KENYA SOIL SURVEY
Twinning Report July/August 1989

E.M.A. Smaling

ng Centre
and, Soil and Water Research,
Netherlands

Report nr. 3

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E.M.A. Smaling

The Winand Staring Centre
for Integrated Land, Soil and Water Research,
Wageningen, the Netherlands

WINAND STARING CENTRE
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The Winand Staring Centre for Integrated Land, Soil and Water Research (SC) is continuing the research of:

ICW Institute for Land and Water Management Research
IOB Institute for Pesticide Research, Department of Environment
LB Department Landscape Planning of the Dorschkamp Research Institute for Forestry and Landscape Planning
STIBOKA Soil Survey Institute

Project nr. 8541

366rm/7/89

Kenya Soil Survey - Winand Staring Centre
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1. Introduction

From June 26 to July 13, 1989, ir. E.M.A. Smaling of the Winand Staring Centre for Integrated Land, Soil and Water Research (Wageningen, The Netherlands) paid a working visit to the Kenya Soil Survey (KSS). This institute is, since 1972, financially and technically supported by the Netherlands Ministry of Development Co-operation (DGIS). It forms part of the Dutch contribution to the Kenya Agricultural Research Institute (KARI), which falls under the Ministry of Research, Science and Technology. Previous visits took place in May/June 1988 and in March 1989. Reports on these missions are available at the Winand Staring Centre, Department of International Co-operation.

The purpose of the present trip was to discuss:

- the future position of KSS in the governmental setting;
- the signing of the Twinning Agreement between the two sister institutes KSS and Winand Staring Centre;
- running matters at the KSS;
- preparation of and contribution to a special in-house workshop on "reporting and editing", which was held from June 30 to July 13. The details and findings of this workshop are documented in a separate volume. During this workshop, the Staring Centre representative gave a brief overview of the expertise available at the institute, the organizational structure, and the forms of support it can provide to KSS.

From July 17 to 20, a brief familiarization visit was paid to the National Soil Service Project, Tanga, Tanzania. Talks were held with several Tanzanian staff members and with the Dutch expatriate personnel. In Dar-as-Salaam a courtesy call was made to Mr. Semugaruka, the Director of Research and Training in the Ministry of Agriculture.

2. KSS in KARI?

The National Agricultural Laboratories (NAL), to which the KSS forms a section, has still not officially been incorporated in KARI. It is even uncertain whether it will ever materialize, as the Ministry of Agriculture seems not to intend to release the institute. Many other national and regional agricultural research centres have already moved to KARI. This move encompasses a number of important advantages, i.e.:

- entitlement to solicit and receive grants directly from outside donors;
- establishment of an own scheme of service;
- evaluation of personal achievements, promotion on merit;
- in the longer run, establishment of a revolving fund.

Concerning the KSS, KARI is presently taking charge of forwarding the printed budget estimates (Kenyan and Dutch component). KARI also caters for night allowances and fuel for fieldwork, and it is responsible for the Twinning Agreement between KSS and the Winand Staring Centre.
The staff salaries, however, still go through the Ministry of Agriculture, which also retains the personal files of the officers.

A decision on this issue of "parent ministry" is anxiously awaited by KSS staff members as well as by the Staring Centre representative.

3. Twinning Agreement

Twinning Agreements were prepared for all five Netherlands-sponsored KARI activities. They are listed below, together with their proposed twinning partners.

Kenya Soil Survey (KSS)	- Winand Staring Centre (WSC)
National Seed Quality Control Service (NSQCS)	- International Agricultural Centre (IAC)
Wildlife Disease Research Project (WDRP)	- International Laboratory for Research on Animal Diseases (ILRAD)
Dairy Development Project (DDP) Poultry Development Project (PDP)	- Research Station for Cattle, Sheep and Horse Husbandry (assisted by the "Spelderholt" research station).

By July 1989 the documents had still not been signed by all parties concerned (KARI, Ministry of Research, Science and Technology, Treasury, RNE, twinning partners).

The delay in signing the Twinning Agreement implies that the Dutch component of the KSS budget is still not fully accessible:
- Twinning fees and Consultancies are settled in Holland;
- Recurrent costs: one installment (Dfl. 35,000/=) was transmitted, through KARI, to KSS in February 1989; The Royal Netherlands Embassy (RNE) does not intend to transmit another installment until the Twinning Agreements are signed, and proper accounting of the previous installment has been received;
- Funds earmarked for Training and Equipment have been blocked by the RNE until the document is signed; fortunately, a limited amount has been made available for Training in August 1989, not to let the KSS officers suffer from the delay in signing.

Upon signing of the Twinning Agreement, the Dutch Government, and the Winand Staring Centre as its contractor, assume only to be dealing with KARI, and thus the Ministry of Research, Science and Technology.

