demand to have access to the database through the Internet.
- The address database of collaborating and interested SWC specialists and institutions is already implemented in the WOCAT database (in Access) and is available.
- A first draft of a menu structure has been programmed and the data entry module for the technology questionnaire has almost been completed. A set of draft analyses and reporting tools have been provided. The query-by-criteria module awaits further refinement before its finalization.
- Goal: The WOCAT database is intended to become a tool to electronically store and easily retrieve and analyse WOCAT questionnaire based data.

This entails:	What's ready 8/97:
• a user-friendly menu structure	Draft
• a questionnaire look-alike data entry module	questionnaire on SWC Technologies
• a search facility based on a combination of general, bio-physical and socio-economic criteria	draft search facility for Technologies questionnaire
• a suite of pre-defined queries for various types of analysis across different Technologies/Approaches (e.g. technology applied on different land use types and altitudes, participation of the local community during different project phases etc.)	2 pre-defined queries for land use type and altitude
• reporting modules to visualise and/or print	
◦ a two page summary of a selected Technology/Approach	draft of SWC Technology summary
◦ special topics of a selected Techn./App.	
◦ a whole questionnaire	
◦ selected analyses across different Techn./App.	2 charts on land use type and altitude
• linkages between the database and the WOCAT hypertext module and other special topics databases (e.g. ECOCROP)	
• a database design to allow for a distribution on various media: diskette, CD-ROM and the internet.	

Advantages compared to previous version on Word:

1. Easier handling through menus and forms (for data entry and retrieval/analysis)
2. Data retrieval, querying and reporting facilities
3. Flexibility to add new retrievals, queries and analyses modules
4. Better handling of large amounts of data
5. Data contained in one file instead of several hundred files/documents
6. Link between QT and QA
7. Search facilities for keywords throughout all questions and questionnaires
8. Combined searches on certain aspects
9. Linking with other databases and WOCAT hypertext media
10. Possibility of making the database available on the internet

Disadvantage compared to previous version on Word:
Time required to change to new database system

- In view of the development of a Soil Conservation Expert System by SoCoX Consult (A. Vlaanderen) with the support of FAO before the WOCAT programme started, the initial idea was to further develop SoCoX into X-CAT. Due to the heavy involvement of WOCAT in identifying and developing the data collection method and the other outputs, the idea of the X-CAT was until now not sufficiently addressed.
- The collaboration with the University of British Columbia (H. Schreier / S. Brown) supported by IDRC resulted in the development of a Hypertext version (which was presented at ISCO and other meetings). This program presents WOCAT and shows results and outputs but it does not yet allow direct links to the use of the "word WOCAT – DB" (nor the Access version).
- There is a high demand for easy access to the WOCAT – DB and for the visualation of the WOCAT experience through a computer program. The meeting between GTZ, FAO and CDE in Bonn (March 1997) again clearly showed the need for a proper discussion on both the DB and a Decision Support System (DSS) and how they are linked.

Objectives

To address the following specific issues:

a) Identify the end users of WOCAT DB and DSS, their needs and expectations
b) The major challenge for developing the DB and additional elements of the DSS
c) Geo-references included in data records
d) Consistency of analysis
e) Inclusion of extra-questionnaire material
f) Further analytical features/reports
g) Language versions French and Spanish
h) Need for an additional expert system (why change to a Decision Support System?).

Results

Topic a): The end users of WOCAT DB and DSS, their needs and expectations

Pre-requisite: know the problem before using WOCAT.

Target groups	Needs and expectations
All	• to learn and benefit from other experiences and avoid duplication • to narrow down the supermarket shelf to those options you would like to try • to identify „best bet" options • to still have a choice of options with information on advantages and disadvantages
Extension: SWC-specialists; other SM specialists; trainers	• to find validated Ts and As appropriate for specific areas • to analyse advantages and disadvantages: financial costs/benefits at household level, ecological, social, etc. • to obtain information on how to improve or introduce new Technologies and Approaches
Researchers	• to identify knowledge gaps • to identify national and preliminary Ts and As to test in response to area specific problems • to analyse advantages/disadvantages: economic, ecological, social etc.
Project planners	• to find validated Ts and As appropriate for specific area • to analyse advantages/disadvantages
Project managers	• to analyse advantages/disadvantages • farm household costs/benefits
Policy makers	• to analyse advantages/disadvantages • society levels costs and benefits • economic analysis
Secondary users: Teachers: Land users:	• • to analyse advantages/disadvantages • to obtain general training materials, case studies • (as extension worker)

Topic b): Challenge for the development of the WOCAT Database and Decision Support System

- simple to access information
- user–friendly to computer non–specialists
- cheap
- high flexibility for the retrieval and analysis of data according to users' and area specific needs

The DB and DDS aim to stimulate thinking and interaction of the users, to make them ask themselves more questions and to find out why certain Ts and As worked in one place and whether they could work in another place.

Topic c): Data field for geo-referencing

There are basically 2 options to provide the collected data with a geo-reference

- indicate latitude / longitude
- indicate the location on map units, eg. SOTER or GLASOD units

Ideally the , (SOTER/GLASOD) map units for which the technologies are described should be indicated (e.g. by hatching) on a small map showing these units by the respondents.

Topic d): Consistency of analysis and interpretation

For each output (DSS, database or multimedia presentation tool, synthesis reports, etc.) it is essential that the outputs of the various systems are consistent. This requires the integration of

and the collaboration between the various work groups (on DSS, database, multimedia, map, etc.).

Topic e): How to integrate non-questionnaire material

There are other databases that resemble the WOCAT database (e.g. PASOLAC) or have additional information (e.g. guide de référence by OSS). They will have to be studied in more detail and potential differences identified; Valid elements not included in the WOCAT database should be considered for subsequent inclusion.
The numerous text/memo fields contained in the database will have to be used to integrate more descriptive/narrative information into the WOCAT database. Where these appear to be too lengthy, one would have to store a reference only.

Topic f): Further analytical features/reports

In order to demonstrate the power of the database and the use of analysing the data, WOCAT needs to prepare several analysis that can be selected from a menu and that are carried out „at a click of a bottom". For the analysis of the data on T and A, there should be a pre-selection feature similar to the existing query-by-criteria one (see Annex 3). However the query-by-criteria should be enhanced, , by:

1.3.1 Geographical criteria(continent, region or country)
2.2.2.2 Description of technology (measures used)
2.2.2.3 Category of technology
2.2.2.4 Soil degradation addressed
2.2.2.5 Impact achieved

All biophysical, socio-economic and the other criteria from the "query-by criteria" should be considered for pre-defined analysis and reporting (see examples on Annex 4).
In addition the following ones should be included:

1.3.4 Area coverage
2.3.1 Current status
2.6.8.3 Crops
2.7 Establishment costs per hectare
Recurrent costs per hectare
3.2.2 Production value previous to the introduction of new technology
3.2.4 Production value after introduction of new technology

Topic h): WOCAT Expert System

There was discussion whether a database management system (DBMS)could replace an expert system. The DBMS is already a form of a Decision Support System, whereas the expert system would be an additional part of the DSS. The question is now whether the expert system would have any added value to the already existing DBMS/DSS. Several questions/remarks were raised:
Some negative remarks:

- I'm afraid that an expert system will give blue-print solutions
- all expert systems I know give "common-sense" answers
- the answers that expert systems provide can also be provided by a database

Some positive remarks:

- the expert system should provide the underlying principles of SWC
- expert systems can chain back from a given goal to a solution
- expert systems can provide answers when data are incomplete
- expert systems can work with confidence, priority etc.

Some expressed needs:

- I would like to know what effects it has when I change one technique for another
- I would like to know what to do when I have few data

A document should be prepared to explain the added-value of an expert system. This document will be prepared by a task force (R. Knapp, A. Vlaanderen, M. Rais, D.B. Thomas). Additional inputs will be sought (Centre for Knowledge Technology, J. Wilson, W. Prante, G. Schwilch).

Open questions:

- What are the implications of having the DBMS in different languages (Language versions in French and Spanish and further languages)
- What are additional needs for specific types of analysis/reports
- What are the needs and capacities of regional centres for the collection and dissemination of WOCAT database information in locally appropriate media (ranging from hard copy to internet access)
- How can such regional centres be funded (refers to Topics 5,6,7)

DB/DSS planning for the next year

Technologies questionnaire	***starting***
Data transfer phase I. (adaptation of existing data to revised questionnaire)	September 1997
Data transfer phase II. (import into Access system)	September 1997
Second programming phase (mainly implementation of workshop recommendations)	September 1997
Multi-language version	Dec. 97/Jan. 98
Inclusion of existing national datasets	February 1998
Internet access	March 1998

Approaches questionnaire	***starting***
First programming phase (equivalent to what has been completed already in Technology questionnaire)	October 1997
Data transfer phase I. (adaptation of existing data to revised questionnaire)	September 1997
Data transfer phase II. (import into new Access system)	September 1997
Second programming phase	November 1997
Multi- language version	January 1998
Inclusion of existing national datasets	February 98

Costs involved:

Gudrun Schwilch, CDE	approx. 70 person-days (funding not sufficient)
Wolfgang Prante, FAO	approx. 90 person-days over a time period up to March 1998.

Further Methodology Development of Decision Support System

- Build in quality control methodologies
- Refine query system; refine system for analysis of data
- Build link to Hypertext system of WOCAT
- Justification for the need, added value and potential benefits of the expert system within the WOCAT DSS: to be drawn up before May 1998

DB and DSS Planning beyond next year

• Inclusion of existing national datasets	Ongoing
• Establishment of regional WOCAT centres	August 1998 onwards
• Development of methodology of DSS programme/ prioritisation	Ongoing
• Process of integration of database into DSS together with an expert system (if needed)	Ongoing

TOPIC 2: WOCAT MAP

Introduction

So far, map data have been collected for Eastern and Southern Africa (15 countries) and for Thailand. For Eastern and Southern Africa several maps were produced and presented e.g. at the ISCO Conference '96 in Bonn and in the revised Desertification Atlas to be published by UNEP in 1997.
The data already collected needs feedback from the contributors and to undergo quality control.
Contrary to the questionnaires on Technology and Approaches ,the Questionnaire on Map has not yet been revised. There is a need to revise the methodology of data collection including the questionnaire and direct-response data entry. Currently the data have to be entered in (hard copy) matrix tables, one for each polygon, and later entered into a (dBase) database to produce maps in ArcView or other GIS.

Objectives

a) Update and refinement of materials collected
b) Revision of methodology: data collection, questionnaire, direct-response input, feedback and correlation of end results
c) Link to QM to QA and QT
d) Base map (maintain GLASOD? SOTER?)
e) Outputs, e.g. viewer
f) Other issues

Results

a) **Update and refinement of materials collected:**
To refine the map data collected from 15 countries from Eastern and Southern Africa, small regional workshops are needed. RSCU has already offered to hold one for Eastern Africa. The possibility of organising such workshops also depends on funds. The data collected should be refined independently of the decision on whether WOCAT will change to SOTER for basic map units.

b) **Revision of methodology:**
- It was agreed that the order of data collection should be changed to fill the data for one subject (e.g. land use) in ALL polygons before going on to the next subject and filling in the next set of data for all polygons and so on.
- The proposal to search for an interactive system to enter and edit data was agreed upon. What system to use (e.g. the proposed ArcView/Access System) was left open and is to be further evaluated by G. van Lynden, W. Prante and G. Schwilch.
- The demonstrated SOTER viewer can relatively easily be adapted to WOCAT. Like this system, any alternative viewing system should definitely be a runtime version to ease dissemination.
- The proposed method to use hardcopy maps for data entry/viewing (owing to the lack of direct computer input/feedback) may be problematic in view of the large number of maps to be generated! As for the other questionnaires, contributors to the map data should come to workshops well prepared. They should obtain the map questionnaire beforehand and - more importantly - should be trained on the data collection during an initial training workshop. The training would be followed-up by in-country data collection (with technical backstopping from WOCAT where required) and subsequently by a concluding workshop where errors can be eliminated and data correlation can take place. A training workshop would also help to identify the right resource persons who can provide the map data. This is also valid for QT/QA and will therefore be discussed further in the TOPIC 4 (quality control) and TOPIC 5/6 (national/regional/global WOCAT and new initiatives).

c) **Link of QM to QA and QT:**
- The link to the database of QT/QA is technically no problem.
- The geo-reference in QT/QA was already discussed in TOPIC 1. Proper reference to QT should however also be made in QM. It should thus be possible to link data from both sides: i.e. to click (in the digital output format of QT) on a technology and view the corresponding map units

or to click on a polygon on the (digital) map and view the corresponding technology/ies (a one-to-many relationship on both sides).

- Although it was thought that some questions in QM are also answered in QT (e.g. on time period, productivity, etc.), they cannot be deleted, as not all occurring map units may have a corresponding QT. Neither are all technologies that are used in the field, reported in QTs and the QT-data most likely refers to several polygons.
- If SOTER units are to be used and links with the QT established, it would also be possible to answer some questions in QT, such as on land use, soils, slope, etc. since that data would already be available through the SOTER database.
- In general it was agreed, that duplications should be minimised. Further elaboration of a revision of QM should take place in a smaller group.

d) Base map GLASOD or SOTER:

- The question as to whether the GLASOD map should be replaced by SOTER maps (at 1:5 Million, hence many more polygons) to provide base map units was discussed at length. In general some characteristics of SOTER can be summarised as follows: the (physiographic) units are based on a standard methodology and physiographic information is available for each polygon, facilitating orientation on the map. Soil information is also available for Latin America. No global coverage as yet (see ISRIC's vision paper), but at least draft (physiographic) maps for Asia, Africa and Eastern Europe are available.
- Some properties of the GLASOD map are: loosely defined physiographic units (without original phys. info), small scale (1:10 to 1:15M), direct link to soil degradation data (but reflecting situation of more than 10 years ago!), global coverage. Moreover, the first WOCAT maps (to date) for Africa were based on GLASOD.
- If SOTER units are used it may not longer be possible to fill all required data entirely at a workshop in view of the larger number of polygons to be described. As a compromise it was suggested that during the initial workshop, GLASOD units are used both for training and for achieving a less detailed spatial overview. The subsequent "homework" should be based on SOTER units. Alternatively, SOTER could be used from the start (but then E. and S. Africa would have to be redone at a later stage to fit in the global map). At the end of the meeting there was consensus that wherever possible, SOTER units should be used.
- In general, a topographic overlay to ease orientation is needed.

e) Map outputs:

- Outputs will consist of hard copy maps and preferably a database/map viewer like the SOTER viewer. The risks of making the full original data available were recognised in that it's easy to produce "nonsense" maps (or other outputs) using (and referring to) "WOCAT information". This also applies to QT/QA. It raises the question of who is allowed to change original data.

f) Other issues:

- With regard to the proposed Questionnaire on Results (D. Cahill), it was noted that many questions are already covered in the mapping exercise. Moreover, the questions asked over-emphasize the static aspects of SWC too much rather than for instance "Land husbandry status".
- The need for links with other spatial databases (e.g. on global change and socio-economic issues) was stressed.

Planning for next year

- Creation of maps from the Thailand data: September/October 97
- Revision of Map Questionnaire: September/October 97
- Contacting RSCU for map data quality control: October 97 and planning of workshop
- Assessment of method for interactive data entry and viewing: September/October 97
- Programming of interactive data entry and viewing tool: October 97 – January 98?

