

**SECOND UNESCO/UNEP REGIONAL**

DESERTIFICATION CONTROL AND NATURAL  
RESOURCES MANAGEMENT: CASE STUDIES FROM  
SADC COUNTRIES

**Bulawayo, ZIMBABWE. 18 to 22 March 1996**

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# OPENING ADDRESS

Dr A.B. Shankanga\*

Distinguished guests, friends, colleagues, ladies and gentlemen. It is my great pleasure, on behalf of the Director General of UNESCO Mr Federico Mayor, to welcome you to the Second UNESCO/UNEP Regional Desertification Control Training Course for SADC Countries, Here at the Matopos Research Station, near Bulawayo.

The organization and promotion of research on the natural resources of the tropical world, including the periodical assessment and evaluation of the state of knowledge in the field, has always figured prominently in UNESCO's cooperative scientific programmes. This training falls within the framework of UNESCO's international scientific programme "Man and the Biosphere" (MAB) launched by UNESCO in 1971.

Earth's "natural capital" on which humankind depends for food security, for medicines and for many industrial products, is its biological diversity. The majority of this diversity is in the developing world and much of it is threatened. The need to tackle the world's increasing environmental degradation is urgent. Current trends in population growth and distribution; globalization of the economy and effects of trade patterns on rural areas; the erosion on cultural distinctiveness; increased demand for energy and resources; universal ownership of the earth's resources and uneven spread of technological innovations; all paint a sobering picture of the environment, and development prospects in the near future, and augment the challenges for the use and management of natural resources. The consensus reached at the 1992 United Nations Conference on Environment and Development (UNCED) made clear that there can be no future for humanity if it is constantly threatened by poverty, illness or ignorance. The Conference laid out a plan for working towards sustainable development,

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\* Director, UNESCO sub-regional office for southern Africa, Harare

incorporating care of the environment and greater social equity, including respect for rural communities and their accumulated wisdom.

The UN has undertaken new initiatives in order to combat desertification and these include:

1. Convention to Combat Desertification, announced from UNESCO House, in Paris, on 17th June 1994, which has been signed by more than one hundred governments;
2. The designation of 17th June as World Desertification Day.

The latter followed a conference on "Desertification: A Challenge to Humankind" held in Paris in November 1995 to mark the occasion of the World Day to Combat Desertification and Drought.

UNESCO will play a key role in assisting member states in the implementation of these conventions through its research training (such as this session) and information exchange.

The training programme for SADC countries resulted from an Inter-Agency Meeting on Desertification and Protection of the Environment in Africa, in March 1981. The formulation of the training project was carried out in April 1984. The first training course held in June 1994 addressed the following topics: the effects and extent of desertification; causes of desertification and land degradation; and indicators of desertification.

We understand that the course was not designed as an end in itself, but as the beginning of a learning and cooperative process. I hope some of you were able to carry out relevant investigations within the context of your work and we hope you will be able to share the results with other participants in the course of this week.

Mr Chairman, UNESCO is very pleased that the second UNESCO/UNEP Regional Desertification Control Training Course has become a reality. It will not only reinforce specialist knowledge in desertification control for the top resource managers concerned with desertification problems in the SADC countries, but will also contribute to widening the understanding of the rural development aspects of the Southern African Sub-region as a whole. We also hope that this course will assist in promoting research and information

dissemination and exchange by member states of SADC. Most importantly, it hoped the programme will reinforce the framework for regional cooperation which already exists under the auspices of SADC.

Mr Chairman, may I, in conclusion, express on behalf of UNESCO, our sincere thanks to all those who have made it possible for this course to be held here. A particular word of thanks to the Head and staff of Matopos Research Station for continuing to be such good hosts and organizing this training course. I wish you all every success and that this will prove, as we all anticipate, to be a milestone on the road to achieving desertification control.

Thank you.

# MESSAGE OF WELCOME

*S.S. Chishiri\**

The Chairperson  
Representative of the Minister of Environment and  
Tourism  
Representative of the Director General,  
Dr Elizabeth Wangari  
Director and Resident Representative of UNESCO/  
UNEP Representative Zimbabwe MAB Chairman,  
Dr C.H. Magadza  
Head of Matopos Research Station, Dr T. Smith  
Distinguished Delegates  
Ladies and Gentlemen

It is my honour to welcome you, on behalf of the Zimbabwe National Commission for UNESCO, to this second and follow up training course on a subject of great concern to the whole world, in general, and to SADC in particular. The issue of Desertification Control is one that needs global support and commitment. It is encouraging to note that the SADC region, with support from UNESCO and UNEP, has taken keen interest to educate its' nationals on the best way to control desertification. Desertification is a major problem in the SADC region due to uncontrolled cutting down of trees for domestic use, especially energy. This felling down of trees is causing land degradation on a global scale.