4. KSS budget matters

The total amount set aside for KSS (Dutch component) for the 1988/1989 financial year is Dfl. 525,000/=. A breakdown of this amount is given in the previous Twinning Report (March/April, 1989).
Only a limited part of these funds was spent up to 30-6-1989 (approximately Dfl. 140,000/=, mainly encompassing twinning fees, consultancies, and recurrent costs).
The remainder can not be spent as long as the Twinning Agreement between KSS and the Winand Staring Centre has not been formalized. As this process is now taking a long time, the KSS starts noticing the negative effects of lack of Training and Equipment funds. The Staring Centre representative requested the Dutch Ministry of International Co-operaion (DGIS) to release part of at least the Training funds.

On the Kenyan side, money is made available by RNE, and finds its way to KSS through KARI and NAL. So far, one installment of Dfl. 35,000/= was made available to KSS. This amount was mainly spent on servicing of vehicles and equipment, and procurement of tyres. Financial procedures within NAL stipulate that any purchase within a year on one item, exceeding the total of KShs. 30,000/= (approximately Dfl. 3,200/=) has to be discussed by the NAL Tender Committee. This body will award the contract to the lowest bidder. KARI headquarters then has to approve of the outcome and authorize the procurement.

A 1989/1990 budget has been drafted by the head KSS, in consultation with the Staring Centre representative (Table 1). It includes the underspending in the previous financial year.

5. Vehicles

The Canter Minibus needs a repair of an engine knock. The quotation for this repair is KShs. 142,000/=. Since the vehicle is rather new (1982), not so frequently used (50,000 km), and highly appreciated by officers on fieldwork duties, it was decided to have it repaired as soon as the funds are released.

Two new landrovers are to be purchased in the near future. The vehicles with number plates ...Y are all old and have frequent breakdowns. The vehicles G470, G544 and the H and J-vehicles are still in good order, and are used for the longer trips. An overview of the present state of the vehicles is given in Table 2.

As the goods trailers have worn-out tyres, new tyres are to be purchased for the vehicles. The replaced tyres can be fixed onto the goods trailers.

Servicing of vehicles still proceeds well. The Dutch funds through RNE have so far reached NAL in time to pay for the services rendered. There have been complaints about the deteriorating services provided by Cooper Motors. The managing director was informed accordingly and he promised to take steps.

It is hoped that in future, KSS can benefit from selling old vehicles, once a revolving fund is established. The station could then reinvest these funds. At present, the Ministry of Agriculture has old vehicles auctioned, whereupon the revenue is transferred to Treasury.

6. Equipment

A list of required goods was produced by the different sections (chemistry, cartography, soil physics lab, field survey, data storage and retrieval).
As soon as funds are released, the materials and equipment can be procured.

7. Staff situation

The following research and technical officers left KSS in the past financial year:
Gachene (R.O., Sept. 1988, Univ. of Nairobi)
S. Mwangi (T.O., Nov. 1988, Egerton College)
Wanjohi (R.O., Dec. 1988, private company)
Kithome (R.O., Jan. 1989, Univ. of Nairobi)

Other officers may leave within months if various pending applications are rewarded. Most officers are anxious to know whether KSS will join KARI or not. The outcome may have serious implications for the future of the station.
New officers have not been appointed since 1986. This is because the vacancies now existing at the KSS are not necessarily rewarded again to the KSS, but can go to any station in the Ministry of Agriculture. Moreover, not every graduate is guaranteed a job anymore upon completion of college.

An important setback is the persistent lack of secretarial assistance. At least two qualified secretaries are needed to take charge of the data storage and report typing backlog.

An overview of the present staff situation is given in Tables 3a (according to designation) and 3b (names and qualification).

8. Field programme

The field programme has been very modest during the past financial year. The only systematic survey presently taking place, is the 1 : 250,000 soil and vegetation/land use survey of the Narok area.
Some few site evaluations have been done, but most officers were kept inside to finalize pending reports.

Commissioned surveys can take place provided that the client (which have in the past been, for example, Sony Sugar, PIU, NIB, KVDA, LBDA) pays for fuel, night allowances, and soil and plant sampling and analysis. As such, the survey is no burden to the modest semi-annual fieldwork budget of KSS which is, at present, almost entirely consumed by the Narok reconnaissance survey.
The KSS Programme Committee sits on this disbursement every six months. Possibly, a part of the Dutch component could be set aside for ad hoc surveys which are not fully covered by a client. Besides, a proforma contract with Terms of Reference and a budget must be drafted by KSS, putting an end to unpaid for services to individuals.

The proposed work programme for the 1989/1990 financial year was recently drafted by the head KSS. It is shown in Annex 1.

Concerning the Range Management Handbook Project (GTZ/Dr. Walther), it is suggested to have two officers (soils, vegetation) join at least one district survey of this project. Participation in the survey of the Garissa District would be a suitable option (September 1989). The officers will gain useful experience in the arid and semi-arid parts of Kenya, and they can step up knowledge on satellite image interpretation. The recent establishment of a Ministry for Arid, Semi-Arid and Wastelands further calls for a increased knowledge on these areas by KSS officers.