TOPIC 3: Technologies and Approaches: methodology and outputs

Introduction

Outputs / analysis already provided by WOCAT:

- Analysis on incentives and economics
- Analysis from E, S, W and N- Africa (presented at ISCO 1996)

Review Methodology: In the WOCAT workshop and the last Steering Committee meeting in Sigriswil, the revision of the questionnaires on Technologies and Approaches was decided and a first proposal was made (see Sigriswil proceedings Objective 3). The revised version of 1996 was used in the Thai workshop and again improvements were suggested. CDE together with support from ISRIC and FAO made another effort to improve the methodology. The revised version has been copied and waits for approval by the Workshop and the Steering Committee before printing. The development of questionnaires will be finalised shortly after the WS. The development of this methodology is a major output of WOCAT.
The revised QT and QA are currently being translated into French (using the old version and adding in the changes) by OSS, into Spanish by GTZ, into Thai by DLD and into Chinese by a ADB sponsored Technical Assistance project.

- Review Outputs: Objective 2a) from Sigriswil (proceedings p. 16-26)
- Review inventory: 2-page summary
  - proposal: Sigriswil, ISCO and Brochure
  - common concerns:
    Why are so many questions asked if only a few are presented?
    How useful is it to have the brief overview?
    How can automated outputs be made from the QT and QA?

Revision of QT and QA in order to improve data collection, quality and outputs:

Major results:

- Clarified / simplified definitions: e.g. the terms Techniques and Technologies caused a lot of problems. New version only uses „Technologies."
- Adding one major Technology category of management measures to the existing agronomic, vegetative and structural measures: and allowing combinations.
- Clarifying questions and providing clearer options for answers. Even though there are less open answers (with only tickboxes), there is still room for additional options.
- Deleting duplications between QT and QA and reducing the total number of questions.
- Stronger link between QT and QA.
- Improved logical sequence.
- The aim to provide a framework for the evaluation of SWC through the development of QT, QA and QM is attractive to many individuals and organisations.
- Positive feedback: the new QT and QA are substantial improvements. QT was accepted as a suitable tool to describe and assess SWC Technologies.
- Several SWC specialists still raised concerns about QA, whether the structured format really captures the major ingredients and processes of an approach.

Consequences due to the change of the questionnaires:

- The change of the questionnaires also resulted in a change of the DB structure.
- Previously collected data could only be transferred partially to the new DB. The gaps in the new data-sets thus remain to be filled.
- A feedback to resource persons and the finalization of the database for the already collected information was delayed.

Objectives

1. To finalise the questionnaires QT and QA
2. To further develop the outputs on Ts and As

Results (of group work)

Revision of QT and QA:

- Minor changes in QT and QA were discussed and approved.
- In order to have a consistent use of terms, a "WOCAT glossary of SWC terms" has been proposed. A list of terms with their definitions in English is added in Annex 8. For the translation into other languages, these terms will first have to be identified in the respective language and used consistently.

Revising 2 page Technology (T) and Approaches (A) summary sheets (see Annex 5):

- CDE – FAO propose a new summary sheet, automatically generated directly from the database. The new proposal was discussed and improvements were made.
- Changes of the proposed 2 page summary were necessary due to the revision of the questionnaires (question dropped out, questions changed) and due to the fact that automatic generation of a 2-pagesummary can only represent a technology based on a single questionnaire and not a summary over several questionnaires describing similar technologies. (see new proposed list for 2 page summary: Annex 5)
- The disadvantage of the automatically produced version is a slight reduction in the layout possibilities. The main advantage is the automated production from the database. This feature was highly appreciated.
- The handbook should be a folder where each Technology orApproach is documented in a 2-page summary. Each T and A should be presented separately.

Synthesis part in the handbooks

- Once a continent or a region has been covered a synthesis should be made which includes analysis as well as an attempt to group Technologies and Approaches
- The classification of Technologies and Approaches should be revised annually to include new experiences gained.

Planning for next year

- Finalisation and printing of new QT, QA
- Translation of QT, QA into French and Spanish
- Transfer of data to new database
- Preparation of 2-page summary sheets
- Submission of 2-page summary sheets to respondents/resource people
- Quality control of by checking and revising data where necessary

TOPIC 4: Quality control of WOCAT data on Technologies, Approaches and the Map

Introduction

- So far, most of the questionnaires have been filled during regional / national workshops, except for W and N- Africa (those collected by OSS).
- Most of the "old" questionnaires for E. and S. Africa have been filled only by one resource person (during a workshop) without the possibility of contacting other resources. In Thailand 6-8 resource persons were jointly describing the same T and A.
- "Old " questionnaires from W and N Africa were filled under guidance of a SWC Specialist who visited the projects facilitating the filling of the questionnaires.
- There is a need to produce immediate reports: this however should not mean any sacrifice in the quality of data.
- Quality control is critical as users of information could make costly mistakes if their decisions are based on inaccurate information.
- After the revision of the questionnaires QT, QA and QM (after this workshop), there will be gaps in the datasets already collected due to changes made in the questionnaires. How to continue after the revision of the Qs is an issue to be addressed.

Data quality control procedures and filling gaps in collected data :

- The data that have been collected so far have been entered into a Word -DB. After the revision of the questionnaires, the answers that are still valid will be printed into the revised questionnaire and sent back to the authors and to the WOCAT country coordinator, with the request to check the data and complement missing information. The resource persons will be asked to contact other sources of information in order to improve the quality (see proposal in Annex 7). After this the questionnaires will be collected and approved by the national / regional coordinators.

Development of guidelines for data quality control

a) Identification and motivation of contributing SWC specialists:

- For data collection, the best qualified key informants must be identified.
- These key informants then need to be adequately motivated. Authorship recognition should be a strong motivating factor e.g. the 2-page summary in the handbook should be clearly associated with the supplier of the information. Institutional commitment helps ensure quality, as well as drawing attention to the importance of the information collection task. This institutional link helps promote personal commitment. The question as to whether incentives may include remuneration is still unsolved.
- An institutional commitment needs to be assured, to provide a solid foundation to the process.

b) Provision of training:

The workshop model followed in South and Eastern Africa and Thailand was appropriate, and helped the process of development and standardisation of the WOCAT questionnaires. Now, however, it is envisaged that data gathering and quality control to be delegated to regional entities.

- An appropriate scenario would be a 2-day introductory workshop by WOCAT facilitators to introduce the programme to pre-selected local key informants and regional project co-ordinators (the key regional task force).
- During this initial workshop contributing specialists and facilitators who assist in the collection of the data need to be properly trained.
- Several resource persons describing the same Ts and As and providing information for the map have to be identified and to be given the task to jointly produce and agree upon the answers.
- A list of possible sources of information needs to be prepared for contributing specialists. However, these source materials can only be properly identified when filling the questionnaires.

c) Filling questionnaires and assuring high quality

- Key informants have to be given a few weeks after the introductory workshop to complete questionnaires.
- Contributing SWC specialists should allowed sufficient time to answer the questions and to seek advice / a second opinion from an additional SWC specialist and to search for documented information in order to provide good quality data. The filling of the questionnaires should be seen as an evaluation and review of the SWC activity.
- Regional co-ordinator(s) and key informants should hold a follow-up workshop to review questionnaires and clarify the questions and answers.

d) Data processing and further quality control

- Key data are entered into the database during the workshop to produce at least the 2-page summary for Ts and As and to produce draft maps and to produce some analysis using the DBMS.
- Workshop facilitators need to check the data before it is entered into the DB.
- After the workshops, questionnaires are processed and data entered into the DB at the regional or national level.
- Processed data are returned to the national / regional institutions that have taken the responsibility to coordinate WOCAT of their country / region for final review and information sharing.
- The feedback from the national resource persons is used to finalise the data in the DB at the regional level.

e) Finalizing the DB

- A regional / national / task force needs to be set-up to assess the data quality and suggest additional quality checks, clarifications and improvements.
- The DB should be set-up and maintained either on the national, regional and/or global level, depending on the focus of the data collection. Clear guidelines need to be established on the procedures. Some ideas are:
  - Regional co-ordinators should be part of the global WOCAT task force.
  - Post-processing and up-dating of data (another function of quality control) could be ensured by official registration. Registered users would be entitled to access to upgraded information. Authors could cite registered versions of the database in publications. All database questionnaire changes/updates should be identified by version numbers.
  - Additional information is in topic 5.

f) Providing a manual with guidelines:

There is a need to develop a WOCAT manual with guidelines, to explain all the steps necessary to use the WOCAT methodology. This includes the identification of relevant SWC Technologies and Approaches, the identification for the contributing SWC specialists as key informants, training during workshops, filling of the questionnaires, data entry into the DB, quality control, analysis / reporting, updating of the DB and the distribution of the data (see Annex 6: proposed table of contents of a manual).

TOPIC 5: Link: national, regional and global DB

Introduction

- WOCAT was originally designed at the global scale with the assumption that the methodology remains the same for all countries and regions.
- The WOCAT methodology created a lot of interest to be used for further / in depth / comprehensive data collection on the national and regional level.
- There have been requests to modify the methodology to the country / region specific requirements or to suit the interests of the institutions involved. These requests for modification of the methodology imply such data cannot be fully used in the global overview and that the databases are no longer 100% compatible.
- What to do about these requests for modifications and how to handle modified datasets?
- Which standards have to be maintained and where is there freedom to go ahead and change the methodology?
- Who should have access to the methodology (free of charge or with charge)?
- Who should have access to what data (free of charge or with charge)?

Objective

Define the WOCAT programme and activities at national, regional and global level

Results

What is needed?

- PR-Materials to help generate interest from new Partners: Posters, Brochures (including need for further development of WOCAT at global, regional, national level) and Multi-Media CD-Roms, etc.
- Support for the setting up of regional institution mechanisms
- Manuals/Guidelines, TORs
- Outputs at global, regional and national levels

- Terms of Reference for WOCAT programme, its Activities and Outputs at the different levels: global, regional and national

For the 3 levels of WOCAT, (a) the global, (b) the regional and (c) the national, the following different responsibilities and outputs were identified:

	Responsibilities / Activities	Outputs
Global (through MB of WOCAT)	• Overall coordination and management of WOCAT • Methodology development (guidelines, software) • Management of global database • Identification of regional partners • Support for setting up of regional institutional mechanisms • Provide concept, guidance for global, regional and national initiatives • Provision of support and backstopping for regional activities	• Procedures, manuals, guidelines • PR-Materials (Posters, Booklets, CD Roms, etc.) • Global handbooks of Technologies and Approaches • Global map • Software for DBM (including analysis and query)
Regional (through regional institutions)	• Identify and motivate national partners • Provide guidance to national partners • Identify source of funding • Facilitate regional / national activities • Organise workshops • Quality control of data • Data entry • Management of regional database	• Maps (national / regional) • 2-page summaries / analysis for Ts and As (national and regional) • Distribution of outputs to region • DB-updates for Region
National (through national institutions)	• Set up national network of institutions and individuals • Identify and describe SWC Technologies and Approaches • Produce national SWC Maps • Initial quality control ▪ Data entry and management	• Produce completed questionnaires QT, QA, QM (Data) • Produce outputs at national level if not provided by regional level

Proposals for rules and regulations for the use of WOCAT methodology

- WOCAT provides the methodology and the software, and guidelines for national and regional institutions which have an interest in collaboration. In return for the provision of the methodology, these institutions are expected to provide a contribution towards the national / regional data collection, to the analysis and to the further development of the methodology.
- Collaborating institutions are expected to follow the rules and regulations set up for the methodology for the global datasets: For the regional and national datasets, own standards can be developed (always with the consequence that comparison and exchange with other datasets becomes more difficult if not impossible).
- For additional initiatives on the national and regional levels, the collaborating institutions are requested to use as much as possible the global methodology and to keep the changes to a minimum. The more changes are made, the less the results can be compared with the other datasets.
- Additional questions are always possible as long as the original set of data remains the same.
- Leaving out questions without changing anything else would allow comparison and exchange on the selected questions. How to include results of the reduced questionnaires into the global datasets remains to be decided.
- As long as each country / region has supplied its most promising and successful experiences to the global database using the standard methodology, each country and region can go ahead to modify the method and adapt it to their needs.
- To facilitate accurate translation of key works and technical terms, CDE has prepared a list of those terms that need special definition and for each of the translations most of those key terms have been defined and put into a glossary.

Proposals for rules and regulations for data distributions and exchange

- Collaborating institutions provide their data to the Global WOCAT-DB. From national and regional initiatives (beyond those that go into the global datasets), WOCAT would also require a copy of the data collected and the system for storage and analysis.
- The updating of the global DB has to be done centrally through the secretariat of WOCAT or an institution mandated by the Management Board.
- The updating / quality control and the distribution of the national / regional DB will be handled by the leading institution of the initiative.
- Decisions have to be taken by the WOCAT consortium on the conditions for provision of data from the global system to the national/regional institutions and if so, whether a charge should be levied.
- Decisions have to be taken on whether contributing SWC specialists (those who have provided at least one questionnaire on Technologies and their Approaches) would have free access to the national/regional or global dataset.
- It remains to be decided whether interested SWC specialists (and their institutions) who have not contributed to WOCAT, can have access to the full or partial database, and whether they should be charged or not.
- Another outstanding issue is how to make data available on the INTERNET.

TOPIC 6: New initiatives and continuation of data collection

Introduction

- The data collection methodology has been tested in different regions using regional and national workshops and / or a consultant collecting SWC measures.
- How to launch and coordinate different initiatives?
- Translations are currently ongoing: French, Spanish, Thai and Chinese

Objectives

- to identify the ongoing and future initiatives
- to identify the institutional commitments

Results

In the following, the results are presented for different regions according to the statements made by the representatives of the different institutions.

EASTERN AFRICA (Joseph Mburu)

The first regional workshop in Africa was conducted in 1995 in Kenya, supported mainly by RSCU (Regional Soil Conservation Unit), sponsored by SIDA.

Positive experiences:

- Qualified facilitators were present.
- The involvement of local institutions was good.
- The workshop enabled participants to concentrate on the subject for a substantial period.

Negative experiences:

- Workshop was organised at short notice.
- People came without relevant documents
- There was no clear understanding of the expected outputs prior to the workshop.
- Little output or feedback given to the participants to date.

Expectations (general):

- There should be an immediate feedback and if possible preliminary analysis, available to the contributors.
- The revision of maps should be made available very soon after the workshop.

There should be 1-2 additional workshop day(s) to fill gaps in the questionnaires (by resource persons)

A CDCS programme, entitled 'Promoting Farmer Innovations' which is also an UNSO programme, is active in Kenya, Uganda and Tanzania. Here, the QT will be used as a framework for the evaluation of technologies, and the approach itself (the use of farmer innovations in technology development and innovation) will also make a useful contribution to the Approaches database.

SOUTHERN AFRICA

Involvement of CDCS (Will Critchley):

Workshop held in December 1995, involving 8 countries and 28 participants (Zimbabwe, Malawi, Lesotho, Botswana, Swaziland, Namibia, Mozambique, and South Africa).

Positive experiences
- Good regional attendance.
- Good range of outputs.

Negative experiences
- Poor South African attendance.
- Poorly prepared participants.
- Not enough networking time.
- No immediate output from the data collection

In South Africa, 3 projects have been requested to complete a QT and QA and have been offered US$ 100 for each completed questionnaire as an incentive. Will C. has himself voluntarily completed a QA and a QT on an indigenous system of SWC in South Africa. Will Critchley (who is likely to remain in South Africa until the beginning of 1998, before returning to a Netherlands base) will confer with Dirk Pretorius about the possibilities of (a) identifying a South African partner which could take the initiative in organising a South African workshop, and (b) following up the question of regional coordination through SADC. Will Critchley could be available as a resource person / facilitator for the South African workshop.

Additional commitment and vision of CDCS:
Two CDCS projects on Indigenous SWC (ISWC), funded by the Dutch Government, are currently running and will potentially generate WOCAT outputs for 8 countries by mid 1998 (Kenya, Uganda, Tanzania, Zimbabwe, Tunisia, Burkina Faso, Cameroon, Ethiopia). Potentially there could be a supply of interesting data regarding indigenous/ novel technologies.