The assistance from UNESCO and UNEP to educate about desertification control in the region is highly appreciated.

These two UN agencies are not only assisting in desertification control through this course but are also assisting in the provision of solar energy to the rural people, as an alternative source of energy, through the Global Environment Facility (GEF) and the World Solar Summit Process (WSSP). These programmes are intended arrest desertification and promote rural development among other things. The National

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\* (Assistant secretary general  
Zimbabwe National Commission for UNESCO)

Commission together with other key national and international players is collaborating with UNESCO in the WSSP. We consider ourselves partners in these ventures and are at your disposal whenever you need us.

May I, Mr Chairman, wish you a productive training course for the next week, where you will be building on the first one held here about two years ago. I hope the first course has been of value to you and to your countries. May I also take this opportunity to thank UNESCO and UNEP for choosing this for this second course. I am sure ICRISAT and Matopos Research Station will do their best to host you and I hope you will enjoy your stay.

I thank you.

# **A P P E N D I C E S**



## **APPENDIX 1.**

# **SUMMARIES OF COUNTRY PROJECTS**

1. Kenya: Research in arid and semi-arid areas of Kenya and its use in policy formulation in desertification control.
2. Nigeria: Savanna productivity in relation to different burning and grazing regimes.
3. Tanzania: The status of desertification, past and present interventions in Tanzania.
4. Uganda: A brief overview
5. Zambia: Update on the Kalahari-Namib project
6. Zimbabwe: Proposed protection of bird and game sanctuary at Gwampa valley (Lake Alice).

### **1. KENYA (J.B. Nyangeri)\***

Research in arid and semi-arid areas of Kenya and its use in policy formulation in desertification control.

#### **BACKGROUND:**

Eighty-five per cent of Kenya is arid or semi-arid. Seventeen per cent of the land area is a high potential land in which all agriculture is confined. There is a high population pressure in the high potential areas leading to declining forests, currently covering only 2.3 per cent of the land area.

Government initiatives to combat desertification include tree planting and soil conservation activities, introduction of family planning to control population growth and research into desertification control.

**Research methodology:** The research involved a literature review and personal contacts.

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\* Acting Chief Science Secretary  
National Council for Science and Technology

### **RESULTS:**

Research activities are confined to Universities and research institutes. They are mainly concerned with crop improvement for disease resistance, early maturity and high yield; animal research into suitable breeds and adequate pastures for dry season feeding; forestry research into tree management for high yield and plant species that can survive in semi-arid areas; range management research involving vegetation assessments, animal population surveys, land use planning and forecasting; and socio-economic studies.

Results from these research activities can be used by policy makers to formulate policies for desertification control. These include research results on trees, erosion control measures and livestock carrying capacity assessments for arid and semi-arid lands.

### **QUESTION:**

How much agreement is there between research results and political will to implement them.

## **2. NIGERIA (T.A. Afolayan)**

### **SAVANA PRODUCTIVITY IN RELATION TO DIFFERENT BURNING AND GRAZING REGIMES.**

**Problems identified:** The study involved collection of baseline data on factors affecting livestock production and wildlife in Central and Northern Nigeria. The problems identified include livestock disease (tsetse flies), seasonal decline in nutritive value of herbage (10 to 1.5 per cent crude protein), wastage by leaving herbage to grow moribund and less nutritive, overburning and overgrazing at sensitive times of plant growth leading to loss of vigour of perennial grasses and their replacement by less nutritious annual grasses and clashes between transhumant pastoralists and resident farmers over grazing areas.

#### **Scientific findings:**

1. There is a positive correlation between herbage yield and rainfall amount
2. Tree canopy cover affects herbage yield and species composition
3. Vegetation cover along transhumant routes has been reduced by trampling
4. Herbage can be clipped up to four times and dried before it reaches senescence.