Ideas for research, preferably in combination with an on-going survey or a site evaluation, should be carried forward to the head KSS.
The same holds for the attendance of short courses which are relevant to the fields of work of the officer concerned. Preferably a cost estimate should accompany the request and reach the head KSS as such. Consultations between the head KSS and the Staring Centre representative will then lead to nominations. Work output and motivation of the officer concerned is a major selection criterion.

A complete set of Landsat imagery of the country should be available at the station. For the drier areas even occasional procurement of SPOT imagery can be useful.

9. Reporting backlog

An update of the state of reporting is shown in Table 4.

The reporting backlog continues to exist; a number of officers, very capable of doing fieldwork, have problems to write their reports. Simple reports of surveys which comprise some tens of hectares can take 2-3 years to be accomplished. In KARI, where an annual evaluation of officers is foreseen, this situation can not persist. The only way to become a modern and flexible institute, attractive to clients, is when deadlines are adhered to, both concerning fieldwork and report writing.

As a consequence, the idea was brought forward to hold a workshop on bottlenecks in reporting and editing. This workshop took effect in July 1989, and was conducted by Dr. T. de Meester, a recently retired senior soil scientist from Wageningen University. All KSS research and technical officers participated in this workshop. The findings of Dr. de Meester are laid down in a separate report.

10. Exploratory Soil Map

The boundaries of the most important soil map of KSS, the 1 : 1 000 000 Exploratory Soil Map, are no longer the official boundaries of the country. The four maps (soil, agro-climate, soil/climate combined, information base) need adjustments in the Turkana District, which are presently prepared with the help of satellite imagery.

An update of the Exploratory Soil Map is envisaged in the near future. In the Range Management Handbook Project (GTZ), data are collected from the arid and semi-arid districts of the country which are more accurate than the existing information. The LBDA 1 : 250 000 map, and the Malindi, Narok, Transmara, Kilifi and Chuka information can also be incorporated in the update.

11. Public relations

The KSS brochure is not yet past the first-copy stage. Corrections were made by KSS staff, who worked on it for two days continuously. Then, the problem regarding the Exploratory Soil Map (section 10) cropped up, causing another delay.

Framed reconnaissance maps have, to a large extent, been delivered at the relevant agricultural offices and stations. The highlighted lists of publications are still to be prepared and submitted. It is suggested to do this exercise for every district, singling out the reports that refer to the district addressed.

The issue of public relations should be further looked into. Attracting clients should deserve much attention in the years to come.

12. Long-term training

The following officers are due for long-term training in the forthcoming financial year:

West Virginia (BSc):	Njoroge (Jan. 90), Achieng (Aug. 90),
ITC:	Waruru (MSc; 90), Kimani (diploma, 89),
ITC/Denmark:	Mikisi/Osiemo/Maingi (cartogr., 89-91),
Nairobi:	Macharia, Wanjogu (MSc).

The following officers are presently out of office for degree training (not on Dutch scholarships):
Wamicha (Germany, PhD), Kiome (UK, PhD), Gicheru (Nairobi, MSc), Ekirapa (Canada, MSc).

13. Refresher courses, workshops, regional meetings

In the interest of attending regional meetings, and also for officers leaving for training abroad, tickets and foreign cash should be made available, through the RNE or via KARI, provided there is an external account. This problem did not play a role in the earlier stages of the KSS Project, as the Dutch teamleader used to have a foreign account.
Regional meetings encompass the East African Soil Science Society meeting (Kisumu, August 1989), FAO East and Southern African Soil Correlation Meeting (Harare, October 1989), 6th Intern. Soil Conservation Conference (Ethiopia/Kenya, November 1989).

The following officers are considered for short courses and meetings in the financial year ahead:

Waruru	ISRIC, Wageningen: soil reference training course
Kamoni, Aore	Harare: FAO Soil Correlation
Ochieng	Egypt: soil fertility and fertilizer use
Olulo	.....: meeting Cartographic association
Okoth	Nairobi: computer training
Kamoni, Kimotho	ITC, Enschede: informatics in soil science course
Aguno	Tanzania: librarian polytechnic
Grace	Nairobi: secretarial training

USAID-sponsored short courses on remote sensing and GIS are given to a number of KSS officers at the Reginal Centre for Services in Surveying, Mapping and Remote Sensing (RCSSMRS). In June 1989,

Okoth, Kilambya, Ndaraya and Waruru followed short courses on satellite image interpretation and agricultural statistics. This arrangement is highly beneficial to KSS. The programme of this course is annexed to this report (Annex 2).
The Cartography Section has also used the services of this institute.

Some officers followed basic courses in Wordperfect, Lotus 123 and DBase III+ at a neighbouring NAL-project: the Fertilizer Use Recommendation Project (FURP).

14. Library

The appearance and the contents of the library are up to standard and beyond. The library is used by many people in the field of soil science (also ICRAF, University of Nairobi). The major issues to be dealt with in the near future are:
- computerization of the storage and retrieval system;
- proper training for the librarian in charge.

Books and journals arriving through the RNE are registered and then left on the library table for display.

Some journals will be subscribed to again:
- Journal of the Soil Science Society of America
- Journal of Soil Science
- Plant and Soil
- ITC Journal

Investigations into the costs will preceed any subscription.

