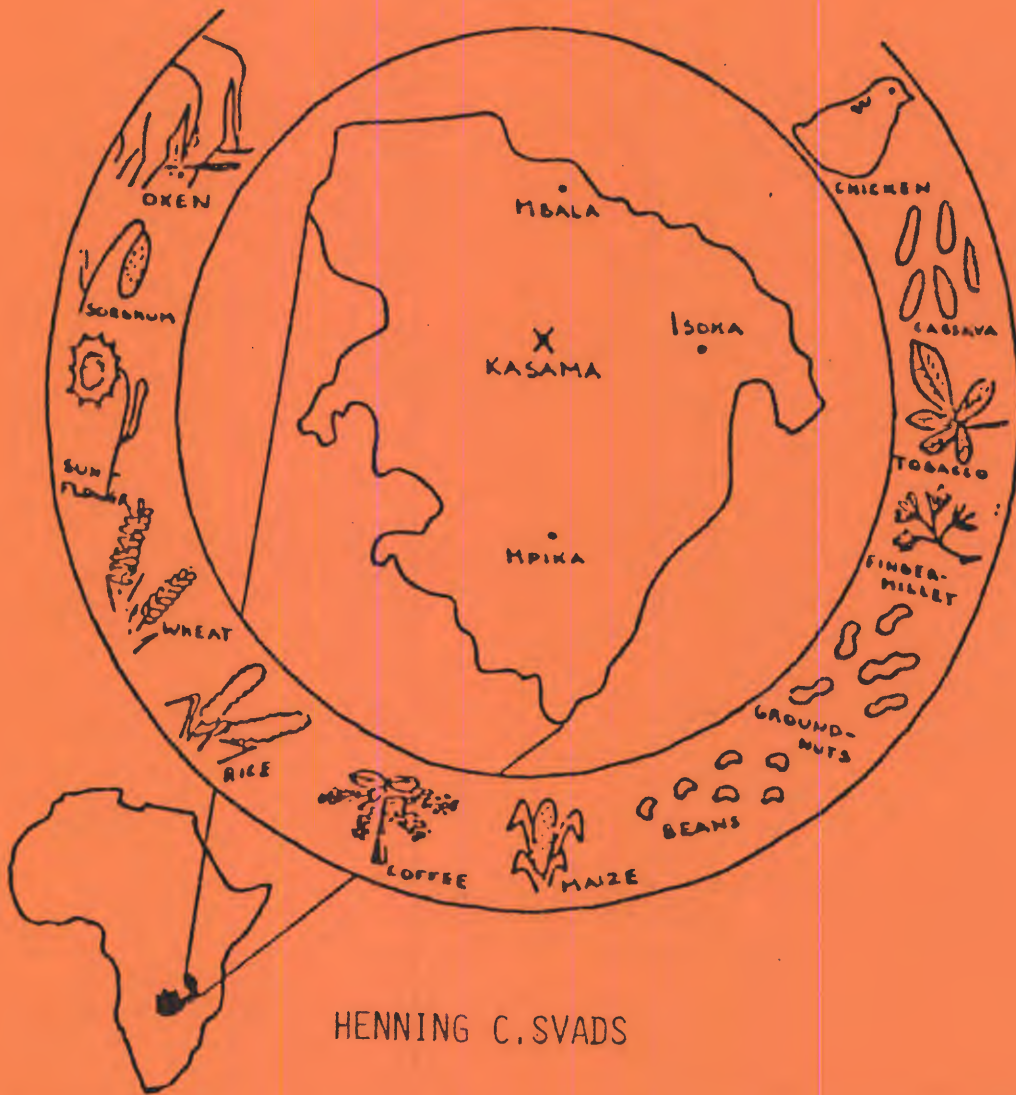


SOIL PRODUCTIVITY RESEARCH PROGRAMME
IN
THE HIGH RAINFALL AREAS IN ZAMBIA

REPORT ON PHASE I
1981-1983

PART 4

PROJECT ORGANIZATION AND ADMINISTRATION



Soil Productivity Research Programme

in

The High Rainfall Area in Zambia

Report on Phase I
1981 - 1983

Part 4

Project Organization and Administration

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PROJECT SUMMARY

The Soil Productivity Research Programme (SPRP) in the high rainfall areas of Zambia commenced in April, 1981. The programme was initiated on the basis of agreements between the Government of Zambia (GRZ), the Norwegian Agency for International Development (NORAD) and the Agricultural University of Norway (AUN).