CDCS is committed to the objectives and methodology of WOCAT, and wishes to continue the long standing cooperation, certainly within the consortium, potentially (if elected) in the Management Board. However, CDCS is an organisation which has to earn its own income, and voluntary contribution in terms of time cannot continue, apart from a token number of days for annual meetings (if required).

ISCW Institute for Soil, Climate and Water of the Agricultural Research Council (ARC) (Dirk Pretorius)

ISCW is interested in participating in the WOCAT programme. A national South African WOCAT workshop has been proposed to be organised on a self-funding basis (the participants being funded by their own organisations).

Suggestions for WOCAT and the collaboration with ARC and ISWC:
- SADC would be a possible regional partner for WOCAT. ARC and CDCS / University of the North (Will Critchley) will approach SADC and report to WOCAT (see also statement by CDCS).
- Since there is no budget allocated so far for WOCAT 1997 – March 98, ISWC will try to obtain for funds in terms of capacity building (for next financial year).
- ISWC needs awareness material from WOCAT to motivate national partners and to identify possible donors and may need „wise men" from WOCAT to assist in SA awareness campaign.
- ISWC will assist in a workshop for South Africa.

WESTERN AND NORTHERN AFRICA (Anneke Trux, OSS)

Continuation of the data collection through OSS (see Annex 12). Statement on ongoing and future planned OSS activities has not been yet submitted.

ASIA

THAILAND (Samran Sombatpanit, Department of Land Development, Thailand)

A national workshop conducted in Sept. 96 in Chiang Mai with 68 participants.

The aims were:
- To set up an inventory/evaluation of SWC in Thailand
- To develop a model for a single-country WOCAT Workshop
- 21 Technologies and 14 Approaches were identified and described for 7 agro-ecological zones of Thailand (detailed description in the Thailand workshop report).

Suggestion for future workshops:
- Translation into other languages should be provided (of the questionnaires).
- Improving motivation of participants to fill out the questionnaires.
- For each questionnaire, a group of 2-6 people may sit together.
- Enough time should be provided at the venue to fill in the questionnaires, since, without support they could not do it at home.
- An economist should be available during the workshop.
- Books and journals should be provided to the participants.
- A well-secluded place should be selected as a venue to prevent disturbance.
- Planning of the workshop should consider other commitments of participants, which may compete with the WOCAT Workshop.

Future interests:
- to continue with the building up of the national WOCAT database and producing the outputs
- to look for working further into the development of an Expert System based on the WOCAT - DB.

There are no specific funds for WOCAT, but resources can be tapped within DLD. This would possible by providing a letter from the MB of WOCAT to DLD, in which WOCAT commits technical and training support to assist DLD in doing WOCAT and other activities in Thailand. Funding could be generated within Thailand or elsewhere.

CHINA (Malcolm Douglas)

Malcolm Douglas is involved in the Asian Development Bank technical assistance (TA) project "Capacity Building for Soil and Water Conservation" which is assisting in the establishment of a Fujian Soil and Water Conservation Centre in Fujian Province China (FSWCC). While initially serving the needs of Fujian Province, the Centre is intended ultimately to serve the eight provinces of the Red Soil Region of China (Fujian, Sianxi, Hubei, Hunan, Siansu, Guandong, Guanxi and Zheijiang). One of the functions of the FSWCC is to serve as a soil and water conservation information centre. One of the tasks of the Technical Assistance (TA) project is to advise on the setting up of appropriate information databases. As one of them is to be a technology documentation database, it was felt appropriate to link up with the WOCAT database rather than working on a new one.

Following discussions between the TA project and the WOCAT secretariat, it is planned to hold a WOCAT workshop for the Red Soils Region of China, in Fuzhou Fujian Province 17-21 November 1997. This is seen as an initial attempt to document Chinese SWC technologies and approaches. The workshop will serve as an entry point for WOCAT in China and will explore the scope and requirements for follow up activities. The workshop is being organised on a cost sharing basis. The TA project and various provincial institutions will meet the workshop costs. WOCAT will provide resource persons, with the TA project covering the air-fares and the DSA costs of one resource person. In addition the TA will provide the services of Malcolm Douglas as a resource person.

The TA project terminates in March 1998 and hence cannot provide long-term support to the Red Soil Chinese WOCAT initiative. The November 1997 workshop will look for ways of providing continuous Chinese and possibly ADB support to in-country WOCAT activities.

ICIMOD: International Centre for Integrated Mountain Development (Tej Partap)
An over-view of the activities of ICIMOD regarding sustainable mountain development in the Himalayan -Hindu Kuch region shows a number of areas of common interest between ICIMOD and WOCAT, and hence the value of cooperation. ICIMOD has already initiated a programme for documenting appropriate technologies for conservation based mountain farming systems. It is also involved in the development and dissemination of SWC approaches and technologies. ICIMOD is therefore in a position to provide WOCAT with additional data sources as well as having an interest in the technologies and approaches contained in the WOCAT database.

As follow up to the ICIMOD participation in the WOCAT meeting and ICIMOD becoming a member of WOCAT, the Centre may be willing to plan some activities for 1998 from existing sources. This shall be confirmed later.

IBSRAM (Mohammed Rais)
An overview of various networks (ASIALAND, AFRSCLAND, etc.) and Managing Soil Erosion Consortium (MSEC) activities emphasised that the IBSRAM mission on Sustainable Land Management (SLM) and the WOCAT framework are complimentary. Currently IBSRAM is involved in Decision Support System (DSS) programme for SLM. WOCAT and IBSRAM can join their efforts in developing DSS for SLM. Further, in South - East Asia, IBSRAM, along with other partners, can act as an active regional partner (e.g. FAO, ASOCON, ICIMOD) in collaborating with WOCAT activities which are mutually beneficial.

ICARDA: International Centre for Agricultural Research in the Dry Areas (Michael A. Zöbisch)
ICARDA is participating in the current workshop to explore future possibilities for collaboration between WOCAT and ICARDA. Given ICARDA's good knowledge of the WANA (Western Asia and Northern Africa) region, its excellent contacts with national scientists and its excellent in-home capacities and facilities (conference, translation, GIS and computer), it was felt that it could serve as a regional centre for WOCAT.

The benefit for ICARDA on linking with the WOCAT program would be:
- Identification of knowledge gaps and help in formulating appropriate research proposals at national and regional levels
- Formulation and justification of research projects
- "training effect" of the WOCAT workshop
- building up spatial baseline data base.

It was proposed that ICARDA should take the initiative in organising a small national/regional WOCAT workshop (e.g. Syria, Sudan, Lebanon) to:
- train ICARDA and national staff to become facilitators for the data collection (but they need training by WOCAT resource persons).
- demonstrate usefulness of WOCAT to ICARDA and the NARS
- identify resources for follow up activities and develop funding proposals (fund, staff etc.)

SOUTH and CENTRAL AMERICA

CIAT: (Ron Knapp)
The activities of the Hillside Program of the International Centre for Tropical Agriculture (CIAT) in Latin America were presented. As an international centre, CIAT is expected to produce goods and services of an international nature. CIAT research is internally organised into projects. Two CIAT projects have expressed interest in formal linkages with the WOCAT consortium including specific tasks that would result in implementing WOCAT procedures for developing databases of SWC Approaches and Technologies. The two CIAT projects are led by Ron Knapp and Richard Thomas. Both projects realise their objectives through collaboration with other international and national GOs and NGOs. CIAT recognises that other international and regional organisations, specifically GTZ, PASOLAC, to mention

two, already have initiated WOCAT related activities in Latin America. CIAT has no wish to overtake or in any way distrust these initiatives. Rather, CIAT would like to complement whatever work other regional organisations wish to carry out and fill critical gaps identified by WOCAT global management for the production of the global SWC database. CIAT plans to contact the GTZ WOCAT initiative for Latin and Central America and other organisations (FAO, RIMISP) in order to join efforts for the data collection in the Latin and Central American region.

For its own part, CIAT is in the position to carry out tasks that would result in WOCAT coverage for Central America within one year without additional funding. Given a continuation of the global WOCAT project beyond one year, CIAT is prepared to take part in a regional effort in the tropical savannahs and Andean regions of South America. In addition, the CIAT project focussing on Hillside agro-ecosystems proposes to demonstrate the strategic value of the WOCAT D-base at the sub-national scale by ex-ante financial simulation analysis of SWC technology scenarios for study site watersheds in the Honduran and Nicaraguan Hillside agro-ecosystems. This activity will be carried out without additional funding from WOCAT. Given the continuation of the core WOCAT project beyond 1998, CIAT would commit itselfto the training of other regional and national WOCAT members in the methodology.

GTZ – Latin America (Helmut Eger / Harald Hunzinger)

Statement on ongoing and future planned GTZ activities in Latin America has not been yet submitted. For continuation of activities see Annex 12.

CLASP / ASOCON (ASIA/PACIFIC) (Gunter Englisch / Rod Gallacher)

A "Conservation of Lands in Asia and The Pacific" (CLASP) Workshop was held in Hanoi, Vietnam July 1997. The workshop objective was to explore possibilities for stimulating information exchange on soil and water conservation in Asia and the Pacific. The workshop focussed on initiatives for the promotion of national programmes to combat land degradation:

a) the Farmer Field School Approach, and
b) WOCAT

Following a general introduction on WOCAT, the workshop participants, through group working sessions and discussion, determined purposes and target groups for a National Inventory of Conservation Approaches and Technologies (NICAT), reviewed WOCAT questionnaires and developed a detailed action plan for a NICAT exercise. The CLASP/NICAT action plan was considered to have wider application for further WOCAT national initiatives.

The future situation is assessed as follows:

1. Interest high, after Thailand and Vietnam Workshops 96-97
   Potential for collaboration: moderate at regional level, medium at national level
2. Capacity to carry out W activities: low at regional level, medium at national level
   Finances to carry out W activities: low to zero at regional level, medium at national level
3. Ability to identify additional capacity: low at region; medium at national level.
   Funding alternatives: low at regional, medium at national level if sufficient lead-time given

GLOBAL

FAO Vision (Rod Gallacher)

- Identify the end users more accurately
- Identify their specific requests and needs
- Design or redesign accordingly (may lead to elimination of X-Cat)
- Widen the circle of partners (= good PR, on partial products)
  to cover extra topics and give „added value" to existing products and to share the burden of developing WOCAT
- Get something tangible on WWW soon
- Make database user-friendly and accessible soon
- Publicise widely future WOCAT regional and country activities to all current collaborators

- Establish and circulate agreed guidelines on conduct and report expectations from all WOCAT events/activities
- Agree on needs and procedures for linking to other relevant database
- Agree on and establish simple guidelines for the practical assessment and use of information and options from WOCAT at the farm level and plot level (=development and production oriented)

FAO Next Steps

- Continue development of database accessing system for QT, QA
- Examine and propose links with relevant existing software
- Physical/financial support to WOCAT Eastern and Southern Africa through FAO's Zimbabwe workshop December 1997.
- Physical support to China Red Soils Initiative (ADB) through savings on D. Cahill travel to Madagascar (postponed) and headquarters support and advice.
- Propositions and examples for WOCAT Image Bank from existing FAO audio-visual material
- Search for other appropriate WOCAT collaborators, linkages and institutional users(including donors)
- Search for financing.

FAO Funding:

Estimated inputs to WOCAT-related activities September 1997 – August 1998: In cashUS$ 58,000: in-kind (database access, workshops, questionnaires etc.) US$ 125,000.

Note with North African, Latin American and Caribbean exercises plus ongoing Asian and Near Eastern and Pacific Island initiatives (FAO, GTZ, OSS, ICARDA), extra backstopping is foreseen at various levels: headquarters, regional and sub-regional FAO. Africa follow-up is included, with desertification component. Higher emphasis on South- and Central America foreseen. FAO staff involvement will more than double over 1996-97.

Launching the WOCAT Programme Worldwide and Funding Considerations (ISRIC's vision)

1 Links between WOCAT and ISRIC Programmes

1. 1 In 1992 (the year WOCAT was launched) participants of an International Symposium on Soil Resilience and Sustainable Land Use (Budapest, 28 September - 2 October, 1992) recommended that the UNEP, ISRIC, ISSS Global database of human-induced soil degradation (GLASOD) be complemented by a similar assessment of areas with sustainable land management system and areas where degraded lands have been rehabilitated. Therefore WOCAT can be seen as complementary to GLASOD.

1.2 WOCAT has used as working template (map) the very vaguely defined physiographic mapping units of GLASOD for its activities in Africa.

1.3 The geographically referenced SOTER database can provide useful and essential information on terrain and soil attribute (so far only very broadly described in the WOCAT handbooks), if the WOCAT units are linked to the SOTER physiographic units. Note that ISRIC has used the SOTER mapping units for South and Southeast Asia to prepare the Assessment of Human-induced Soil Degradation for South and Southeast Asia (ASSOD).

1.4 ISRIC's Vision:
The three programmes (SOTER, WOCAT and GLASOD) whether carried out at global, continental, regional, or national scale are complementary and can strengthen each other to contribute to the goal of sustainable use of land (soil and water) resources.

It should be noted that under FAO's internal programmes (Project 5) the Service Agreement SA 2/S has formulated three components: SOTER, NASOD (National Assessment of Soil Degradation) and WOCAT as major strategy for studies on food security, soil vulnerability, and sustainable agricultural development.

2 Launching the world-wide WOCAT Programme

2.1 Where?

In view of the complementarity of the three programmes the worldwide WOCAT programme could be most effectively implemented in those regions or countries where a SOTER physiographic template has already been developed. These are now available for the following areas:

At scale 1:5 Million:	Latin America and the Caribbean (national verification)
	South and Southeast Asia (national verification)
	West Asia (draft prepared by ISRIC)
	Africa (first draft prepared by FAO consultant)
	Former USSR (first draft prepared by IIASA team)
	Central and Eastern Europe (being implemented)

Note that FAO,UNEP and ISRIC intend to have completed by the year 2002 a 1:5 M world wide SOTER database, replacing the existing 1:5 M FAO/UNESCO Soil Map of the World.

At scale 1:1 Million:	Uruguay; Argentina; Kenya
At scale 1:0.5 Million:	Hungary; Syria; Jordan

At scales between 1:0.5M and 1:1M:

Under negotiation:	Thailand, Hainan, Benin, North Africa (being implemented)
At larger scales:	certain parts in Uruguay and Argentina (completed)

2.2 How?

The Sigriswil workshop (May, 1996) discussed alternatives to regional workshops (mailing returnable questionnaires or sending experts to collect information). Both alternatives had problems. We would suggest the following alternatives as elements of a WOCAT project:

1. A WOCAT implementation workshop and basic training in techniques for data collection. The first day should be attended by potential beneficiaries of the WOCAT product. A core team of national SWC specialists (data producers) and national beneficiaries (WOCAT users) should be identified. This workshop should last no more than one week.
2. Initial data collection. The implementing agencies (the national teams) will commence through dialogue on the spot with farmers and national soil and water conservation agencies the necessary information.
3. Technical assistance and trouble-shooting. A visiting expert well-acquainted with WOCAT and preferably having local knowledge of the region should visit the individual countries (or districts in a national WOCAT approach) and discuss in the field any problems related to the data collection work. This visit should take place around three months after the first workshop.
4. Data compilation, storage and interpretation. The national teams will send all collected information tot he WOCAT Central Unit after a preset period (depending on the size of the region).
5. A WOCAT regional (or national) conference. This conference will be Organized at the end of the project period. The results to be discussed with the producers and users. An important aspect of this conference should be how the collected information will be further used to develop sustainable land management systems. Why are some technologies successful or why did they fail? Bio-physical or socio-economic constraints?
6. Preparation of final technical report and proceedings of the conference.