Front pages of leading journals will be sent to the KSS Library again.

15. Cartography

Problems have cropped up with the
- Aarque Print Vac 190 S (for making lightprints);
- Eykelkamp digital planimeter;
- 3M lettering machine (persistent problem).

Most of the instruments continue to serve well because of the regular servicing which is paid from the Dutch component.

The supply of locally available goods through the NAL Supplies Section is, however, not satisfactory. Upon notification of a lack of developer or film materials, the head KSS and Director NAL fulfil the necessary procedures, and a Local Purchase Order is issued to have the Supplies Section purchase the materials. In

spite of pushing by the Cartography Section, the procurement of these materials can take many months. An obvious solution for this problem is to have the officer go to town himself and purchase the goods.

Discussions were held on training at ITC or in Denmark (Maingi, Mikisi, Osiemo). Moreover, the procurement of materials was discussed. A list of necessary items was prepared by the head of section, Mr Olulo.

16. Data storage and retrieval/GIS

The two Personal Computers are intensively used. Two more PCs (and an extra printer) will be required in the near future. A good development is the further specialization of Mr. Kamoni in the field of data storage and GIS. It is suggested that Gatahi and Kamoni clearly divide tasks as to reinstating the data storage system (ISIS) and guidance to other officers on land evaluation, research on qualitative versus quantitative land evaluation (ALES, WOFOST), and the future role of remote sensing and GIS in the Kenya Soil Survey.

ACRONYMS

ALES	Automated Land Evaluation System
DDP	Dairy Development Project
DGIS	Directorate-General for International Development Cooperation, Ministry of Foreign Affairs (The Netherlands)
FAO	Food and Agriculture Organization of the United Nations
FURP	Fertilizer Use Recommendation Project
GIS	Geographical Information System
GTZ	German Society for Technical Co-operation
IAC	International Agricultural Centre
ICRAF	International Council for Research in Agro-Forestry
ILRAD	International Laboratory for Research on Animal Diseases
ISIS	International Soil Information System
ISRIC	International Soil Reference and Information System
ITC	International Institute for Aerospace Survey and Earth Sciences
KARI	Kenya Agricultural Research Institute
KSS	Kenya Soil Survey
KVDA	Kerio Valley Development Authority
LBDA	Lake Basin Development Authority
NAL	National Agricultural Laboratories
NIB	National Irrigation Board

NSQCS	National Seed Quality Control Service
PDP	Poultry Development Project
NSSP	National Soil Service Project, Tanzania
PIU	Provincial Irrigation Unit
RCSSMRS	Regional Centre for Services in Surveying, Mapping and Remote Sensing
RNE	Royal Netherlands Embassy
R.O.	Research Officer
STIBOKA	Netherlands Soil Survey Institute
T.O.	Technical Officer
WDRP	Wildlife Disease Research Project
WSC	Winand Staring Centre for Integrated Land, Soil and Water Research
WOFOST	World Food Studies

ITINERARY

17-6	14.00	Departure Amsterdam
18-6	01.00	Arrival Nairobi JKA
	evening	FURP - Discussions Dr. G. Duerr, Co-ordinator
19-6	morning	KARI - Mr G. Hinga, ass. director Soils, Water and other Resources
	afternoon	KSS - Mr S.M. Wokabi, head
20-6		Range Management Handbook - Mr. L. Touber (Winand Staring Centre)
21-6	morning	RNE - Mr L. Jacobs (second secretary)
	afternoon	KSS - Mr. Wokabi
22/23-6		Visit to Machakos area
24/25-6		weekend
26-6		KSS - Mr Wokabi
27-6		KSS - Mr Wokabi Cartography Section (Olulo, Maingi, Mikisi, Osiemo) Library (Aguno)
28-6		KSS - Data Storage and Retrieval Section (Kamoni, Kimotho) Field Survey Section (Aore, Okoth, Mainga) Land Evaluation Section (Gatahi, Situma, Achieng)
29-6		KSS - Mr Wokabi Field Survey Section (Waruru, Rachilo, Ndaraya) NAL - Agro-Chemistry (Oduor, Ayaga)
	evening	Discussions Dr. R. Brinkman - FAO