The work is centered at Misamfu Regional Research Station, Kasama, and covers the Northern, Luapula, Copperbelt and North-Western Provinces in Zambia, approx. 370 000 km².

For the initial period of the project (phase I) which ended June 30th 1983, AUN provided senior scientific personell totalling 59 man months plus 21 man months representing graduate students. Staff assigned to SPRP by GRZ has amounted to 2 junior technical officers, 4 general workers and occational labourers.

The overall financial support was provided by NORAD. Norwegian Kroner 3.600.000.- was allocated for phase I out of which NOK 3.452.540.- was spent.

The emphasis of the investigations in phase I has been to provide better understanding of soil conditions, crop production and farm management systems and their interactions. Information sources have been Department of Agriculture; Research, Land Use and Extension branches, Parastatal agencies, local farmers and relevant literature. In addition, the SPRP's soils, agronomy and agricultural economy sections have carried out field investigations in different parts of the high rainfall areas.

The phase I final report consists of the following papers;

- Part 1. An Outline of Soils and Soil Fertility Research in The High Rainfall Areas in Zambia. By S. Tveitnes.
- Part 2. Evaluation of Agricultural Crops and Cultivation Methods in the Northern Province of Zambia.
By H.C. Svads

Part 3. Peasants and Agricultural Change in Northern Zambia.
By. K.A. Stølen.

Part 4. Project Organization and Administration. By H.C. Svads.

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1. INTRODUCTION

1.1. Request from Zambia

The Norwegian Agency for International Development (hereinafter referred to as NORAD) received a request of 19th September 1978 from Zambia for support for a soil productivity research project in high rainfall areas. The request outlined a project in two phases. It was assumed that NORAD would support phase I. The Agricultural University of Norway (hereinafter referred to as AUN) appointed a project committee consisting of experts in fields related to farming problems in these areas, prepared a research programme proposal for phase I (hereinafter referred to as the Project). The Project was discussed with Zambia and NORAD authorities and finally agreed upon early 1981.

1.2. Agreements

Two agreements and one contract were written, formalizing the relationships between the following bodies:

1.2.1. The Agreement between the Government of the Kingdom of Norway and the Government of the Republic of Zambia. Appendix I.

1.2.2. The Agreement between the Agricultural University of Norway (AUN) and the Ministry of Agriculture and Water Development (MAWD). Appendix II.

1.2.3. Contract between the Norwegian Agency for International Development (NORAD) and the Agricultural University of Norway (AUN). Appendix III.

2. OUTLINES OF THE PROJECT

2.1. Title. The Project was given the following title:
Soil Productivity Research Programme in High Rainfall

Areas in Zambia (hereinafter referred to as SPRP).

The High Rainfall Areas were confined as those areas with rainfall exceeding 1000 mm. per year.

The Copperbelt, North-Western, Luapula and Northern Provinces fall within the high rainfall areas.

Due to practical problems in covering such a large area, most of the phase I investigations have been carried out in Northern Province.

2.2. Duration

The duration of phase I has been approx. 2 years.

The intention was to start in January 1981, but for different reasons the SPRP did not start until April/May 1981 when the first Norwegian scientists of the team arrived. The termination of phase I was in July 1983. A reasonable period of overlap was arranged between the outgoing Project coordinator and the successor.

3. AGRICULTURAL RESEARCH ADMINISTRATION

3.1. Central administration

The SPRP is an integral part of the Research Branch in the Department of Agriculture. In this respect it liaises closely with Mount Makulu Central Research Station which is the headquarter for agricultural research in Zambia. This research station gives administrative as well as professional backstopping to MAWD, provincial agricultural departments, regional research stations, commodity research - and development teams and to farmers. The centre is situated at Chilanga 20 km south of Lusaka.

3.2. Regional administration

The SPRP is based at Misamfu Regional Research Station located in Northern Province, Kasama District, about 8 km North of Kasama on the Mbala Road.

The station is responsible for carrying out agricultural research projects in Northern Province.

Two substations, one in Mpika and one in Mbala, assist in the research programme.

4. ADMINISTRATION OF THE SPRP

An Advisory Committee, a Project Unit and a Project Coordinator are responsible for the administration of the SPRP in Zambia. At AUN a Zambia Committee is in operation on matters concerning AUN/NORAD issues.