2.3 Regional or national WOCAT projects?

We suggest to commence WOCAT at national level as a case study, since it might be easier to obtain funding for a national programme than for a regional programme, involving several countries. It avoids language problems; it is less expensive. The conference at the end of the project could be a good opportunity to invite representatives from neighbouring countries. The next phase could then very well be a regional WOCAT project, in which the trained staff of the first (national) WOCAT project could play a major role in training and trouble-shooting (South-South cooperation) still with a supervising role of the WOCAT Central Unit.

Note that ISRIC has developed a project proposal for Thailand, in which SOTER, soil degradation status assessment and WOCAT are linked. All three components have already been identified by the Thais as highly relevant and initial activities have started (at 1:5M scale), but it would be more interesting (and more directly useful) to do this work at a larger scale.

3 Funding Mechanism

The funding constraints WOCAT is facing are very similar to ISRIC's difficulties in obtaining financial support for its SOTER programme. There is considerable verbal support for data and information needs, but this is now rarely accompanied by financial support. Donors are more prepared to accept proposals developed from within the developing countries than from institutes in the western world. Secondly, they are less interested in funding data collection activities than in the uses of these databases and in the uses of the applied database information. It is essential to first identify the potential users in order to create a market for the WOCAT product. These users should be pooled together as a consortium, including both influential national and international users that are recognised by potential donors. Such a consortium from a region is in a far better position to approach potential donors. Potential consortium members are the NAR's, IARC's, national NGO's, national environmental agencies, food policy organisations, resource managers and also the donor institutions themselves (they can utilise the results in other Technical Assistance projects).

The WOCAT brochure is an important asset to familiarise potential donors and users with the objectives, means of implementation and possible outputs. It is important to indicate in P.R. actions that WOCAT is a standardised, internationally accepted framework to describe SWC Technologies and Approaches, and an important tool for evaluation of SWC activities.

The WOCAT brochure however does not make clear how the information is being used. Assumably donors are not so much interested in handbooks on SWC technologies and approaches or in very generalised maps on SWC activities, but rather wish to be informed about success stories in SWC and in reasons why certain SWC technologies fail or were not accepted, so that extrapolation to other regions with similar conditions could be promoted (or discouraged). Many technical assistance projects are conducted in isolation, perhaps benefiting a localised rural community, but without a framework to extrapolate the experience elsewhere.

In a long-term funding strategy the Central WOCAT coordinating unit should look for a sufficient continuing core budget to support its staff and facilities and should generate additional income through extramural funded projects. The WOCAT coordinating unit should establish strategic alliances with other organisations, preferably based on joint activities.

ISRIC will continue to develop project activities in which SOTER, GLASOD, and WOCAT are tabled as a joint package (e.g. proposals for the Sustainable Mountain Initiative of the CGIAR, for its Thailand Programme (see 2.3), for its regional Southeast Asian Information Network programme). ISRIC has included WOCAT in its Bi-Annual Report and its long-term strategy plan. So far, however, these initiatives have not (yet) yielded any results., Since the FAO/AGLS Division has developed its programme under Project 5 in a similar manner, a strategic alliance CDE/FAO/ISRIC might yield more results.

2nd WOCAT Steering Committee Meeting, Murten, Switzerland, 1 - 2 September 1997

Proposed Agenda

1. Approval of agenda and election of chairperson	H. Hurni
2. Introduction to WOCAT: A brief SWOT analysis	H. Hurni
3. Proposal for organisational set-up (rules)	T. Partap / Handout
4. WOCAT programme presentation 5.1996-8.1997:	
Overview and general review	H.P. Liniger
Database management and decision-support systems (1)	W. Critchley
Development and spatial database (QM) (2)	G. v. Lynden
Development of outputs from QT and QA (3)	G. Schwilch
WOCAT initiatives at global, regional, and national scales (4)	R. Gallacher
Data quality assurance (5)	R. Knapp
New initiatives to foster WOCAT (6)	Various
Institutional development review (7)	H. Hurni / Overview
of expenditures 1.5.96-31.8.97 (16 months) (handout)	H.P. Liniger
5. Long-term strategy: Presentation and discussion	M. Zoebisch
6. Proposal and discussion of annual work plan	H.P. Liniger
Funding need and fund-raising 1998-2001	H. Hurni /
Discussion and decision on organisational set-up (rules)	Chair
7. Definition of basic membership (SC Member, Active Member, Task Force Member, Honorary Member, Task Force Non-member)	Chair
8. Closed session of SC (if needed)	Chair
9. Election of MB members, MB Coordinator	Chair
10. Internal organisation of SC	Chair
11. Sub-committee meetings of SC (if needed):	
Financial	
Executive	
Nominations	
Review	
12. Reporting of sub-committees to plenary (if needed)	Chair
13. Discussion and approval of annual work plan	Chair
14. Next SC meeting (modalities, dates)	Chair
15. Any other business	Chair

Minutes of the 2nd Steering Committee Meeting

1. Approval of agenda and election of chairperson

The agenda was approved without amendments, since inputs by participants could be accommodated. Roel Oldeman, director of ISRIC, was proposed and elected as chairman of the meeting.

2. Introduction to WOCAT: A brief SWOT analysis

Hans Hurni presented a brief analysis of current Successes and Weaknesses, as well as possible future Opportunities and Threats relating to the WOCAT Programme:

Successes:
- Framework developed
- Message spread
- Database and Management System growing
- First products emerged

Weaknesses:
- Africa programme slower than anticipated
- Coordination limited due to insufficientfunding
- Funding strategy delayed
- Feedback to data suppliers delayed
- Need for data adjustment

Opportunities:
- User-friendly database emerging
- Mid-term review for fund-raising
- WOCAT approach emerging
- Linkage to global networks possible and desired
- Concrete stakeholder interests manifested

Threats:
- Prolonged implementation because of present low funding level
- Insufficient core for management board
- "Counterpart" services to national/regional initiatives not covered
- User expectations not sufficiently fulfilled

3. Proposal for organisational set-up (rules)

A proposal for an organisational set-up was distributed and shortly introduced for later discussion and amendment in agenda item 9.

4. WOCAT programme presentation 5.1996-8.1997:

Overview and general review:

The activities since the last meeting in May 1996 were reviewed and the major highlights presented (see WOCAT Milestones on page 5). A comparison between the planned activities (during the last workshop and SC meeting) and what has been achieved is presented on page 6. It shows that some of the planned activities for the continuation of data collection in Africa were not carried out but more efforts have gone into the development of the methodology and support to new initiatives. The following topics, which were further developed during the workshop, were presented and discussed:

Database management and decision-support systems (1)
Development and spatial database (QM) (2)
Development of outputs from QT and QA (3)

Data quality assurance (4)
WOCAT initiatives at global, regional, and national scales (5)
New initiatives to foster WOCAT (6)

These topics are presented in the proceedings (Topic 1 – 6) including the adjustments made during the SC meeting.

Additionally the institutional development was reviewed only. At the 1st SC meeting in May 1997 a consortium structure was approved, which included WASWC, the Donors, a Management Board, a Secretariat, WOCAT members, and national and regional Task Forces. The organisational set-up was developed as described in handout to Agenda item 2.

5. Overview of expenditures 1.5.96-31.8.97 (16 months)

The attached Annex 9 shows the contributions towards WOCAT since the beginning of the programme in 1992. It is interesting to note the increasing number of funding institutions and the increased total funds made available to WOCAT during the last 15 months.

6. Long-term strategy: Presentation and discussion

The long-term strategy of the WOCAT programme focused on time horizons of 4 and 10 years. Annex 13 presents the preparatory strategy prepared by the Workshop participants. The need for an accompanying funding strategy was stressed in view of the obvious expansion of the programme. Alternatively, the need for concentration on core expectations was seen as a necessity, if the funding situation remains at the present level.

7. Proposal and discussion of annual work plan

A proposal of the annual work plan for the Management Board and the regional/national activities is presented in Annex 12.

8. Funding need and fund-raising 1998-2001

There is a need for additional funding for the multiple activities of WOCAT. In particular, services requested from the Management Board appear to be much higher than actual capacities permit. An analysis of the activities foreseen in Annex 10 showed that the capacity at the MB level would have to be doubled for the leading institutions CDE, FAO and ISRIC, in order to be able to achieve outputs in time. Prioritisation of the core activities as developed by the meeting are presented in Annex 11. They show that it is possible to achieve certain key activities in time, while others will be delayed due to insufficient funding. This bottleneck might be overcome only if it is possible to achieve funding of projects at national, regional, or global levels which would permit the inclusion of specialist services to be provided by the core group of WOCAT.

9. Discussion and decision on organisational set-up (rules)

The meeting, after discussing the handout of the organisational set-up, decided to amend the structure of the WOCAT Consortium, namely:

(a) to replace the Steering Committee with a **Steering Meeting** (SM) of active members and donors. It was realised that there is little difference between participants attending the regular WOCAT Consortium workshops and the SC following immediately afterwards. Because of the strong mix of institutions which make financial contributions and institutions which also contribute to the WOCAT activities, a distinction between Active Members and SC members is made with difficulty. Every active WOCAT member also makes contributions "in kind", which can be considered equal to donor involvement. Thus, most members assume the role of "steering members". As a consequence, it was decided to hold an annual workshop, whereby three working days are used to develop the programme, the fourth is used to summarise the findings and identify issues for decision-making, and the fifth day would be used as a Steering Meeting to make decisions for the continuation of the programme. Donors would be invited to attend particularly day 4 and 5, whereby they could eventually form a donor support group if needed.

(b) to merge the Task Forces and other members into Active Membership. With the emergence of a series of highly interested regional institutions, it has become difficult to make a distinction between Task Forces and Active Members. Consequently, it was decided to merge these categories into one.

(c) the Management Board was requested to amend the proposed organisational set-up according to the above decisions, and to approve it for the current year, until it could be rediscussed during the next WOCAT Consortium Workshop and the WOCAT Consortium Steering Meeting and amended if necessary.

10. Definition of basic membership (SC Member, Active Member,
Task Force Member, Honorary Member, Task Force Non-member)

Due to the decisions taken in agenda item 9, this definition is no longer necessary.

11. Closed session of SC (if needed)
No closed session is needed due to the dissolution of the SC.

12. Election of MB members, MB Coordinator
As a further step, the members of the Management Board (MB) were elected as follows:

1. Hans Peter Liniger, CDE Switzerland (coordinator)
2. Samran Sombatpanit, DLD Thailand (WASWC representative)
3. Godert van Lynden, ISRIC
4. Rod Gallacher, FAO
5. Anneke Trux, OSS

13. Internal organisation of SC
No need either

14. Sub-committee meetings of SC (if needed):
No longer required

15. Discussion and approval of annual work plan
With the prioritisation and funding need in mind, the annual work plan of the MB and the Active Members was approved.

16. Next SC meeting (modalities, dates)
A suitable meeting would be the ISSS Congress to be held in Montpellier in August 1998. ISRIC, FAO and UNEP would jointly furnish a booth, where WOCAT could also be presented. The workshop and steering meeting could be organised in connection with a planned meeting on the SOTER programme either before or after the congress.

17. Any other business
(a) the MB members assembled after the meeting in order to develop ToR among themselves;
(b) the annual work plan of the MB was then further discussed and prioritised
(c) the procedures for a review to be held in early 1998 had to be designed, so that the MB could take the appropriate follow-up steps.

The participants thanked the Chairman of the 2nd WOCAT SC meeting for his excellent steering.

ANNEXE

ANNEX 1: List of Abbreviations

A	Approaches
ASOCON	Asia Soil Conservation Network, Jakarta, Indonesia
CDCS	Centre for Development Co-operation Services, Vrije Universiteit Amsterdam, The Netherlands
CDE	Centre for Development and Environment, University of Berne, Switzerland
CEC	Commission of the European Communities, Brussels, Belgium
CIAT	Centro International de Agricultura Tropical, Cali, Colombia
CLASP	Conservation of Lands in Asia and The Pacific
DB	Database
D-CAT	Database of WOCAT
DLD	Department of Land Development , Bangkok, Thailand
DSS	Decision support system
ES	Expert system
FAO	Food and Agriculture Organisation of the United Nations, Rome, Italy
GLASOD	Global Assessment of Soil Degradation (UNEP /ISRIC)
GO	Government Organisations
GTZ	Gesellschaft für Technische Zusammenarbeit, Eschborn, Germany
ha	Hectare (10.000 m^2)
IBSRAM	International Board for Soil Research and Management, Banghkok, Thailand
ICARDA	International Center for Agricultural Research in the Dry Areas, Aleppo, Syria
ICIMOD	International Centre for Integrated Mountain Development, Kathmandu, Nepal
IDRC	International Development Research Centre, Ottawa, Canada
IRE	Institute for Resource and Environment, University of British Columbia, Vancouver, Canada
ISCO	International Soil Conservation Organisation
ISCW	Institute for Soil, Climate and Water, Pretoria, South Africa
ISRIC	International Soil Reference and Information Centre, Wageningen, The Netherlands
MB	Management Board of WOCAT
NARS	National Agricultural Research Organisations
NGO	Non-Governmental Organisation
NICAT	National Inventory of Conservation Approaches and Technologies
OSS	Observatoire du Sahara et du Sahel, Paris, France
PASOLAC	Programa de Agricultura Sostenibile en Laderas de América Central
QA	Questionnaire on SWC Approaches
QM	Questionnaire on SWC Mapping
QT	Questionnaire on SWC Technologies
RSCU	Regional Soil Conservation Unit, SIDA, Nairobi, Kenya
SC	Steering Committee
SDC	Swiss Development Co-operation, Berne, Switzerland
SIDA	Swedish International Development Authority, Stockholm, Sweden
SM	Steering Meeting
SOCOX	Soil Conservation Expert System, SOCOX CONSULT, Lochem, The Netherlands
SOTER	Soils Terrain Digital Databases
SSM	Sustainable Soil Management
SWC	Soil and Water Conservation
T	Technologies
TF	Task Force
TOR	Terms of Reference
UNEP	United Nations Environment Programme, Nairobi, Kenya
WASWC	World Association of Soil and Water Conservation, Ankeny, USA
WOCAT	World Overview of Conservation Approaches and Technologies
woCat	WOCAT's cat (cartoon and personal guide)
X-CAT	Expert system of WOCAT (including SOCOX)

ANNEX 2: At the ISCO Conference, Bonn 26-31 August 1996

1. WOCAT at the Dare to Share Fair

Through extra funding by Swiss Development Cooperation (SDC)