30-6	morning	UNEP - Dr. Croze, Mr. Mendoza, Mr. Ayoub, Mrs. Schomaker
	afternoon	KSS - Workshop preparations with Dr T. de Meester and S.M. Wokabi NAL - briefing Dr. F.N. Muchena, director
1/2-7		preparations Workshop with Dr. de Meester
3-7	morning	opening Workshop - Dr. Muchena, Mr. Wokabi, Dr. de Meester
	afternoon	meeting KARI - Mr. Hinga, Jacobs, Wokabi
4-7		report write-up + attending workshop
5-7	morning	attending workshop
	afternoon	excursion workshop participants to RCSSMRS
6-7	morning	attending workshop
	afternoon	lecturing in workshop - Land Evaluation
7-7	morning	lecturing in workshop - Modern Developments in Soil Science
	afternoon	meeting KARI - Messrs. Hinga, Kamau, Dr. Wachira, ass. directors, Mr. Jacobs, Mr. Wokabi
	evening	Mrs. W. Ferguson (FAO ass. expert RCSSMRS)
8-7		report write-up
9/12-7		visit to Kisii-Homa Bay area
13-7	morning	RNE - debriefing Mr. Jacobs KSS - final discussions Mr. Wokabi NAL - discussions Mr. J.N. Qureshi, head Agro-Chemistry
	afternoon	Windup session workshop (speeches and beer) NAL - debriefing Dr. Muchena FURP - discussions Mr. S.M. Nandwa, Deputy Co-ordinator
	evening	Dinner and workshop evaluation with Mr. Wokabi and Dr. De Meester
14/16-7		visit to Kilifi-Kwale area
16-7	18.30	arrival in Tanga, Tanzania
17-7		National Soil Service, Mlingano Discussions with Dutch Project staff and with (acting) heads of section Dr. B. Kiwambo (laboratory) and J. Magoggo (field survey)
18-7		Discussions and field trip with Mr. Kaihura, Mr. Mbingu, Mrs. Kalumuna and Esther (soil fertility); Dr. W. Siderius (ITC); report write-up
19-7	morning	Discussions Mr. A.J. van Kekem (Dutch teamleader NSSP)
	afternoon	Departure to Dar-es-Salaam

20-7		Discussions Mr. S. Semugaruka (Ministry of Agriculture, Director of Research and Training), Mr. J. Floor (soil fertility expert to NSSP) RNE - Mr. M. Brouwer (third secretary)
	20.45	Departure Dar-es-Salaam
21-7	6.00	Arrival Amsterdam

Table 1

TENTATIVE BREAKDOWN OF NETHERLANDS COMMITMENT TO KSS FOR FINANCIAL YEAR 1989/90 (IN Dfl'000)

Balance of funds for the year 1988/89 approx.			385
		Funds for the year 1989/90	705
			1090
I	Institutional support		80
II	Personnel (consultancies)		40
III	Investment/Equipment (427)		
	9421	Soil survey equipment	25
	9423	Cartography equipment	150
	9424	Laboratory equipment	35
	9425	Office equipment	32
	9426	Maps, journals, printing of maps	35
	9430	Vehicles	150
IV	Recurrent costs (193)		
	9520	Service contracts of equipment	20
	9530	Running costs and maintenance of vehicles	80
		Purchase of fuel	35
		Travelling and accommodation	40
	9540	Stationery	18
V	Training (320)		
	9610	Training in Netherlands and other countries	235
	9620	Training in Kenya	54
	9620	Visits, regional seminars, workshops and conferences	31
VI	Miscellaneous		30
		GRAND TOTAL	1090

Table 2

Vehicles, at KSS, year of Purchase and Condition

Type	Registration	Year of Purchase	Condition
Landrover LWB	GK H348	1985	Serviceable
Landrover LWB	GK J501	1985	Serviceable
Landrover LWB	GK J501	1985	Serviceable
Peugeot 504/S/W	GK 158Y	1979	Serviceable
Peugeot 504/ S/W	GK 900S	1978	Serviceable
Peugeot 404 P/Up	GK F 229	1982	Serviceable
Landrover LWB	GK G470	1983	Serviceable with minor repair requirements
Landrover LWB	GK 644	1983	Serviceable with regular minor repair requirements
Landrover LWB	GK 469)	1983	Serviceable with consistent serious repair requirements
Landrover LWB	GK 487Y) require immediate replacement	1980	"
Landrover LWB	GK 486)	1980	"
Landrover LWB	GK 99Y)	1979	"
Landrover LWB	GK 98Y)	1979	"
Landrover LWB	GK 97Y)	1979	"
Canter Mini Bus	GK F190	1982	Require major engine repairs
Goods trailer	GK 248H		Serviceable
	GK 249H		"
"	GK 252H		"
"	GK 889L		"
"	GK 967L		"
Water tanks	GK 247H		"
	GK 250H		"
	GK 251H		"
"	GK 960L		"
	GK Z 448		"

Cadre of KSS Staff, present and future

Designation	PRESENT	TOTAL REQUIRED	SURPLUS	DEFICIT
Head of section	1	1	-	-
Soil surveyors	6	8	-	2
Vegetation/Land use survey	2	2	-	-
Land evaluation specialists	2	3	-	1
Soil micromorphologist	1	1	-	-
Soil physist	1	1	-	-
Soil chemists	2	3	-	1
Agronomist	0	1	-	1
Climatologists	1	2	-	1
Agro-economist	1	1	-	-
Agronomist	0	1	-	1
Technical officers	8	9	-	1
Field/Technical Assist.	11	13	-	2
Laboratory technologists	1	2	-	1
Laboratory technicians	2	3	-	1
Cartographers	2	7	-	5
Draughtsmen	1	0	1	-
Photo-lithographers	0	3	-	3
Shorthand typists	0	1	-	1
Copy typists	2	4	-	2
Drivers	11	15	-	14
Artsan	0	1	-	1
Subordinate staff	16	16	-	-