4.1. Advisory Committee

The main task of the Advisory Committee has been to supervise the implementation of the Project and advise the Project Unit. The Committee which has met once a year to discuss all major issues pertaining to the Project, has comprised representatives from the following institutions:

- a. The Assistant Director of Agriculture, Research MAWD, Mr. W.N. Chibasa, Chairman
- b. The University of Zambia, School of Agricultural Sciences, Prof. J.A. Toogood, Dr. K.S. Gill
- c. Senior Soil Surveyor, Mr. A. Commissaris
- d. Chief Agricultural Research Officer, Dr. D. Naik and two more representatives, Mount Makulu Central Research Station, Mr. A.M. Bunyolo, Mr. K. Munyinda
- e. Permanent Secretary (MAWD), Mr. J.H. Remba
- f. The Officer in Charge, Misamfu, Mr. O.K. Sinyangwe
- g. NORAD Res.Rep., Lusaka, Mr. K.F. Petersen, Mr. L. Sauvik
- h. The Project Coordinator, Mr. H.C. Svads
- i. The Agricultural University of Norway, Director G. Øygard, Prof. A. Njøs.

The Advisory Committee has met once a year in February, mainly to discuss annual reports of research results, annual plans of research, and budgets.

4.2. Project Unit

The Project Unit has been the executive body of the Advisory Committee and consisted of,

- a. The Soil Productivity Research Team (SPRT), leader Mr. A.M. Bunyolo
- b. The Chief Agricultural Research Officer, Mt. Makulu Central Research Station, Dr. D. Naik
- c. The Agric. Chemist, Mr. K. Munyinda
- d. The Soil Correlator, Dr. W.J. Veldkamp
- e. The University of Zambia, School of Agricultural Sciences, Prof. J.A. Toogood, Dr. K.S. Gill
- f. The Crops and Soil Advisor, Mt. Makulu Central Research Station, Mr. J.K. McPhillips
- g. The Soil Scientist SPRP, Dr. S. Tveitnes
- h. The Project Coordinator SPRP, Mr. H.C. Svads
- i. The Cereal Coordinator, Mr. A.J. Prior.

The SPRT leader has been the chairman in Project Unit. The main task of the Project Unit has been to supervise the SPRP on agrotechnical matters arising from the project research programme. The Project Unit has prepared the meetings of the Advisory Committee as well as assisted in the general project management.

4.3. Project Coordinator

The AUN nominated Mr. H.C. Svads as Project Coordinator for SPRP phase I. Mr. Svads was accepted by the MAWD, Research Branch. The coordinator has made all day-to-day decisions, but consulted the Assistant Director of Agricultural Research, Chief Agricultural Research Officer or the SPRT leader on

all major changes of the approved plan of operation. Whenever possible, substantive changes were brought before the SPRP Advisory Committee before implementation.

4.4. AUN administration of SPRP

The AUN established a Zambia Committee which guided the AUN and NORAD on all major issues concerning the project. The committee consisted of the following members; From AUN: Gunnar Øygard, Arnor Njøs, Gunnar Semb, Harry Langvatn, Kåre Ringlund, Halvor J. Kolshus, and from NORAD: Sverre Utne.

The AUN/NORAD Office has carried out the administrative work in Norway, e.g. purchasing of equipment, recruiting of personnel, project finances, etc.

4.5. Reporting Systems

The Project Coordinator has prepared monthly progress reports and submitted them to the Project Unit, Research Branch, NORAD-Zambia and to AUN.

The Project Coordinator has prepared and submitted to the Advisory Committee, Project Unit, SPRT and AUN

- . annual plans of research
- . annual budget
- . annual reports of research results
- . annual reports of expenditures.

4.6. Administration of the budget and keeping of accounts

The Project Coordinator has been responsible for utilization of available funds in cooperation with MAWD, ordering payments of bills and keeping the accounts. The accounts have been approved by AUN within two months after the end of each fiscal year. Reallocations in the budget have been presented for the Advisory Committee.

5. MISAMFU REGIONAL RESEARCH STATION

In 1957 it was decided to close down the Lunzuwa Agricultural Station in Mbala district. At that time, it was realized that the Station was not in a position to serve this entire and diversified Province as a site for major experimental work. A few years earlier the Misamfu Regional Research Station was opened.