#### **Recommendations:**

1. Reinforcement of rangeland areas with legumes
2. Grasslands should be harvested when they are most nutritive and stored as high quality hay for dry season feeding
3. Grazing reserves should be established
4. Salt licks and improved pastures should be used in grazing areas to spread utilisation
5. Improve efforts to eradicate tsetse flies and other pests causing livestock disease
6. Use fire with care, selectively burning areas at the appropriate time.

## **QUESTIONS:**

1. Grazing management systems research suggests that moving animals around an area may improve water infiltration because of the hoof effect. (soil, type, time)
2. Implications of herbage clipping on nutrient cycling (defer grazing after clipping to promote recovery)
3. Recommendations on grazing management after burning (burning and grazing immediately after leads to plant degeneration. Burn and allow for plant recovery)
4. Tsetse eradication in fragile ecosystems which might be sustained by tsetse presence which excludes livestock and human habitation. (land pressure issue)
5. What is the position on transhumant pastoralists and land tenure? (Government recognises their right to graze in reserves)

### **3. TANZANIA (P. Mtoni)**

#### **The Status Of Desertification In Tanzania: Past And Present Interventions**

##### **INTRODUCTION**

Tanzania has a total area of 942000 km<sup>2</sup>, of which 86000 km<sup>2</sup> is the land mass. Drought has been observed since records were started, by the colonial government. The north and central areas of the country are the worst affected areas. In theory Tanzania has excellent hydrological resources, but drought is causing similar problems as in other SADC countries. It is not clear if the problems are caused by human failure, through interference, or climatic change.

The people must be prepared to face the challenge of halting desertification, and initially this means seeking the cause of the problem.

Economic progress in developing countries relies heavily on exploitation of natural resources, which creates stress, leading often to adverse effects on the environment. This often manifests itself as land degradation. Although the definition of land degradation varies with user interest (eg. forester, range manager, soil chemist) it is indicated by a reduction of the desired form of productivity.

##### **DESERTIFICATION IN TANZANIA**

Desertification is caused by: low rainfall; high rates of evapotranspiration; over cultivation; over stocking; over exploitation of the natural resource base; rampant bush fires; mismanagement of irrigation schemes; land tenure problems.

A third of the country lies in a belt receiving less than 800 mm of rain annually. Although significant amounts of rain fall during the short rains, evapotranspiration rates can exceed rainfall (Chenje and Johnson, 1994).

With the exception of protected and tsetse fly areas 45 per cent of dry land is under cultivation or used for grazing. About one third of the country (the northern and central areas) is threatened by desertification. The ecosystem in these areas is starting to lose it's ability to recover from abuse.

The problems facing Tanzania are not uniform and are worst for women and children. Scarcity of water and firewood together with gender issues dominate the fabric of society in Tanzania.

## **CAUSES OF DESERTIFICATION IN TANZANIA**

Lema (1991) suggested that the main causes of desertification in Tanzania are:

1. **Agricultural:** Basic principles for land management for cropping are not being observed. There is a collapse in the use of traditional systems.
2. **Overgrazing:** There is an estimated 23 million head of cattle and 70 million goats and sheep (livestock census of 1984). These are concentrated in the arid and semi-arid areas of the Northern and Central regions. Overgrazing is leading to the formation of dust bowls in many areas.
3. **Deforestation:** This is occurring because of a combination of factors: agricultural expansion; bush fires; demand for fuel wood. The annual rate of deforestation is approximately 350000 ha.
4. **Other:** These include; poverty; land tenure and resource ownership; a population growth rate exceeding the economic growth rate.

### **PAST AND PRESENT EFFORTS TO COMBAT DESERTIFICATION**

**A. Traditional soil conservation practice:** Certain forest areas were regarded as sacred, thereby precluding tree cutting, grazing, and the lighting of fires. In other areas hunting was only allowed at certain times of the year.

**B. Pre-independence measures:** Measures for soil and water conservation were started in the late 1920's. By 1952 local authorities had the power to combat land degradation through the legislation of a number of ordinances: National Parks; Forestry; Natural Resources; Grass Fires' Control.

Between 1946 and 1950 development schemes, based on land use planning were introduced in some areas. They were not successful because they ignored local culture, social structure and traditional practice. Because of their association

with colonialism they became a rallying point in the struggle for independence.

C. Post-independence measures: In the early years of independence the government's priority was to establish political unity, but some measures to combat desertification were introduced (eg. SCAPA; Soil Conservation and Agroforestry Project; Arusha).