Table 3b

KENYA SOIL SURVEY (August 1989)

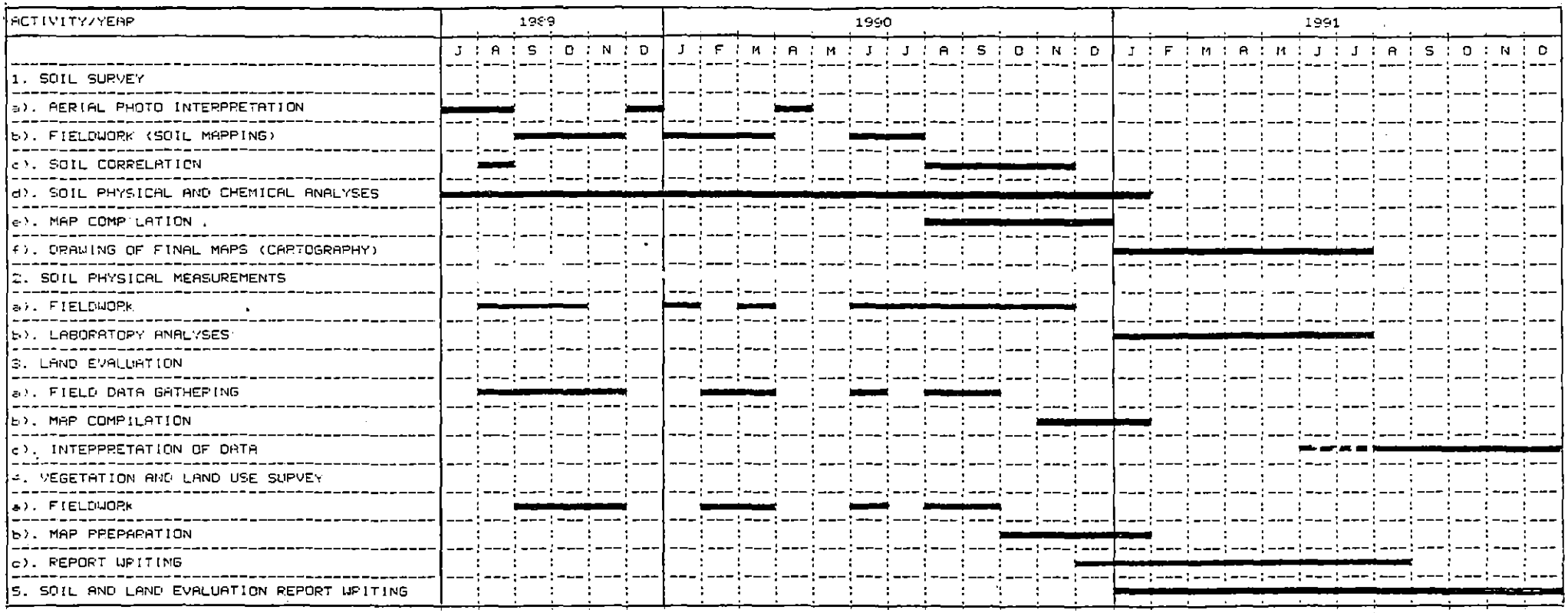
S.M. Wokabi, MSc	- Soil Surveyor/Ag. Head
W.N. Wamicha, MSc	- Soil Surveyor (Study leave)
M.M. Gatahi, MSc	- Land Evaluation Officer
R.L.M. Kiome, MSc	- Soil Surveyor (Study leave)
P.F. Okoth, MSc	- Soil Surveyor
W.W. Aore, MSc	- Soil Surveyor
P.T. Kamoni, MSc	- Land Evaluation Officer
F.M. Ndaraiya, MSc	- Agro-climatologist
M. Situma, MSc	- Ecologist/Vegetation Surveyor
D.W. Kilambya, MSc	- Agro-economist
N.P. Ochieng', MSc	- Soil Chemist
J.N. Kariuki, BSc	- Soil Chemist
J.R. Rachilo, BSc	- Soil Surveyor
B.K. Waruru, BSc	- Soil Surveyor
A.E. Ekirapa, BSc	- Soil Management Officer (Study leave)
P.T. Gicheru, BSc	- Soil Surveyor (Study leave)
S.N. Wanjogu, BSc	- Soil Surveyor
P.N. Macharia, BSc	- Ecologist/Vegetation Surveyor
J.M. Kibe, Dip. Soil Survey	- Technical Officer (Soil Survey)
F.M. Shitakha, Dip. Soil Survey	- Technical Officer (Soil Survey)
C.R.K. Njoroge, Dip. Soil Survey	- Technical Officer (Land Evaluation)
N.M. Achieng, Dip. Rural Survey	- Technical Officer (Agro-economics)
H.C.K. Kinyanjui, Dip. Soil Survey	- Technical Officer (Micromorphology)
E.M. Mare, Dip. Soil Survey	- Technical Officer (Soil Management)
P.W. Kimotho, Dip. Soil Survey	- Technical Officer (Soil Survey)
P.M. Mainga, Dip. Soil Survey	- Technical Officer (Soil Survey)
D.M. Olulo, Cert. Soil Cartography	- Cartographer
P.M. Maingi, Cert. Soil Cartography	- Cartographer
J. Osiemo, Cert. Photolithography	- Photolithographer
L.H. Mikisi	- Assistant Cartographer
P.K. Kimani, Cert. Agric.	- Technical Assistant
T.J. Wachira, Cert. Agric.	- Technical Assistant
E.N. Kinyanjui, Cert. Agric.	- Technical Assistant
H. Onyono, Cert. Field Tech.	- Technical Assistant
B.N. Kitonyo, Cert. Agric.	- Technical Assistant
C.N. Kariuki, Cert. Agric.	- Technical Assistant
B.G. Mwangi, Cert. Agric.	- Technical Assistant
J.S. Wataka	- Junior Technical Assistant
P.M. Waweru	- Junior Technical Assitant
N. Gachini	- Laboratory Technician
D.K. Kariithi	- Laboratory Technician
A.M. Agevi	- Laboratory Technician