5.1. Location

The Misamfu Regional Research Station is located in Northern Province, Kasama District, about 7 km North from Kasama on the Mbala Road. The approximate location is 10°10' South and 31°10' East. The actual research area is bound in the West by the Kasama Mbala Road, in the North by a cuesta of rockland, in the East by the Misamfu dambo and in the South by a straight line extending from the entrance gate on the Mbala Road to Chikaka village South East of it along the Misamfu stream.

5.2. Climate

The Meteorological Station in Misamfu is situated at an altitude of 1384 m. The annual temperature is 19.8°C and the mean annual rainfall is 1360 mm.

The climate is strongly seasonal with a wet season from November to April and a dry season from May to October. The wet season has mean monthly temperatures of about 21°C, with mean maxima about 10°C higher and it has a mean monthly rainfall maximum of about 280 mm in January. The dry season has a cool period in June/July with mean monthly temperatures of about 17°C. Although frosts generally do not occur, a temperature just below zero was recorded in 1976. After June temperatures rise steadily to the October maximum of about 23°C.

5.3. Experimental areas

The Misamfu Regional Research Station covers approximately 426 ha. About 222 ha. consists of Good Arable Land. About 44 ha. has been downgraded due to some rock outcrops, slight wetness, moderate depth or sandy textures into Moderately Good Arable Land. Marginal Arable Land constitutes about 63 ha. of which 55 ha. comprises Poor Arable Land and about 8 ha. Very Poor Arable Land. Non Arable Land makes up the remaining 96 ha. This land has been excluded for agricultural use because of being rockland, land with shallow soils, or poorly drained dambos.

5.4. Facilities

The Misamfu Regional Research Station has an administration building, an office block, rooms for handling samples from trials, stores, conference room, workshop and a garage. The station has water and hydro-electrical support.

Equipments for agricultural research activities are limited to two tractors, a trailer, a plough and a harrow. There is no fertilizing equipment, planter, tractor sprayer or harvesting machine. All this work has to be done by hand. There is no thresher, shelling machine and seed cleaner. The station has 3 land-rover vehicles.

5.5. Staffing

The station is staffed with administrative and professional personnel. The officer in charge, Mr. O.K. Sinyangwe, was the person responsible for all activities from the research station, assisted by an executive officer, accountant, clerks and a variable number of agricultural specialists, supervisors, assistants and ordinary workers. Altogether the number of staff were approx. 30 people. In addition to the SPRP team there was a coffee research team

supported by FAO and a soil survey team partly financed by NORAD.

5.6. Staff development in SPRP

The AUN has been responsible for recruitment of the expatriate staff while MAWD has recruited the technical personnel.

- a. Agronomist, Mr. H.C. Svads, 01.07.81-31.10.83.
Mr. Svads was the SPRP coordinator for phase I.
- b. Soil fertility specialist, Dr. S. Tveitnes, 01.04.81-30.06.83. In absence of Mr. Svads, Dr. Tveitnes acted as coordinator.
- c. Agricultural economist, Mrs. K.A. Stølen, 01.05.81-31.10.81. By profession Mrs. Stølen is a rural sociologist. In Zambia Mrs. Stølen worked for 3 months. An additional period of 3 months was spent at AUN analyzing the collected material and writing of reports.
Dr. E.P. Archetti from the University of Oslo participated in the field study and was co-author of the preliminary report based on this study.
- d. Technical officers. Mr. H.C. Goma was appointed as agricultural supervisor from 01.01.81-30.06.83 and assisted in the field of soil science, while Mr. B.M. Kababu, a senior agricultural assistant, was assisting the agronomist for the period 01.06.81-30.06.83. From 01.01.83-30.06.83 Mr. A.R. Simanwe was engaged by SPRP as junior executive officer.
- e. A driver and 4 general workers have been appointed throughout phase I. From time to time several workers have been engaged for shorter periods.
- f. Graduate students from the University of Zambia, School of Agricultural Sciences (UNZA) and AUN have been employed on short term contracts for defined field investigations.

Ruth Haug, AUN 1981, agronomy.

Trond Vedeld, AUN 1981, agricultural economy.

Pål Vedeld, AUN 1982, agricultural economy.

Ragnar Øygard, AUN 1982, agricultural economy.

G.P. Mwila, UNZA 1982, agronomy/soil science.

C.J. Musanya, UNZA 1982, agronomy/soil science.

S.T. Holden, AUN 1982, agronomy.

G.D. Aarnes, AUN 1983, agronomy.