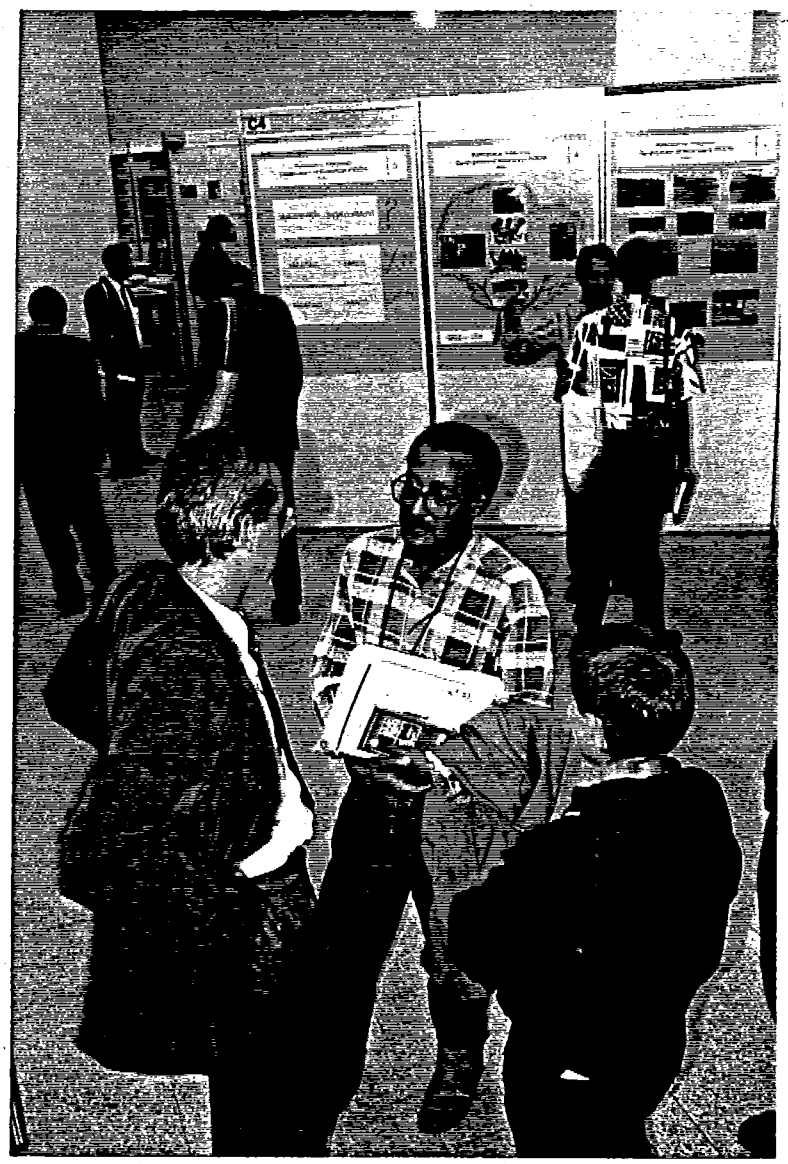
- 15 participants from Africa were sponsored to prepare posters and attend the conference. These participants have all contributed towards the WOCAT programme before by attending regional workshops and filling out questionnaires.
- Over 30 posters for WOCAT were presented (see photo documentation) providing an overview of the programme and showing examples of successful SWC from 10 African countries.
- The WOCAT programme was presented right at the entrance of the Dare to Share Fair and conceptually co-ordinated with
  - 4 SDC projects (from Central America, India, Bhutan and Niger)
  - the presentation of SDC and
  - the presentation of the Centre for Development and Environment.
- WOCAT received many visitors and the exhibition together with the multimedia presentation of WOCAT stimulated lively discussions and feedback.

2. WOCAT presentations during the Conference

- WOCAT was mentioned during 3 key note addresses at the beginning of the conference.
- WOCAT presented its methodology and first results in a paper
- Several meetings were organized during the conference to discuss and enhance further initiatives. The following meetings were held with:
  - over 30 GtZ collaborators from Latin America
  - Eastern and Southern African representatives
  - Western and Northern African participants

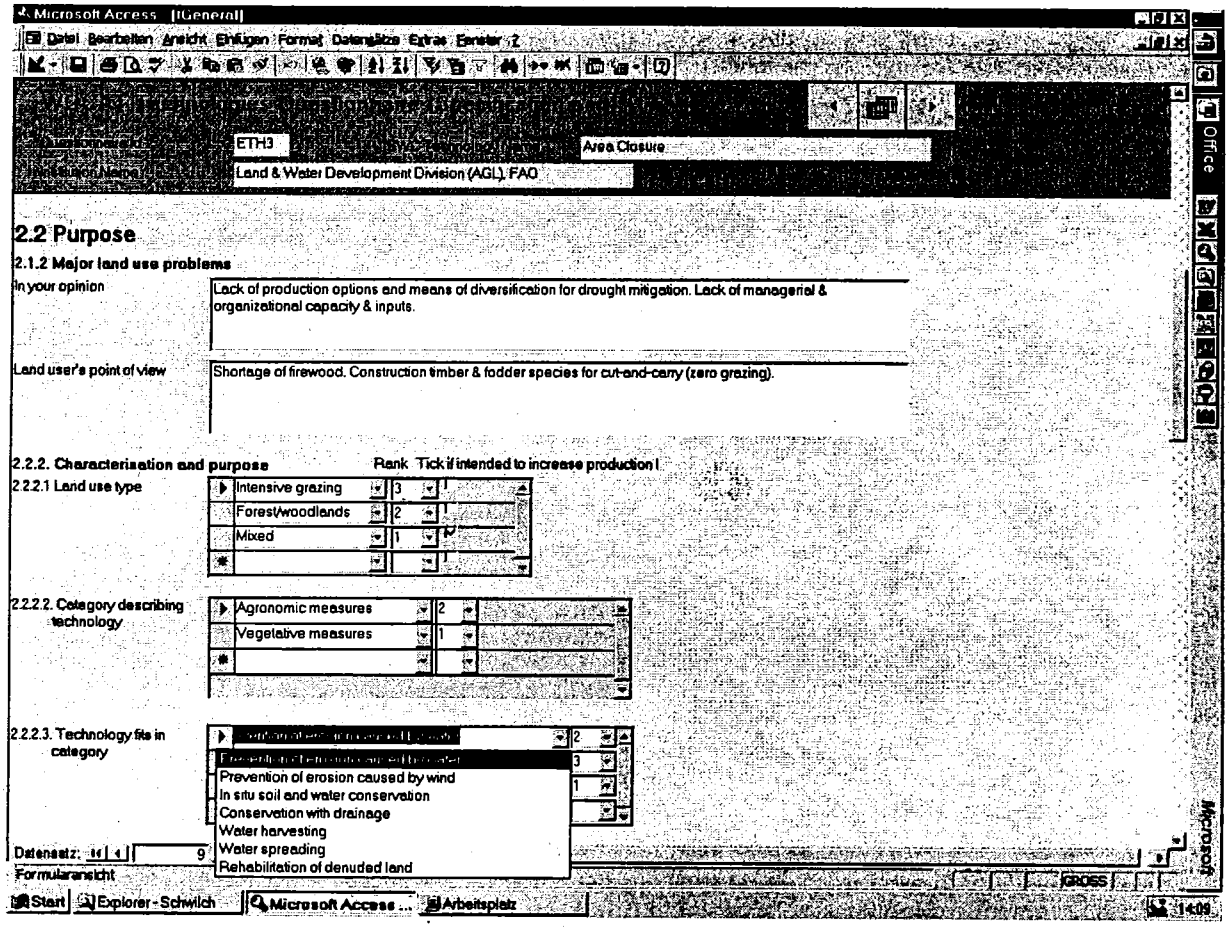
3. Conclusion:

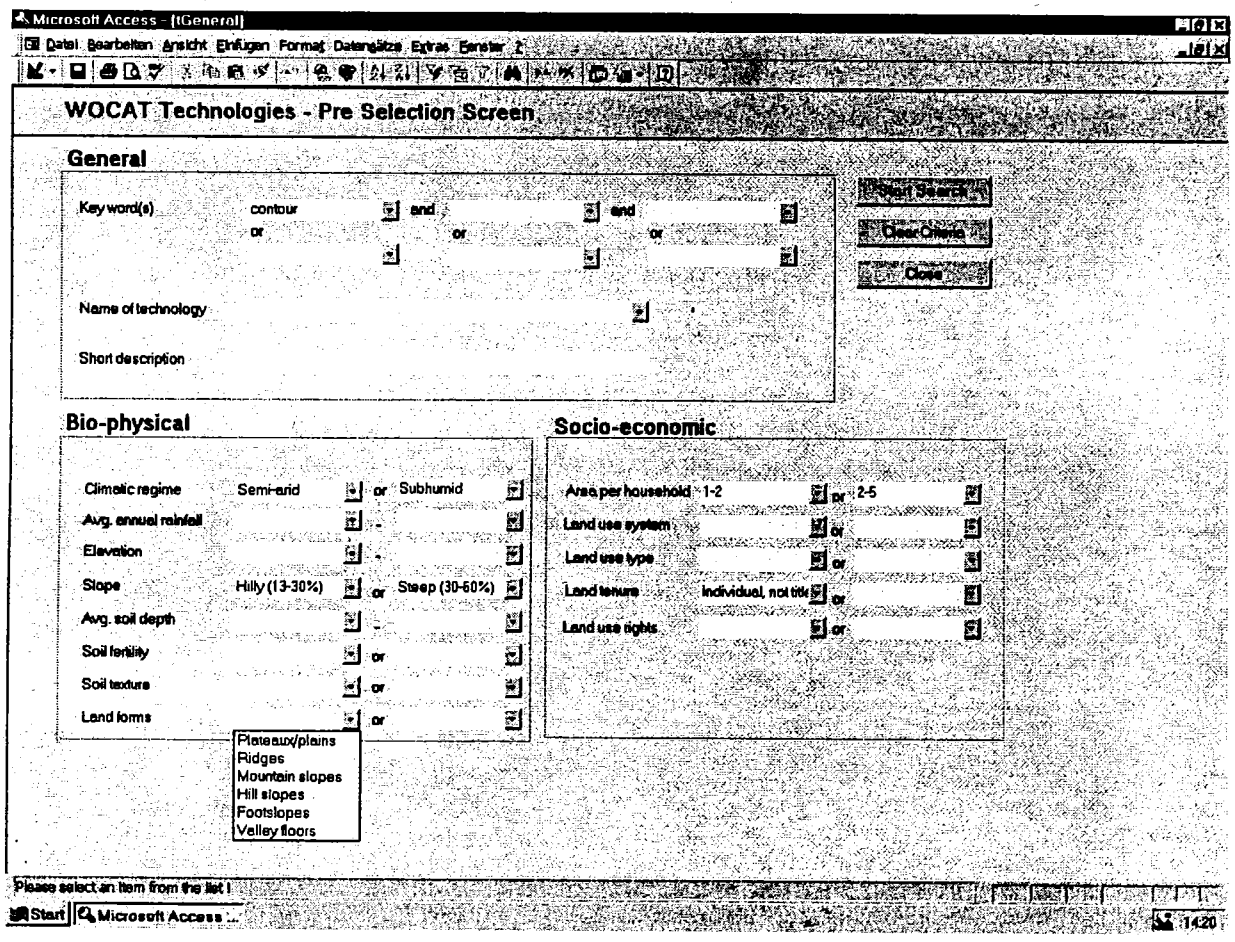
WOCAT made a substantial contribution during the conference and received high attendance and a good feed back.



Lively discussions took place throughout the opening hours of the dare-to-share fair: exchanging experiences, old and new ideas....

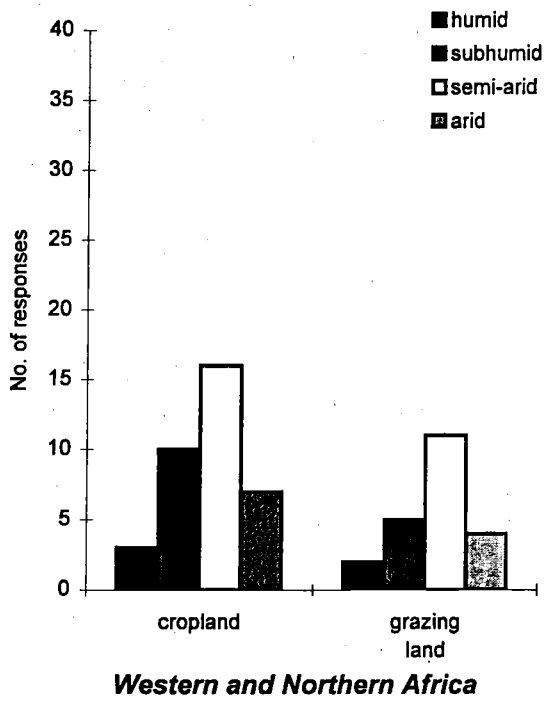
ANNEX 3: Search by Criteria (Query System)



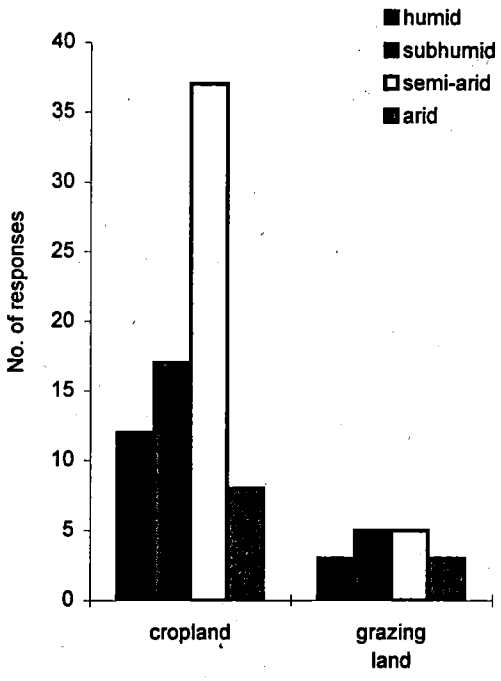


ANNEX 4: Selected Analysis on Technologies and Approaches

SWC Techniques on Cropland and Grazing Land in different Climates

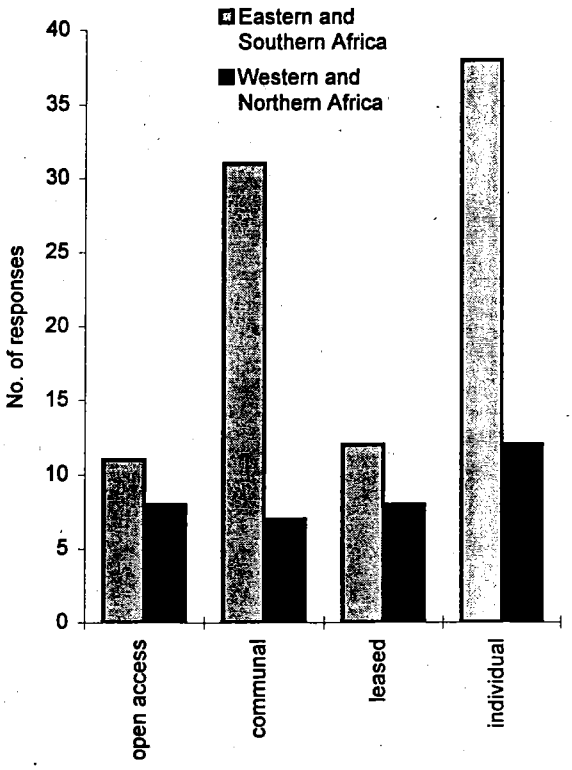


Western and Northern Africa

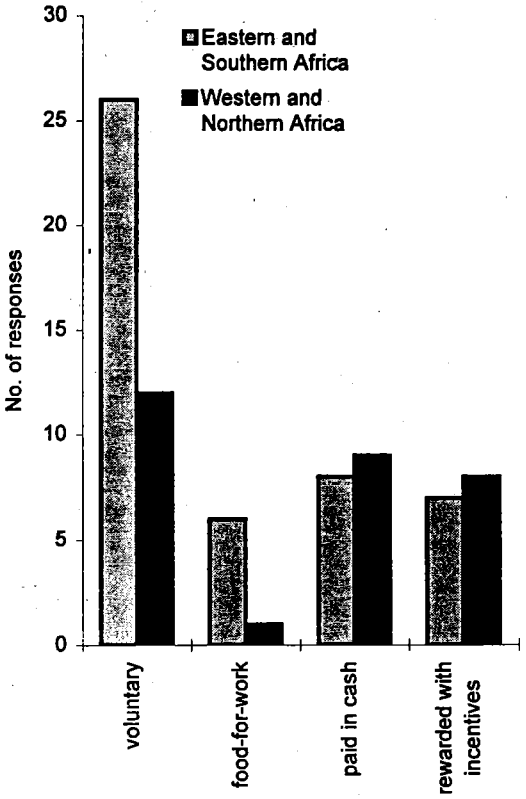


Eastern and Southern Africa

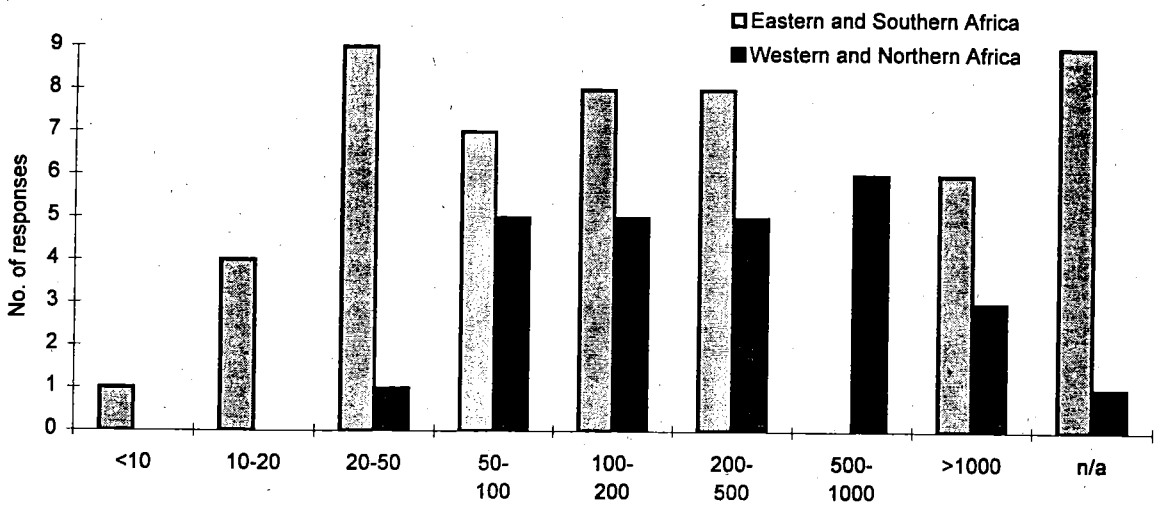
Distribution of SWC Technologies according to land use rights