STATUS OF THE REPORT WRITE-UP BACK-LOG

Code	Survey Area	Year started	Total area	Author	Status July 88	Status June 89
R5	Makueni	1976	305000	Dr. Muchena	dwp	np
R8	Busia	1978	280000	J.R. Rachilo	dwp	dwp
R9b	Galole	1979	50500	J. Kibe/Muchena	md	md
R10	Bondo	1982	125000	C.K.K. Gachene	dwp	sup
R13	Transmara	1983	230000	Wamicha/Okoth	sup	np
R14	Malindi	1983	350000	M.M. Gatahi	dwp	continues
R15	Narok	1984	9970000	W.W. Aore	fd	continues
R16	Chuka-Nkubu	1985	310000	R.M. Kiome	edc	sup
S15	Marimanti.R	1983	820	J.M. Kibe	dwp	dwp
S17	Bukura	1984	20	J.M. Kibe	dwp	draft ready
S18	Marimanti.C	1984	5000	S.M. Wokabi	ty	prd
D44	Mathina	1987	250	H.C. Kinyanjui	dwp	ed
D42	Hodan Farm	1985	60	E. Mare	ed	ed
D47	Sigor Irr.	1988	70	S. Wanjogu	dwp	ed
D48	Maya Farm	1988	255	F.M. Ndaraiya	dwp	ty
P46	Transmara	1982	260000	P.F. Okoth	dwp	dwp
P63	Magarini	1983	52000	Dr. Muchena	dwp	dwp
P84	Mambai	1987	10	F.M. Shitakha	dwp	dwp

dwp - draft report write - up, md - map drawing, sup - report write - up suspended, fd - field work discontinued, edc - entering draft in the coput
ty -typing, ed - editing, pr - printing, prd - printed, np - no progress

TITLE: NAROK RECONNAISSANCE SOIL SUPVEY WORK PLAN (AUGUST 1989 - DECEMBER 1991)



ANNEX 1: Tentative workplan Kenya Soil Survey 1989-1990

SEMI-DETAILED SOIL SURVEY WORKPLAN (JANUARY - DECEMBER 1990)

ACTIVITY/MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1. Soil survey fieldwork	━	━	━									
2. Soil physical field measurements			━	━								
3. Soil chemical and physical analyses					━	━	━					
4. Report writing and map compilation					━	━	━	━				
5. Drawing of final map							━	━				
6. Typing, editing and printing of maps and report								━	━	━		

ACTIVITY	DURATION (Weeks)	WHERE	BY WHOM
1. Soil survey fieldwork	9	Field	2 AO's, 2 TA's, 2 Drivers and Casuals
2. Field physical measurements	6	Field	1 AO or TO, 1 TA and 1 Driver
3. Lab. physical and chemical analyses	8	NAL	1AO, 1 Lab. Technician
4. Map compilation and report writing	12	NAL	2 AO's, 2 TA's
5. Drawing of final maps	4	NAL	1 Cartographer
6. Typing, editing and printing of maps and report	12	NAL	2 AO's, 1 Secretary, 1 Lithographer

DETAILED SOIL SURVEYS WORKPLAN (JULY 1989 - DECEMBER 1990)

ACTIVITY/YEAR	1989						1990											
	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1. Soil survey fieldwork			—	—														
2. Field soil physical measurements				—														
3. Lab. physical and chemical analyses					—	—												
4. Map compilation and report writing							—	—	—									
5. Drawing of final maps									—									
6. Typing, editing and printing of maps and report										—	—	—						