It is clear that a multi-sectorial approach is necessary. The National Conservation Strategy for Sustainable Development (NCSSD) and the National Environmental Action Plan (NEAP) are now in action. District strategies, especially for the drier areas, are now being prepared.

In the late 1980's the National Environment Management Council (NEMC), with the assistance of UNSO and NORAD, formulated a National Plan of Action to Combat Desertification (NPACD). The processes of desertification in areas where pastoralism and agro-pastoralism are practised will be closely monitored. Other important issues being addressed by NPACD include: adoption of sustainable land use management techniques; improvement of resource assessment; environmental education; the gender balance.

Whilst Tanzania's Forestry Action Plan (TFAP) has over 90 projects across the country, NPACD has a limited number of proposals. They are summarized below:

1. Establishment of an environmental information centre.  
A preliminary proposal was prepared, funded by UNSO and UNEP. More recently support has come from the East African Biodiversity Project.
2. Monitoring desertification in Tanzanian dry lands.  
The NEMC in collaboration with the Institute of Resource Assessment of the University of Dar Es Salaam (IRA-UDSM) carried out studies in four regions. Funding is required for further work.
3. Establishment of radio programmes.  
The NEMC and division of Forestry are producing programmes which cover aspects of environmental



degradation in dry areas. It is intended to expand this to television.

4. Integrated development of range farming and wildlife management in the pastoralist division of Loliondo.

At present a concept.

5. Pastoralist area development in Naberera Maasai steppe.

At this stage concept only. Possibility of NGO involvement.

6. Development of women in Tinga (Iringa) agro-pastoral area.

Project document not yet ready.

7. Sustainable resource management in Mtera Reservoir Perimeter. Project document not yet ready.

With all the projects listed above lack of funds is the major constraint.

An important initiative towards effective protection of the environment is in the development of guidelines and procedures for carrying out "Environment Impact Assessment" (EIA) in Tanzania. In 1992 a workshop was held to introduce the concept of EIA to those likely to use it. In December, 1995, a panel of four was tasked, by NEMC, to prepare to prepare a draft document on it's implementation. This was submitted in March, 1996. Another workshop is planned to finalize the proposals, after which government approval will be sought.

## **CONCLUSIONS**

Tanzania needs to strengthen programmes initiated in order to reach the grassroots, where the problems of desertification and poverty are interrelated. Coordination and cooperation are needed to ensure the efficient utilization of available resources.

Appropriate institutional structures for implementation of the convention to combat desertification should receive priority for attention. This must be viewed within the overall framework for operating national policies.

## REFERENCES

- CHIENJE, M. and JOHNSON, P. 1994. State of the environment in Southern Africa. IUCN, Harare/ SADC-ELMS, Maseru/ SARDC/Harare.
- LEMA, A. 1991. An assessment of the process of desertification in Tanzania. Report of workshop on environmental education for desertification control. NEMC/IEC.

#### **4. UGANDA (Dr. E.O. Wangari, UNESCO, Dakar)**

1. The desertification problem *per se* may not seem a big problem for Uganda due largely to its favourable climate, except in the North-Eastern border with Sudan and a few other areas in the East. With the high rate of deforestation going on in many areas of Uganda, there should not be complacency.
2. Uganda has shown a good example of commitment towards environmental protection and management by the recently established National Environment Management Authority, a supreme authority on the environment with far reaching powers, including co-ordination and dealing with environmental degraders.
3. Makerere university opened up, some years ago, the Institute of the environment and Natural Resources Management. Considerable work has been going on including Higher degree research projects.

## **5. ZAMBIA (R. Mwiinga)**

### **The Liangati Integrated Development Project As A Desertification Control Measure**

#### **INTRODUCTION**

The Liangati Development Project is situated in Senanga District of Western Province of Zambia. The project is under the Southern African Development Community's (SADC) "Kalahari Namib Regional Plan of Action", aimed at monitoring, protection and rehabilitation of rangelands. The Kalahari Namib Region was zoned in conformity with the 1985 Cairo Plan of Action, approved by the African Ministerial Conference on the Environment (AMCEN), under the United Nations Environment Programme's (UNEP) "Desertification Control Programme Activity Centre (DC/PAC). Funding for the preparatory phase of the project has come from UNEP.

The Desertification Convention has guided the formulation of the project with emphasis on the involvement of the community in the planning stages with the incorporation of indigenous knowledge.