H. Steinshamn, AUN 1983, soil science

5.7. Staff development in general

An important task in the project is to build up professional competence within Zambia on farming systems by training Zambian graduates. A training programme should be developed in collaboration with Zambian authorities. For this purpose co-operation has been sought with University of Zambia, School of Agriculture.

6. SEMINAR AND PUBLICATIONS

6.1. Seminar

A seminar on Soil Productivity in the High Rainfall Areas of Zambia was arranged in Lusaka 8-10 February, 1983. More than 80 people participated. The contributions made by various scientists were drawn from a cross section of scholars beginning with the University of Zambia, Research Branch of the Department of Agriculture and other institutions which in one way or the other are attempting to elucidate the problems of increased food production. The subjects covered ranged from the social sciences to physical sciences. Based on the facts stated, proposals on research projects in fields of land evaluation, soil fertility and agronomy and socio-economy were worked out by 3 working groups.

Proceedings of the seminar have been published, see item 6.2.

6.2. Publications

The following papers have been published as Occasional Papers from International Development Programs, Agricultural University of Norway.

- No. 1: Ruth Haug, 1981. Agricultural Crops and Cultivation Methods in the Northern Province of Zambia
- No. 2: Trond Vedeld, 1981. Social-Economic and Ecological Constraints on Increased Productivity among Large Circle Chitemene Cultivators in Zambia
- No. 3: Paul Vedeld and Ragnar Øygard, 1982, Peasant Household Resources Allocation
- No. 4: Kristi Anne Stølen, 1983. Peasants and Agricultural Change in Northern Zambia
- No. 5: Stein Terje Holden, 1983. A Survey of the Vegetable Production and Marketing on the Central Plateau in Northern Province, Zambia
- No. 6: Henning Svads (ed.), 1983. Proceedings of the Seminar on Soil Productivity in High Rainfall Areas of Zambia, Lusaka
8 - 10 February, 1983.

As part of the study at the University of Zambia, School of Agricultural Sciences, Mr. Mwila and Mr. Musanya completed their practicals with SPRP writing the following reports:

Mr. C.P. Mwila, 1982. Collection and evaluation of data on the use of fertilizers, nutrient regime and structural problems of the soils in the high rainfall areas of Zambia. Report to UNZA, School of Agricultural Sciences.

Mr. C.J. Musanya, 1982. Shifting cultivation. A review of research findings into the Mambwe and Chitemene system. Report to UNZA, School of Agricultural Sciences.

Two students from AUN participated in 1983 with field studies. The analyses of collected data and writing of their theses were completed after the termination of phase I. However, their theses were:

Aarnes, G.D., 1983. Intercropping - Practice and Research in the Northern Province of Zambia. Thesis. Department of Farm Crops, Agricultural University of Norway. 119 pp.

Steinshamn, H., 1984. The Effect of Chitemene (shifting cultivation) on Soil Fertility. Changes in Some Soil Parameters during the First Cropping Season in Two Field Trials at Misamfu Regional Research Station, Northern Province, Zambia, 1982-1983. M.Sc.-thesis. Agricultural University of Norway.

The thesis will be published in the Occasional Papers from International Development Programs, Agricultural University of Norway.

In this publication series will also be published the following research reports in 1986, based on work completed in phase I:

Shanmugaratnam, N., 1986. Agronomic Transition and Mixed Cropping Practices in Northern Zambia - A review.

Tveitnes, S., 1986. An Outline of Soils and Soil Fertility Research in the High Rainfall Areas in Zambia.

Svads, H.C., 1986. Evaluation of Agricultural Crops and Cultivation Methods in the Northern Province of Zambia.

7. STATEMENT OF EXPENDITURE

The Grant made available for SPRP phase I was expected to be utilized according to the following approximations:

- Services of AUN	NOK 2.300.000
- Procurement of equipment, vehicles etc.	" 300.000
- Recurrent expenditure	<u>" 1.000.000</u>
Total	<u>NOK 3.600.000</u>

If any of the above amounts are not fully utilized for the purpose indicated, the balance may be utilized upon agreement between the Parties to the benefit of the Project.

The statement of expenditure for SPRP phase I is as follow:

- Services of AUN	NOK 2.101.875,88
- Procurement of equipment, vehicles etc.	" 181.831,08
- Recurrent expenditure	<u>" 1.168.833,97</u>
Total	<u>NOK 3.452.540,93</u>

The statement has been controlled and approved by the Norwegian government board of auditors.