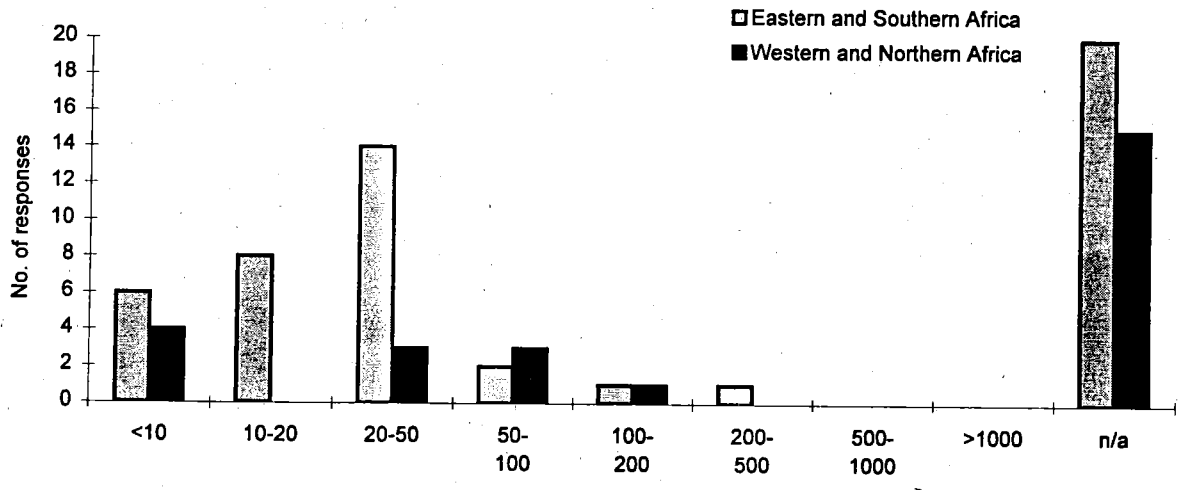
Labour input



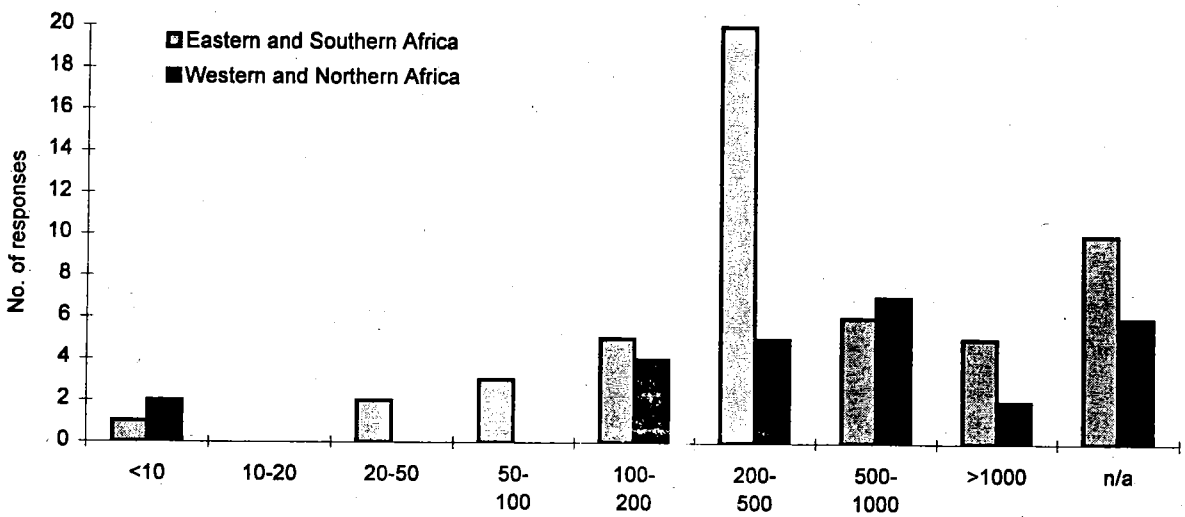
Establishment costs (US$/ha)



Maintenance costs (US$/ha per year)



Average production value of the land where the technology is applied



ANNEX 5: Contents of 2-page summaries

Technology:

Header: name of technology (1.2.1), land use type (2.2.2.1), climate regime (2.5.2), SWC measure (2.2.2.2)
Summary: description (2.1.1), key words (1.2.3), local name (1.2.2), country (1.3.1), classification (2.2.2.3), function/impact (2.2.2.5), photo/drawing (2.1.3), country map (1.3.3)
Setting: biophysical environment with rainfall (2.5.1), altitude (2.5.3), slope (2.5.5), soil depth (2.5.6), soil texture (2.5.7) and socio-economic environment with market orientation (2.6.8.1/2.6.9.1/2.6.10.1), land size (2.6.8.4/2.6.9.3/2.6.10.3), land tenure and land use rights (2.6.1).
Costs and economic evaluation: establishment and maintenance costs in labour days (2.7.1, 2.7.4), productivity with and without SWC Technology, at beginning and after 10 years (3.2.2, 3.2.3, 3.2.4, 3.2.6)
Supportive technologies (2.8)
Adoption: with incentives (3.4.1.1, 3.4.1.2, 3.4.1.3), spontaneous adoption (3.4.2.1, 3.4.2.2, 3.4.2.3).
Evaluation: on-site benefits (3.1.2), off-site benefits (3.1.3), on-site disadvantages (3.1.5), off-site disadvantages (3.1.6), strenghts (3.5.1), weaknesses (3.5.2)
Contributors reference: name, institution, country, date (1.1)

Approach:

Header: name of approach (1.1.2.1)
Introduction: approach description (2.1.1.1), problem description (2.1.4.1), key words (1.1.2.2), country (1.1.3.1)
Summary: main objectives (2.1.5.1), target area (2.1.3.1), target groups (2.2.1.1), approach area (1.1.3.2), initiation date (2.1.1.4), budget (2.3.2.1) and contributors (2.3.1.1), technologies involved (1.1.2.4, 1.1.2.5), indigenous technologies (1.2.8.1).
Setting: household size (1.2.1.2), population density (1.2.1.3), land tenure (1.2.1.1, 2.1.3.2), land use rights (1.2.2.2), wealth (1.2.2.7), non land-use income (1.2.2.9), labour constraints (1.2.2.10), decision making (1.2.2.13, 1.2.2.14), SWC rules (1.2.2.16, 1.2.2.18). land use (1.2.3.1, 2.1.3.3).
Methodology: who designed approach (2.1.2.3), approach towards SWC constraints (2.1.4.3), involvement of local community (2.2.3.1), gender (2.2.3.3), training (2.4.1.3), extension (2.4.2.1), research (2.4.3.2), subsidies (2.5.1.1, 2.5.1.3).
Evaluation: strengths (3.3.2.1), weaknesses (3.3.3.1).
Contributors reference: name, institution, country, date (1.1)

ANNEX 6: Proposal for Development of WOCAT Guidelines

Why do we need Guidelines?

While the overall WOCAT approach is becoming clear – and has been further clarified at the current Murten Workshop – there is a need to refine the methodology and to consolidate it in a single product. The existing brochure is informative and attractive, but it needs to be supported by a document, which contains more specific 'how to go about it' methodological details, as well as rules and the responsibilities of the various stakeholders. Hence there is a requirement for a booklet containing WOCAT Guidelines to help potential (and current) collaborators to understand the specific WOCAT methodology and procedures.

What would it contain?

The WOCAT Guidelines booklet would comprise various sections: these can provisionally be summarised as follows:

- A brief introduction of WOCAT and its objectives
- Responsibilities at all levels (Core/ Global/ Regional/ National etc)
- The database: procedures for data entry and management
- WOCAT data collection workshops: guidelines for organisers and facilitators
- Quality control procedures
- An annex with contacts, addresses

How would it be produced?

It is suggested that a small task force be formed – four or five members (H.P. Liniger and G. Schwilch from Berne plus perhaps R. Gallacher, W. Critchley and G. v. Lynden from outside)– who would initially divide tasks/ sections between themselves and communicate by email. This task force would then convene for perhaps a week in early/ mid 1998 to finalise the product. This task force could also look into the possibility of a video, based exclusively on slides, graphics and texts, which while giving a broad overview of WOCAT, would help to support the guidelines booklet. Naturally there would be extra costs involved: both person days, travel and publication costs. These could be arranged if this proposal is considered to be a potentially valuable idea.

First proposal by:
Will Critchley and
Gudrun Schwilch

ANNEX 7: Procedures of data transfer to new questionnaire and to Access database

Introduction

Due to several revisions of the Questionnaires on Technologies and Approaches, there is a need to transfer the old datasets (Africa, Thailand) in to the new questionnaire and to ask the contributors to complete/update (new questions, restructured questions, etc.) their technology/approach.
The database system was also revised with the original MS-Word database system being replaced by an MS-Access database system. This implies another transfer step, i.e. to import the old dataset into the new Access system. The following list shows the necessary steps for the different datasets.

Transfer of old dataset from old questionnaire to revised questionnaire

G. Schwilch prepared a new mask in MS-Word for the revised questionnaire and updated the menu-structure of the MS-Word database system. Since many questions moved from QA to QT, the corresponding database files had to be copied together for the new QT-database files (file merging). With the new menu, it is possible to reload these files into the mask and to update questions where necessary (identified on a list by G. Schwilch). The original paper version of the QT/QA assists in updating some questions (e.g. questions that were open before, but are structured now). There is a reference list of the origin (in the old QT/QA) of every new question. After that, a new word database file needs to be created (for the later import to access).

- **Eastern and Southern Africa:**

1. File merging: completed by G. Schwilch
2. File reloading: currently under way by F. Kaspar (CDE)
3. QT/QA updating: currently under way by F. Kaspar
4. New QT/QA printing: currently under way by F. Kaspar
5. Creating new database file: currently under way by F. Kaspar
6. Feedback/request for completion of contributors: to be followed up by HP. Liniger/RSCU for Eastern Africa and by HP. Liniger/W. Critchley for Southern Africa.

The printed files from Eastern Africa will be taken to RSCU in Nairobi at the end of September by HP. Liniger and G. Schwilch.

- **Western and Northern Africa:**

1. File merging: to be completed by G. Schwilch (after last updates from B. de Choudens (OSS))
2. File reloading: to be completed by B. de Choudens (OSS)
3. QT/QA updating: to be completed by B. de Choudens
4. New QT/QA printing and feedback: open subject, if necessary at all, needs to be discussed with OSS
5. Creating new database file: to be completed by B. de Choudens, to be sent to G. Schwilch

- **Thailand:**

Thailand used an intermediate version of the questionnaires and needs therefore less updating input.

1. File merging: to be checked if it is necessary, if yes, to be completed by G. Schwilch
2. File reloading: to be completed by Pitsabu Jutvapornvanit
3. QT/QA updating: to be completed by Pitsabu Jutvapornvanit
4. New QT/QA printing and feedback: open subject, if necessary at all, needs to be discussed with Thailand.
5. Creating new database file: to be completed by Pitsabu Jutvapornvanit, to be sent to G. Schwilch

3. Transfer of updated dataset to Access

After the transfer of the old dataset to the new questionnaires, the data then can be imported to Access. To reduce time, this would be done preferably after all existing datasets are transferred and updated to the new questionnaires (but before any feedback from the contributors). G. Schwilch with assistance of F. Kaspar would do this work, after all database files are sent back to CDE. As soon as the data is in Access, the new database then will be sent back to OSS and Thailand. It would not need further work from their side except any updates from the contributors. Any updates from that stage onward would need to be reported to CDE! This is very essential to make sure that there is always an updated and complete version of the overall database in Bern. See further information on database handling in the forthcoming "WOCAT Manual".