#### **PROJECT AREA**

The project area lies north of Senanga District, between latitudes  $15^{\circ} 46'$  and  $15^{\circ} 43'$  South and longitudes  $23^{\circ} 10'$  and  $23^{\circ} 35'$  East. It is an area of  $519 \text{ km}^2$  and stretches from the Zambezi River in the west to Lui in the east. The Topography of the area is divided into three land types: the Zambezi flood plain ( $88 \text{ km}^2$ ); the plain edge ( $44 \text{ km}^2$ ); and the uplands ( $378 \text{ km}^2$ ).

The area falls within agro-ecological region 11b, zone 13c, and is characterized by a mean annual rainfall ranging from 760 mm to 950 mm. The average length of the growing season is between 120 and 130 days. The rainy season extends from November to March. The mean maximum temperature throughout the year is  $21.3^{\circ}\text{c}$ .

The soils range from podzolic on Kalahari sands, which are very deep and well drained, to loose and strongly acidic in the flood plain.

Major vegetation types are based on land patterns. In the flood plain grass species are dominant with a few scattered trees and shrubs. The plateau (upland) is dominated by grass and woody species. The common trees include: *Brachystegia spiciformis*, *Erythrophleuns africanuns*, *Parinari curatellifolia*, *Burkea african*, *Terminalia cericea* and *Combretum* spp.

### **MAJOR LAND USE PATTERNS**

The flood plain is used mainly for grazing cattle. Small areas of the plain are used for growing maize. Depressions within the floodplain are used for growing rice, maize and vegetables.

The plain edge is the most heavily populated area with the best developed infrastructure and is intensively cultivated. The upland area is sparsely settled, shifting cultivation (cassava the main crop) and timber production being the major activities.

### **OBJECTIVES OF THE PROJECT**

1. To achieve sustainable development and exploitation of natural resources through participation of local communities.
2. To minimize man induced land degradation and desertification processes.
3. To improve the welfare of the local population by promoting small scale entrepreneurship and income generating activities.

### **PROGRAMME OF WORK**

1. To improve livestock marketing opportunities by increasing reproductive rate and rate of turnover of cattle.
2. To monitor livestock production systems in order to establish optimum carrying and stocking density.
3. To establish suitable grazing and cropping systems to minimize structural deterioration of soils and vegetation.
4. To develop community based sustainable and environmentally sound management plans in areas suitable for agricultural production.

5. To increase availability of inputs, marketing and trading facilities in the project area.

### **STATUS OF THE PROJECT**

The preparatory phase is almost complete. Funding will then be sought through UNEP and SADC in the first instance. An approach to UNESCO for assistance with the training and research components of the project is likely.

## 6. ZIMBABWE (L. Sola)

**Title:** Proposed protection of bird and game sanctuary at Gwampa valley (Lake Alice).

**Location:** Matebeleland North Province

<b>Area :</b>	12 000 hectares
<b>Topography:</b>	900 - 1500 m.a.s.l.
<b>Rainfall:</b>	450 - 650 mm year <sup>-1</sup>
<b>Climate:</b>	Wet (November to March) and dry season
<b>Population:</b>	Lupane - 94 890 Nkayi - 111 899

### **BACKGROUND:**

In 1979, the local District Council and the Department of National Parks and Wildlife Management set out to protect the Lake Alice area because of the fragile ecosystem which, under heavy grazing, was leading to siltation of rivers and dams. The area was declared protected by government statutory instrument 301 of 1982. This was met with resistance from the local community which had other uses of the Lake area, such as grazing, watering and fishing.

**Vegetation type:** Indigenous woodland comprising two state forests (Lake Alice and Gwampa Valley), dominated by *Brachystegia*, *Acacia* and *Mopane* trees.

These are managed by the Forestry Commission. The local community has controlled access to thatch grass, fuelwood and grazing in the area.

**Wildlife:** The wildlife in the area consists of wild animals and water-fowls.

**Soils:** The area is covered by Kalahari sands which have 10 per cent clay. The nutrient-rich depositional alluvial soils along the valley bottom are utilised for gardening and livestock grazing in the dry season.

**Economic situation:** The agricultural production system includes production of drought-tolerant crops, for subsistence purposes, under rainfed conditions, market gardening along the valley and livestock production at the valley bottom. Small-scale fishing used to be an important activity before the dam silted.