ACTIVITY	DURATION (Weeks)	WHERE	BY WHOM
1. Soil survey fieldwork	6	Field	2 AO's, 2 TA's and 2 Drivers
2. Field soil physical measurements	3	Field	1 AO, 1 TA, 1 Driver plus casuals
3. Lab. physical and chemical analyses	4	NAL	1 AO or 1TO, 1 TA and 1 Driver
4. Map compilation and report writing	7	NAL	1 AO or TO, 1 TA
5. Drawing of final maps	3	NAL	1 Cartographer
6. Typing, editing and printing of maps and report	10	NAL	1 AO, 1 Secretary and 1 Lithographer

AO - Agricultural officer
TO - Technical officer
TA - Technical assistant

SITE EVALUATIONS WORKPLAN FOR THE YEAR 1990

ACTIVITY/MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1. Soil survey fieldwork				▬	▬							
2. Lab. physical and chemical analyses						▬	▬					
3. Field soil physical measurements					▬							
4. Map compilation and report writing						▬	▬	▬				
5. Typing, editing and printing of map and report									▬	▬		

ACTIVITY	DURATION (Weeks)	WHERE	BY WHOM
1. Soil survey fieldwork	6	Field	1 AO, 1 TA, 1 Driver plus casuals
2. Field physical measurements	3	Field	1 AO/TO, 1 TA, 1 Driver plus 1 casual
3. Lab. physical and chemical analyses	8	NAL	2 AO's, 2 Lab. technicians
4. Map compilation and report writing	12	NAL	1 AO, 1 TO, 2 TA's
5. Typing, editing and printing of maps and report	10	NAL	1 AO, 1TO, 1 Cartographer plus 1 Secretary

AO - Agricultural officer
TO - Technical officer
TA - Technical assistant

REGIONAL CENTRE FOR SERVICES IN SURVEYING, MAPPING AND REMOTE SENSING

P.O. BOX 18118
NAIROBI.
18th May, 1989

COURSE

ANNOUNCEMENT

Due to popular demand and the realization of enhancing our knowledge in the field of agriculture, the Regional Centre for Services in Surveying, Mapping and Remote Sensing is pleased to announce the following course in the application of Remote Sensing to agriculture and land resources assessment.

Course Title	:	APPLICATION OF REMOTE SENSING AND GIS TO AGRICULTURE AND LAND USE
Duration	:	Three Weeks From Monday, 10th to Friday, 28th July, 1989.
Venue	:	The Centre's Headquarters, Kasarani, Nairobi, Kenya.
Language	:	English

Objectives of the Course

The main objectives of the course are to review the application of remote sensing to land resources assessment planning and management. The mapping of agricultural resources, soil mapping, categorization of land uses and how geographical information systems is applied.

Other objectives will be to introduce remote sensing technology to as many users as possible as well as encouraging technical and scientific information exchange and technology transfer in East and Southern Africa.

BASIC INFORMATION ABOUT RCSSMRS (THE CENTRE)

The Centre which started its operations in March, 1975 is an inter-govnernmental institution which operates under the auspices of the United Nations Economic Commission for Africa and the Organization for African Unity. It is composed of 12 contracting member States, namely: Kenya, Tanzania, Somalia, Lesotho, Uganda, Malawi, Comoros, Swaziland, Zambia, Botswana, Sudan and Ethiopia. Eight other member States participating in the activities of the Centre are: Djibouti, Rwanda, Burundi, Sychelles, Madagascar, Angola, Mozambique and Zimbabwe.

Purpose and Functions of the Centre

Among the objectives of the Centre as stated in the Agreement Establishing it are to provide services in surveying, Mapping and remote sensing included, but not limited to aerial photography, photogrammetry, ortho-photomapping, photo interpretation, satellite remote sensing, airborne geophysical surveys, electronic computation, zero order surveys, multicolour printing and calibration and maintenance of surveying and mapping equipment. Also to provide training of nationals of member States in surveying, mapping and remote sensing.

The above activities and others not mentioned are carried out by the departments of Geodesy, Cartography, Engineering and Remote Sensing.

The department of Remote Sensing carries on the activities of training, user services and project assistance work. In training,courses of various duration are given including three weeks courses, extended courses (3 to 6 months) and on the job training. Various fields in natural resources are covered including geology, forestry, water resources, agriculture and related fields.

Draft Programme

The draft programme for the course will include the following items:

1st Week : Fundamentals of remote sensing including systems, sensors, platforms and characteristics.

Agricultural data requirements for crop production. Crop condition and drought monitoring, climatic impact assessment.

2nd Week : Land resources assessment and planning. Introduction to GIS, principles of GIS in agriculture and land use studies. Field trip.

3rd Week : Geographic information systems approach for crop and rangeland assessment, soil mapping, crop area assessment and objective yield assessment. Workshops and projects.

Participants

We are looking for participants who must have obtained a university degree or equivalent in the field of agriculture, soil science, agronomy, agro-meteorology, range science and other natural resources sciences which are related to agriculture. They must be actively engaged in their countries in projects dealing or associated with the above disciplines.

Sponsorship

The course is sponsored by the Regional Centre for Services in Surveying, Mapping and Remote Sensing(RCSSMRS) in collaboration with the United States AID for International Development (USAID). The participants will be accommodated at Hotel Ambassadeur, situated in the centre of Nairobi city.