ANNEX 8: Glossary of terms

Ad-hoc basis	from time to time/ not on regular programmed basis
Arable land	1) Land which is ploughed, and on which crops are cultivated; agriculture based on the production of field crops, such as sorghum, millet, maize, and vegetables (Timberlake & van der Poel, 1979). 2) Arable land includes all land used in most years for growing temporary crops and which is lying fallow or has not been sown due to unforeseen circumstances. Arable land does not include land under permanent crops or land under protective cover. It is not mean to indicate land that is potentially cultivable but is not normally cultivated (FAO, 1995). -> agricultural area
Area Closure:	land closed by fencing (or other means) for control of grazing or resting
Attitudes	(see list of attitudes in 2.2.2.1)
Backward sloping bench terrace:	A bench terrace in which the terrace bed slopes slightly backwards (towards the terrace riser)
Banks:	linear or contour earth or stone (or mixed material) structures, normally more than 30cm in height, used in conservation systems to impede or impound runoff
Barely palatable grass species	Grass species which are only eaten when more desirable species are unavailable
Baseline information	basic information about the area/ people before project intervention
Bottom up	land users given a strong role in participatory decision making
Breakdown	constituent parts
Browsing	animals feeding from trees and shrubs
Bund and ditch:	a bund in association with a ditch formed from excavating soil to make an adjacent ditch (above or below)
Bunds:	synonym for Banks
Burning	setting fire to pasture/ rangeland to burn off unpalatable dry grass, and to control bush invasion in some circumstances
Capacity building	improving human skills (through training etc)
Cash crop	a crop grown entirely (or mainly) for sale
Clear felling	felling the whole forest at one time
Closed canopy	where a forest has no gaps in its canopy
Communal land	Land managed by a community of land users (larger number of land users)
Community involvement	the active involvement of communities or groups in decision making, implementation, monitoring and evaluation etc
Conservation tillage:	forms of tillage, which minimise disturbance, to the soil surface, thus reducing the potential for moisture, and soil loss
Continuous cropping	a piece of land which is cropped every season without rest
Continuous grazing	grazing land continuously without resting
Contour cultivation:	farm operation, e.g. ploughing and planting, carried out along the contour
Contour ridging:	the creation of ridges along the contour (or at a slight gradient). A series of small (15-20cm height) structures, closely spaced. [N.b. in the Southern African context they may be large 40-50 cm structure, widely spaced – termed contour bunds or banks elsewhere)
Contour tillage:	tillage (ploughing, harrowing, weeding etc) along the contour line
Counterpart agencies	local agencies which work together with an outside agency
Crop land:	land on which crops are grown
Crop production	production of crops
Cropland systems	Land used for the production of adapted crops (Lipton, 1995). Cropland includes all arable land plus land under permanent crops (FAO, 1995). -> agricultural area
Cropping patterns	crops grown: mixtures of crops and sequences
Cropping system	The cropping patterns used on a farm and their interaction with farm resources, other

	farm enterprises, and available technology which determine their cultivation (ASA, 1976). The cropping system is subsystem of a farming system (FAO, 1996).
Cut-off drain:	synonym for Diversion Ditch
Decision makers	those (usually in a senior position) who make decisions
Decision making	the process of making of decisions
Diversion ditch:	a ditch, normally laid out at a slight gradient at the top of a plot of land , intended to intercept and divert concentrated runoff
Downstream effects	impact of erosion or conservation measures at the lower part of the catchment
Early planting:	planting at the beginning of (or in anticipation of) the start of the rains to make best use of limited rainfall and the early 'nitrogen flush'
Ecological Unit	A land area, generally smaller than a Region but considerably larger than a farm with a definable combination of climate, relief, altitude, edaphic conditions, and natural vegetation (IDWG/LUP, 1994).
Economic return	returns (from SWC activities) in terms of economic value
Encroachment of farming:	cleared forest being turned into farm land – often on an illegal and piecemeal basis
Extension worker	staff who carry messages to/ work with land users
Fallow cultivation	An agricultural system with an alternation between a cropping period of several years and a fallow period with natural fallow vegetation. The intensity of rotation, expressed as R, is between 33 and 66 percent (Ruthenberg et al., 1980). R is calculated as the years of cultivation multiplied by 100 and divided by the length of the cycle of land utilisation. This indicates that between 33 and 66 percent of the area, which is available for farming, is under cultivation. In other words the land is cultivated between 33 and 66 percent of the years (Ruthenberg et al., 1980). -> land cultivation systems
Fallow period	An agricultural system with an alternation between a cropping period of several years and a fallow period with natural fallow vegetation. The intensity of rotation, expresses as R, is between 33 and 66 percent (Ruthenberg et al., 1980). R is calculated as the years of cultivation multiplied by 100 and divided by the length of the cycle of land utilisation. This indicates that between 33 and 66 of the area, which is available for farming, is under cultivation. In other words the land is cultivated between 33 and 66 percent of the years (Ruthenberg et al.,1980). -> land cultivation systems
Farming system	Unit of analysis of agricultural production, defined by their components and boundaries and by the types of interactions between the components and with the environments outside the boundaries. Farming systems include all activities, both agricultural and non-agricultural, under the control of farm household units (Caldwell in: Arntzen & Ritter, 1994). A decision making unit, comprising a farm household, cropping, livestock systems and fish production systems, that produces crop and animal products for consumption and sale (FAO, 1996).
Food crop	an edible crop grown entirely (or mainly) for consumption
Food-for-work	provision of food rations in return for work accomplished (usually during periods of drought/hunger)
Food-for-work	provision of food rations in return for work accomplished (usually during periods of drought/hunger)
Forest	1. Land with tree crown cover (or equivalent stocking level) of more than 10 percent and area of more than 0.5ha. The trees should be able to reach a minimum height of 5 m at maturity in situ. May consist either of closed forest formations where trees of various storeys and undergrowth cover a high proportion of the ground; or of open forest formations with a continuous vegetation cover in which tree crown cover exceeds 10 percent. Young natural stands and all plantations established for forestry purposes which have yet to reach a crown density of 10 percent or tree height of 5 m are included under forest, as are areas normally forming part of the forest area which are temporarily unstocked as a result of human intervention or natural causes but

which are expected to revert to forest (UN.ECE/FAO, 1997).

Includes: Forest nurseries and seed orchards that constitute an integral part of the forest; forest roads, cleared tracts, firebreaks and other small open areas within the forest; forest in national parks, nature reserves and other protected areas such as those of special environmental, scientific, historical, cultural or spiritual interest; windbreaks and shelterbelts or trees with an area of more than 0.5 ha and a width of more than 20 m. Rubberwood plantations and cork oak stands are included.
Excludes: Land predominantly used for agricultural practices.
–> other wooded land
2. In other disciplines forests are defined by a large tract of land with a fairly dense growth of trees. This differs in degree from woodland, which tends to refer to more open forest (Timberlake & van der Poel, 1979, modified).
Example: In the FAO Land Cover Classification a range of 60-70% crown cover determines a closed even or uneven canopy.
-> closed vegetation cover

Forward sloping bench terrace:
A bench terrace in which the terrace bed slopes slightly forwards (away from the terrace riser)

Framework: organisational outline

Gender Issues: issues pertaining to the gender (sex) of people

Graded bund: a bund laid out on a gradient (i.e. slightly off-contour, to allow for lateral controlled disposal of runoff at non–erosive velocity)

Graded strip: a strip of vegetation laid out on a gradient rather than the true contour

Grant: a gift in terms of money or kind

Grass/ forage: grasses and other species grazed/ browsed by livestock

Grazing land system: system of management applied to grazing land

Grazing land: The land available for grazing animals; specifically may refer to the land area for the animals of a particular stockowner or community herd (Reynolds, 1997).
Stocking rate can be calculated from the number and size of the animals and the land area, and if the nature of the herbage cover is known, grazing pressure can be calculated (Reynolds, 1997).

Grazing management practices
See Grazing system

Grazing system: system of managing livestock with respect to grazing land (e.g. rotational management of pastures)

Grazing: animals feeding from grazing land

Green manure: a crop grown to be ploughed into the ground to improve organic matter, thereby improving fertility and reducing erodibility

Group land: Land managed by a well-defined group of land users (small number

Gully erosion: erosion that causes the formation of gullies as a result of concentrated runoff

Hedge barrier: a dense hedge, normally of a woody species, planted on the contour to reduce soil loss through slowing surface runoff

Herd Owner: the owner of a herd of cattle/ goats/ sheep etc

Household economics: the economic situation of households (income generation/expenditure etc)

In-line staff: staff already in an existing post (not recruited specifically by the project)

Input: resources put into a system: human, financial, energy, seeds, fertilisers etc

Intercropping: The growing of two or more crops on the same field per year (FAO, 1985b; ASA, 1976), either simultaneously or –in the case of relay intercropping- with an overlapping period.
The simultaneous systems are referring to the cultivation of two or more crops either intermingled or with distinct row or strip arrangement.
Ruthenberg (1980) made a further distinction as follows:
- Intercropping of crops with similar vegetation cycles.
Example: Mixed annual crops are cultivated on one piece of land. Components often found are Legumes combined with Non-Legumes.
– Intercropping through interplanting in medium- or long-term arable crops.

	Example: Perennial crops (trees and shrubs) are inter-planted through cash crops during the period of establishment of the main crop. At a later stage the inter-planted crops might be replaced by cover crops (Euroconsult, 1989).
Land cover	see E10
Land management	(good) management of land for production and conservation purposes
Land management	see 'management measures'
Land ownership	individual (or group) ownership of land, with rights to sell
Land Tenure System	1. Land Tenure refers to arrangements or rights under which the holder holds or uses land. Land rented out is not considered to be part of the holding. A holding may be operated under one or more tenure forms, with each parcel normally operated under one tenure form. All data regarding land tenure should be collected for the same time reference (FAO, 1995). This definition is used for land belonging to an agricultural holding. 2. Land tenure refers to the arrangement or right that allows a person or a community to use specific pieces of land and associated resources (e.g. water, trees, etc.) in a certain period of time and for particular purposes (Riddell, 1997, pers. Com.)< There are many land tenure systems that allow people to use the same property for different purposes. For example, the farming rights can belong to one person, while the trees to another and the fruit of the trees to someone else. Leasing and renting are kinds of land tenure, just as is hare-cropping. Thus, there exists a hierarchy of land tenure interests in the same parcel. Example: One person often holds the right to use a specific resource, another may hold the allocation rights and finally someone else holds the alienation rights (that is the person who can sell the land).
Land use rights	rights conferred on an individual (or group) to use land
Land use:	Human activities which are directly related to the land, making use of its resources, or having an impact upon it. Technically a series of activities carried out anywhere in the world for the purpose of producing goods or benefits. A given land use may take place on one, or more than one piece of land, and several land uses may occur on the same piece of land. (De Bie et al., 1996). It is thus based upon function, the purpose for which the land is being used. An approach has been proposed which defines a land use as a series of activities undertaken to produce one or more goods or services. This definition of Land Use provides a basis for precise and quantitative economic and environmental impact analysis, and permits precise distinctions between land use if required (De Bie et al., 1996). Not to confuse with land cover. A crop is not a land use.
Land user:	anyone who uses the land – whether for crops, livestock production, or other (in the context of WOCAT) production purposes
Leased	the process whereby an owner of land allows another to use it, for a fixed period of time, for a given fee (rent)
Level bench terrace:	a bench terrace in which the terrace bed (the cultivated part) is level
Level bund/ bank:	a bund (bank) constructed on the contour
Ley	A sown pasture used for a specific period of time and which is alternated with crops (Mack & Reynolds, personal communications). Opposite of permanent pasture.
Livestock composition	constituent types and numbers animals within an overall holding of livestock
Livestock management	management practices as applied to livestock, with particular reference to practices such as rotational grazing
Livestock production	production systems involving animals
Livestock	Refers to all animals kept or reared, mainly for agricultural purposes (FAO, 1986). Includes Aquaculture for fish production.
Loan	money which is leant for a given period but must be repaid with/ without interest
Management measures	measures intended to protect land from erosion/ improve production etc, with particular reference to resting and rotating for grazing , or alternatively changing

land use for alternative production system

Management of forests/ woodland
The management of forests and woodlands for production

Minimum tillage: a system whereby crops are planted into the soil with only a light and shallow tillage operation beforehand

Mixed cropping: As defined by Ruthenberg (1980) this includes the growth of two or more crops simultaneously on one plot. Usually involving relay planting. This term is therefore closely linked to multiple cropping.

Mulching: spreading of organic (or other) materials on surface of soil around crops to reduce moisture loss, reduce erosion, inhibit weed growth etc

Off-farm employment employment outside the farm: external jobs

On-the-job during active service (e.g. on-the–job training = in-service training)

Open access Any natural resource that does not have a barrier or obstacle to its use or exploitation sometimes also referred to as nonproperty resources (IDWG, 1994). Examples are many types of fisheries, the ocean, certain freshwater resources, including great lakes and, in the absence of regulation or control, many upland forests resources. Because these resources are available free or at minimum cost, they are frequently overexploited, leading to degradation, pollution or exhaustion (IDWG, 1994).

Open canopy where there are gaps within the canopy of a forest / woodland

Other land includes categories such as wilderness/ recreation land/ roads/ settlements etc

Plantation forestry Forest stands established by planting or/and seeding in the process of afforestation or reforestation. They are either:
- of introduced species (all planted stands), or
– intensively managed stands of indigenous species which meet all the following criteria: one or two species at plantation, even age class, regular spacing.
– Excludes: Stands which were established as plantations but which have been without intensive management for a significant period of time. These should be considered semi-natural.

Population dynamics changes in numbers/ growth rates of population etc

Rainfed The crop establishment and development is completely sustained by rainfall (Euroconsult, 1988, modified).

Ranching Commercial raising of grazing animals, mainly for meat, under extensive production systems usually with controlled boundaries and paddocks (Mack, personal communication).

Rapid/ participatory rural appraisal
methodologies involving land users/ communities together with outsiders in appraisal & decision making etc

Removal of litter removal of fallen branches/ leaves beneath trees (for fuel/ fodder etc) leading to exposure of bare ground

Resource poor land users with few natural or economic resources at their disposal

Resting/closing see area closure

Retention/infiltration ditch:
A ditch (similar to a diversion ditch) but constructed on the contour, with the objective of capturing, and allowing the infiltration of, runoff from above

Rotational Grazing: grassland grazed in rotational sequence allowing recovery of rested areas

Runoff: Portion of total precipitation from a given area that appears in natural or artificial surface streams (I.C.I.D., 1975).

Savannah Savannah vegetation is characterised by a continuous graminoid stratum, more or less interrupted by trees or shrubs. The climate associated with savannah lands is always seasonal wet, warm to hot summers alternating with more or less dry, warm to cool winters (Johnson & Tothill, 1984).
The use of the word Savannah is differing according to the cultural and scientific background. Thus, a precise definition is lacking though the term Savannah is useful in identifying, by structure and function, some unity of vegetation types determined by environmental controls such as climate, soils and fire and providing man with a particular type of agronomic and pastoral resource (Johnson & Tothill, 1985).

Selective felling	felling (harvesting) only certain valuable trees within a forest
Self mobilisation	(see E31)
Sheet erosion	erosion which removes a thin surface layer of soil as a result of 'sheet' runoff
Shifting cultivation	cultivation on a piece of land which is cleared, used for a number of seasons, and then left fallow for several years to recover fertility, while the land user moves to another site
Siltation	the deposit of silt (or other sediment) within reservoirs/ dams/ irrigation schemes etc
Soil management	management of the soil in terms of its conservation and productivity
Stall feeding	carrying fodder to animals confined to a stall/ shed
Steering committee	committee which meets to guide the project and approve plans/reports etc
Target group	group(s) who are directly addressed by the programme as a priority
Technical know-how	technical knowledge
Timber	wood used for construction
Topsoil	The upper part of a soil, with the lower limit set at 30 cm or shallower. The soil depth may be limited by a root growth inhibiting layer which can be hard rock, a pedogenetically indurated layer, a chemically unfavourable layer, or a strongly contrasting layer (FAO, 1995d
Uncontrolled grazing	Grazing without a management system in place leading (often) to erosion and reduced productivity
Uncontrolled logging/felling	Felling of trees without a management system in place leading (often) to erosion and reduced land productivity
Water Harvesting:	the harvesting of runoff from a contributing (or 'catchment') area and its concentration in a collecting area. Usually for crop production in dry areas, or ponding of water for domestic/ livestock use.
Waterlogging	State of and in which the subsoil water table is located at or near the surface (I.C.I.D., 1975). In other words access water is accumulated in the root zone of the soil (Ritzema et al., 1996). In case the land is cultivated this results in a reduced yield of crops commonly grown. Uncultivated land is limited in its use because of the high subsoil water table (I.C.I.D., 1975).
Watershed/ catchment	(Unesco & SMO, 1992, Bergsma et al., 1996) The area which supplied water by surface and subsurface flow from rain to a given point in the drainage system (Bergsma et al., 1996). –> basin
Wilderness	land, often inaccessible and of poor quality, not used for production
Windbreaks:	lines or blocks of trees planted adjacent to prevailing wind to reduce wind erosion and damage to crops
Woodland	Characterised by an open even or uneven tree layer. A herbaceous layer and/or sparse or open shrub layer can be present or not, but the trees are definitely dominant in the total vegetation aspect (Eiten, 1968).
Zero grazing	stall feeding (see above) where the livestock are not permitted to graze at any time
Zero tillage:	a system whereby crops are planted into the soil without primary tillage beforehand

Will Critchley
Murten
Switzerland
02 September 1997

ANNEX 9: Financial contributions in US$ to WOCAT (till 8/97)

	1992 – 5/96			5/96 – 8/97			92-8/97
	Cash	"Kind"	Total	Cash	"Kind"	Total	Total
SDC	450,000		450,000	153,000		153,000	603,000
FAO	170,000	80,000	250,000	110,000	90,000	200,000	450,000
IDRC	70,000		70,000	15,000		15,000	85,000
RSCU	30,000	35,000	65,000		5,000	5,000	70,000
UNEP	80,000	10,000	90,000				90,000
GTZ/OSS	100,000	25,000	125,000	33,000	8,000	41,000	166,000
CDCS		25,000	25,000		5,000	5,000	30,000
ISRIC		35,000	35,000		35,000	35,000	70,000
CDE		30,000	30,000		20,000	20,000	50,000
Thailand				32,000	3,000	35,000	35,000
GTZ/ LA					25,000	25,000	25,000
ADB/China					5,000	5,000	5,000
ASOCON					15,000	15,000	15,000
Total US$	**900,000**	**240,000**	**1,140,000**	**343,000**	**211,000**	**554,000**	**1,694,000**

Note: Inputs of national contributing specialists during regional workshops, meetings and conferences (e.g. ISCO), totalling 3 person-years, are not included in this overview.