**The proposed project involves:**

1. Erection of a fence around the communal area side of the proposed site for protection.
2. Conducting environmental awareness workshops
3. Facilitating controlled hunting in the area with benefits being shared by the community, using the Campfire approach.
4. Developing a tourist resort and an educational centre
5. Rehabilitating Lake Alice.
6. Introducing the Forestry Commission resource sharing concept.
7. Carrying out research on the present status of the waterfowls
8. Monitoring habitat change.

**State of the project:** The project is at the awareness stage which will involve the holding of workshops at the end of the 1995/96 growing season.

**QUESTIONS:**

1. Cost of fencing and assurance that the community will respect it.
2. Resource sharing mechanism in protected area.
3. Proposed approach to preserving the habitat.
4. Likely socio-economic benefits to the communities.

**The highlights of the country reports include:**

1. The need for sectorial co-ordination in natural resource management eg, health sector in population management, energy sector in fuelwood management.
2. The need to consider the socio-economic aspect of communities in management interventions



3. The need to involve target beneficiaries and tap on their indigenous knowledge in project formulation and implementation.
4. The need to standardise methodologies in desertification control programmes that span wide ecological boundaries so that experiences can be shared
5. The need to get political commitment for policy implementation by packaging research results into usable form for farmers and policy makers.

## APPENDIX 2

### PROGRAMME

**SUNDAY,  
17<sup>th</sup> March:**

Arrival and registration

**MONDAY,  
18<sup>th</sup> March**

08.30 - 09.00: Official Opening: Director, UNESCO,  
Southern

Africa:

Dr. A.B. Shankanga

09.00 - 09.30: Introductions

09.30 - 10.30: Desertification and environmental  
degradation: background to  
problem within Africa: Dr E. Wangari

10.0 - 10.30: Tea

10.30 - 12.45: Country reports

12.45 - 14.00: Lunch

14.00 - 17.00: Country reports

(Tea 15.15 - 15.45)

**TUESDAY,  
19<sup>th</sup> March**

08.00 - 10.00: Role of cattle: Dr T. Smith

10.00 - 10.30: Tea

10.30 - 12.45: Rangeland Management: J. Gambiza

12.45 - 14.00: Lunch

14.00 - 17.00: Fire as a management tool: G.M. Calvert  
(including visit to "burning" trials)

**WEDNESDAY,  
20<sup>th</sup> March**

08.30 - 10.00: Rangeland management :J. Gambiza

10.00 - 10.30: Tea

10.30 - 12.45: Holistic resource management: a new  
approach for sustainable resource

12.45 - 14.00: management in the 1990's: O.Mugweni  
Lunch  
14.00 - 17.00: Holistic resource management  
continued (on-site training: working  
groups)

**THURSDAY,  
21<sup>st</sup> March**

08.30 - 09.30: The role of the Department of National  
Museums and Monuments of  
Zimbabwe in maintaining biodiversity:  
D. Mlotshwa  
09.30 - 10.00: Tea  
10.00 - 15.30: Field visit: Matobo National Park and :  
Game Park: Mrs G. Amyot  
16.00 - 17.00: Campfire in Zimbabwe: N. Zondo  
18.30 to late: Reception and Braai

**FRIDAY,  
22<sup>ND</sup> March**

08.30 - 10.00: The uses of Moringa Oleifera:Dr T.  
Smith/O.Mhere  
10.00 - 10.30: Tea  
10.30 - 11.30: The role of irrigation in food  
production: R. Hleruka  
11.30 - 12.30: Course assessment and presentation of  
certificates  
12.30 : Lunch and departure

## APPENDIX 3

### LIST OF PARTICIPANTS

Country and Name Address	Organization	
Kenya Dr J.B. Nyangeri 30623,	National Council for Science & technology	P.O. Box Nairobi
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Tanzania P.E. Mtoni 63154,	National Environment Management Council	P.O. Box Dar Es Salaam
Uganda Dr M.B. Musoke	Virus Research Institute	P.O. Box 49, Entebbe
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Zimbabwe G. Amyot	Matobo Estate Committee	9 Whitestone Way Burnside, Bulawayo
G.M. Calvert	Plumtree High School	P.Bag 5874, Plumtree
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J. Gambiza	Makoholi Research Station	P. Bag 9182, Masvingo
R. Hleruka	Agritex	Box 326, Gwanda

Zimbabwe		
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