Comments:

1. SDC contribution in % of the total budget decreased from 40% (during the first period: 92-96) to 28% (during the last 15 months).
2. A strong input from FAO increasing from 22% to 36% of the total budget despite the general funding difficulties of FAO.
3. In the last 15 months, WOCAT used about half as much as in the 4 years before.
4. Growing number of new contributors (in kind) indicating that the users and potential users invest in WOCAT.

ANNEX 10: Proposed WOCAT Activity Plan for Management Board: Sept. 97 to Aug. 98

ID	ACTITITY	Estimated time input in hours by:			
		CDE	FAO	ISRIC	Others
1.	**Methodology development**				
1.1	Finalising / printing of **QT/QA/QM** in **different languages** (English, French, Spanish), (by December 97)	80		40	200
1.2	**Integrating map and QA/QT** database (Nov 97)	60	40	60	
1.3	Finalising **2-page summaries** for technologies and approaches and developing automated outputs from the database (December 97)	80	40		
1.4	Further **development of data analysis and presentation**. Initiate handbook distribution for Africa (after regional collaborators have finalised quality control)	320	720	100	
1.5	Further development of **data management system** (including data query and analysis) (February 1998).				
1.6	Identifying **further needs for expert system** (working group: R. Knapp (Chair), D. Thomas, M. Rais, A. Vlaanderen. by May 1998)	20	40	20	200
1.7	Developing **WOCAT Kit**:		40	20	40
	Awareness creation tools: Using brochure, hypermedia demonstration, video clips, etc. to produce a video (Proto-type by May 1998).	200	60	60	100
	Manuals for national/ regional initiatives for: data collection, data management, data analysis	160			
1.8	Development of interactive Map data entry tool	160		80	
1.9	Development of WOCAT on Internet: Access to data	?	?	?	?
2.	**Data collection and dissemination of results of ongoing and new initiatives**				
2.1	**Map** production for **Thailand**			60	200
2.2	**Inform contributing SWC specialists** about the progress of WOCAT and provide first results and analysis. (September 1997 and May 1998)	80			
2.3	**Return of data** from old QT and QA in new questionnaire to authors and ask regional WOCAT institution to follow up **quality control and filling of gaps** (Sept' 97)	120			200
2.4	Support regional **data quality control and gaps filling,** and build up the global and regional database mainly for E.&S. & W.& N. Africa (ongoing)	160	160	80	++++
2.5	Support **new regional/national initiatives** (training/backstopping/etc.) China, ICARDA, L. America (ongoing)	160	160	160	++++
2.6	Identify continuation for **filling gaps in Africa**: West Africa workshop, francophone and anglophone; Central Africa; other gaps (by Aug'98)	80	40	40	200
3.	**Programme development, funding and collaboration strategy**				
3.1	**Review of WOCAT**	80	30	25	50
3.2	Development of **general funding and collaboration strategy**	**120**	**120**	**80**	**200**
3.3	Preparing **proposal(s) for the next phase** and further development of **funding** and **collaboration** strategy (by May 98)	120	80	40	200
3.4	Support to regional/national funding proposal	80	80	40	
4.	**Annual WOCAT workshop and Steering Committee meeting**	160	120	80	**300**
	Preparing and holding next year's **workshop/meeting** (May 98?)				
5.	**Communication** among WOCAT members, MB etc. by e-mail	400	400	100	
	TOTAL	**2640 +**	**2130 +**	**1085 +**	**1890 ++++**

ANNEX 11: Priority list of next year activities for the Management Board

Since the estimated hours required to carry out the proposed activities are more than double of the amount budgeted and funded, participants were asked to prioritise the activities. The result is as follows (for the activities and the activity-number, see previous table):

Priority	Points	Activity-ID *1	Activities
1	30	1.3	2-page-summary
	26	1.1	Printing QT, QA, QM
	25	1.7b	Manuals for nat./reg. Initiatives
	22	2.3	Returning data
	22	3.2, 3.3	Proposals for fund raising
2	19	2.5	Support nat./reg. Initiatives
	18	1.4	Development of data analysis / presentation
	18	3.4	Support reg./nat. fund raising
	17	1.5	Development of database management system
	14	2.2	Inform SWC specialists
	13	4.	WOCAT annual meeting
	13	5.	Communication among member
3	12	1.2	Integration of Map and QA/QT database
	11	1.6	Identify further needs for expert system development
	9	1.7a	PR Materials
	9	1.8	Interactive map data entry tool
	9	1.9	Internet site development
	9	2.6	Filling gaps in Africa
4	6	2.1	Map for Thailand
	5	2.4	Quality control in Africa

*1: For Activity- ID: see Table above

The discussion showed that all the activities listed at the end of the priority are important parts of activities set at the top of the priority list and therefore cannot be delayed except for activity 1.6, 1.7a and 1.9. The subsequent discussion showed that either the time period will have to be stretched beyond the next 12 months given the available resources or the inputs into each activity will have to be reduced. It was left to the Management Board of WOCAT to develop a strategy on how to continue, given the fact that the funding limits the activities.

ANNEX 12: WOCAT Activity Plan at Regional /National level

Africa

- **QT/QA data quality control and filling gaps** in Eastern Africa through ***RSCU*** as the regional coordinator. In Southern Africa, a regional coordinating institution needs to be identified through W. Critchley and D. Pretorius (see Topic 5).
- **Map data quality control** and verification for Eastern Africa through ***RSCU***, and Southern Africa as above.
- **Launching additional North Africa or West Asia** initiative by ***ICARDA***, including translation of QT/QA/QM into Arabic/Russian and training of ICARDA staff by WOCAT ***(CDE).***
- Identify regional **coordinating institution for Southern Africa**: South Africa members of WOCAT to link between WOCAT and ***SADC*** (Will Critchley and Dirk Pretorius)
- **South Africa National Workshop.**
- Data **quality control and completion**, and production of outputs for GTZ projects Western and Northern Africa by ***OSS***.
- Launching of WOCAT activities within the Desertification Convention through ***OSS***.
- Identify continuation for **filling gaps in Africa**: West Africa workshop, francophone and anglophone; Central Africa; other gaps (by Aug'98).

Asia and the Pacific

- **China** Workshop for the Red Soils Region (Initial training workshop), November 97 and formulation of follow-up proposals (by ***ADB***)
- Linking ***FESLM*** and WOCAT framework in various ***IBSRAM*** networks (**ASIALAND**, Indonesia, Thailand, Vietnam, Philippines, Laos etc.)
- ***IBSRAM*** collaboration on DSS/ES development for **SE Asia**
- ***ICIMOD***, **HKH Region**: set up of network, awareness meeting and commencement of QT/QA for selected countries.
- ***ASOCON***: collaboration in regional initiatives of WOCAT e.g. with IBSRAM and others.
- **Philippines:** a national initiative was launched during the last ***ASOCON*** workshop including a national workshop in 1997.

Latin America and the Caribbean

CIAT:

- Contact ***PASOLAC/GTZ*** and the ***RIMISP*** network to ascertain intentions and develop work plan (Oct. 97)
- Review pre-release WOCAT DBMS and WOCAT questionnaire in Spanish (Nov 97)
- Collaborate (R. Knapp) on preparation of expert system (4 pages) document (May 98)
- Sub-National analysis of ex-ante adoption potential of SWC technologies identified for Honduras (Dec 98)
- CIAT: prepared to fund Central America Workshop and will collaborate in Phase 3 to search for funding.

GTZ:

- About 30 GTZ projects working on land and water management from Latin America will meet in November to discuss the regional WOCAT programme.
- The translation of the questionnaires into Spanish is ongoing.
- WOCAT will be introduced first in Colombia.
- A GTZ vision of WOCAT in Latin America will be provided in November.
- Funding to cover the GTZ experience in Latin America is available.

ANNEX 13: Vision for WOCAT: Medium and Long Term

The following table is the result of a brainstorming session. The result has not been discussed or finalised, it is presented as food for thought for the next annual workshop and for the MB of WOCAT to further develop:

Global	Regional	National
WOCAT in 4 years	**WOCAT in 4 years**	**WOCAT in 4 years**
• Methodological standards approved World-wide (for data collection etc) • Presentation Kits '*Kit-CAT*' • Handbook of SWC field indicators for monitoring/ criteria for evaluation of TsQuestion/Answer System in place and functioning • Framework for incorporating social /community benefits • Handbook on Technologies and Approaches produced (for certain regions / continents) • Complete WOCAT Map and DB at GLASOD scale for selected continents • Database/info. Collection completed for selected countries/ regions/ continents. • Digital database map accomplished • Easy access to WOCAT results (Internet, Handbooks etc)	• All data / maps accessible at regional internet nodes • Regional synthesis reports • Distance learning for facilitators • Africa covered • Africa phase 2 updates underway • Latin America covered 50% • Asia covered 50%	• Data base available for several countries • Handbooks available for some countries(and regions) • Research and Development needs identified for selected countries • People working in NRM should have the idea what WOCAT is, what it is doing and how they can contribute.
WOCAT in 10 years	**WOCAT in 10 years**	**WOCAT in 10 years**
• Global coverage completed and outputs published • Hyperlink Databases developed • Global phase two updates underway • Automatic extraction of data from other electronic DB's • Impact of WOCAT T/A analyses/DSS visible • Several Bilateral/Multilateral Dev. Programmes using WOCAT outputs • Expert system developed	• 2nd approximation on-going/ completed with data at more detailed scales • Develop Generic Methodologies and Tool Kit (Qs, HBs, DSS) • Strengthened Regional WOCAT Nodes • Up-dating monitoring programme initiated • Database and handbooks available for all regions	• WOCAT would be in the routine work plan of country agencies responsible for NRM • Customisation and Implementation of WOCAT methodology Tool Kit • Introducing WOCAT Methodologies in National Network

WOCAT Workshop Participants: *Murten; 26.08.97 to 02.09.97*

Name	Institution/Department	Address	ZIP	Town	Phone	Fax
Critchley Will R.S.	University of the North Land Management and Rural Development Programme *willc@unin1.north.ac.za*	Private Bag x1106	0727 South Africa	Sovenga	0027-152/268 3177	0027-152/268 3176
Douglas Malcolm	Langenfeld *mgdouglas@gn.apc.org*	Easingwold Road	YO6 1HN United Kingdom	Huby	0044-1347/810815	0044-1347/810815
Eger Helmut	GtZ GmbH *helmut.eger@gtz.de*	Postfach 5180	65726 Germany	Eschborn	0049-6196/79 1312	0049-6196/79 7153
Englisch Gunter	FAO Land and Water Dev. Div. *Gunter.Englisch@fao.org*	Viale delle Terme di Caracalla	00100 Italy	Roma	0039-6 570 53229	
Gallacher Rod	FAO AGL *rodney.gallacher@fao.org*	Viale delle Terme di Caracalla	00100 Italy	Rome	0039-6 570 53085	0039-6 570 56275
Hurni Hans	University of Berne Centre for Development and Environment *hurni@giub.unibe.ch*	Hallerstrasse 12	3012 Switzerland	Bern	0041-31/631 88 22 0041-31/332 76 70	0041-31/631 85 44
Knapp Ron	CIAT Hillsides Program *r.knapp@cgnet.com OR ciat@cgnet.com*	AA 6713	 Colombia	Cali	0057-2/445 0000	0057-2/445 0073
Liniger Hanspeter	University of Bern Centre for Development and Environment *liniger@giub.unibe.ch*	Hallerstrasse 12	3012 Switzerland	Bern	0041-31/631 88 22 0041-31/755 50 31	0041-31/631 85 44 0041-31/755 50 31
Mburu Joseph Kimani	Ministry of Agriculture Agricultural Information Centre	P.O. Box 14733	 Kenya	Nairobi	00254-2/446 467	00254-2/446 467
Oldeman Roel	ISRIC *soil@isric.nl*	P.O. Box 353	6700 AJ Netherlands	Wageningen	0031-317 471711	0031-317 471700
Partap Tej	ICIMOD Mountain Farming Systems Division *tej@icimod.org.np*	P.O. Box 3226	 Nepal	Kathmandu	00977-1/525 313	00977-1/524 509 00977-1/524 317
Prante Wolfgang	FAO Room: B-710 bis *Wolfgang.Prante@fao.org*	Viale delle Terme di Caracalla	00100 Italy	Rome	0039-570 55085	0039-570 56275
Pretorius Dirk	Institute for Soil, Climate and Water Agricultural Research Council *dirk@igkw2.agric.za*	Belvedere Street 600	0001 South Africa	Pretoria	0027-12 326 4205	0027-12 323 1157

Name	Institution/Department	Address	ZIP	Town	Phone	Fax
Rais	IBSRAM	P.O. Box 9-019	10900	Bangkok	0066-2 941 2500	0066-2 561 1230
Mohammad		Bangkhen	Thailand			
	rais@ksc8.th.com					
Schwilch	University of Berne	Hallerstrasse 12	3012	Bern	0041-31/631'88'22	0041-31/631'85'44
Gudrun	Centre for Development and Environment		Switzerland		0041-31/631'88'45	
	gudrun@giub.unibe.ch					
Sombatpanit	Ministry of Agriculture and Cooperatives	Phaholyothin Road	10900	Bangkok	0066-2/579 5397	0066-2/562 0732
Samran	Department of Land Development		Thailand		0066-2/570 3641 (p)	0066-2/561 3029
	kulwadee@mozart.inet.co.th					
Thomas		P.O. Box 14893		Nairobi	00254-2/581 472	00254-2/581 472
Donald B.			Kenya			
	dbthomas@tt.sasa.unep.no OR dbthomas@tt.gn.apc					
Trux	OSS	1, rue Miollis	75015	Paris	0033-1/42 73 32 68	0033-1/42 73 38 27
Anneke			France			0033-1/45 67 26 86
	a.trux@unesco.org					
van Lynden	ISRIC	P.O. Box 353	6700 AJ	Wageningen	0031-317 471735	0031-317 471700
Godert			Netherlands		0031-317 471711	
	VANLYNDEN@ISRIC.NL OR soil@isric.nl					
Vlaanderen	SoCoX Consult	Curieplein 7	7242 KH	Lochem	0031-570 699 893	0031-570 699 666
Anton		Postbus 133	Netherlands			
	ACV@tauw.nl					
Zahner	Swiss Development Cooperation	Postfach	3003	Bern	0041-31/325'92'79	0041-31/325'93'62
Philip			Switzerland			
	philippe.zahner@deza.admin.ch					
Zöbisch	ICARDA	P.O. Box 5466		Aleppo	00963-21 213477	00963-21 225105
Michael			Syria			
	M.Zoebisch@CGNET.COM					