8. REFLECTIONS

8.1. The Project

The SPRP was supposed to be carried out in the high rainfall areas in Zambia covering the Northern, Luapula, Copperbelt and North-Western provinces, approx. 370.000 km², which is half the Zambia land area. The project was based at Misamfu Regional Research Station, Kasama District in Northern Province. These circumstances in addition to poor road communication network have restricted the SPRP movements within the high rainfall areas. Most of the work, particularly the socio-economic part, is mainly related to the Northern Province conditions. The problems were discussed with Zambian authorities. It was realized that the SPRP in phase II should concentrate its agricultural research efforts in Northern and Luapula provinces, while an other SPRP team sponsored from NORAD/AUN or an other aid agency should take care of the Copperbelt and North-Western soil productivity problems. Such an arrangement would fit nicely into other Norwegian agricultural assistances in the area (Dept. of Agriculture, planning- and extension branch, Village Agricultural Programmes (VAP), Northern Cooperative Union (NCU) and Adaptive Research Planning Team (ARPT).

8.2. The Programme

The proposed programme made by Norwegian scientists in different fields of agricultural disciplines was approved by Zambian authorities. It was, however, experienced that when the programme became operational, disagreements occurred. The most serious one was the SPRP soil sampling programme. From Zambian authorities it was asserted that this exercise was a repetition of soil sampling programmes already carried out by other commodity research and advisory teams, Soil Survey Unit, etc. etc. The SPRP, however, argued that this was a part of the agreed programme. In addition the soil samples referred to should be taken from farmers' fields under different farm management systems to observe the influence of the systems on soil fertility, both chemically and physically. The soil sampling analytical programme

should include analyses of micro-nutrients as well as macro-nutrients. Such informations are lacking in these areas, but would be of much value when designing soil fertility research in the future. It is believed that this kind of disagreements could have been avoided if a proper discussion among a broader agricultural scientific representation of the two bodies (AUN and MAWD) had taken place in advance.

The Agreement between MAWD and AUN outlined a research programme for 6 months' engagement of a rural sociologist in the fields of socio-economy. In spite of the short period, the informations obtained have to a great extent been very valuable in the sense of understanding the small scale farmers' socio-economic problems in the designated areas. Therefore, it came as a surprise and a disappointment to learn from the Zambian authorities that the proposals for further studies presented by the rural sociologist should not be included in the SPRP project in the future. They had already charged the Adapted Research Planning Team (ARPT) in the Northern Province with the work on these aspects. The SPRP was instead encouraged to cooperate with ARPT in this discipline as well as in other fields of agricultural research projects. It was expected to have the ARPT in operation in Northern Province from 1984. It was assumed that NORAD would support the ARPT. When the majority of the Advisory Committee favoured the exclusion of a social science component in the SPRP, the AUN had to concur if the Project was to continue. Discussions within the AUN bodies underscores therefore the importance of the ARPT, and the cooperation between ARPT and SPRP.

8.3. The Obligations of MAWD

Reference is made to Appendix II, item 4. To some extent it must be admitted that the obligations of MAWD listed was fulfilled. It is, however, necessary to point out the MAWD failure in appointing young graduates to be trained in the various SPRP agricultural disciplines. The matter

was discussed with Zambian authorities several times, both in the MAWD, Advisory Committee and at UNZA, but without much progress. From AUN it was pointed out that the training part of the programme is of much importance to build up Zambia competence in farming systems research. In the end of phase I steps were taken to improve the training part of the programme, but still not at a satisfactory level.

Two technical staff members were appointed by MAWD from the start of phase I, see item 5.6. of this part 4. It was very soon experienced the need for more assistance both in the administration of the project as well as in the field work, so six people were permanently employed in the beginning of SPRP pay-roll. From January 1983 five of the employees were accepted to be employed by MAWD and paid by them, while the junior executive officer remained with SPRP. Due to heavy seasonal workload, the SPRP employed from two to six casual labourers. With reference to the MAWD/AUN agreements, the local employees should have been the responsibility of MAWD, but so did not happen.

The services of Mount Makulu Central Research Station have been satisfactory. In particular we would like to express our thanks to the Soil Survey Unit laboratory for expeditious service of analyses of the SPRP soil samples. The SPRP has provided chemicals and glassware of different kind and invested in an atomic absorption spectrophotometre (AAS) worth US\$ 43,707.-. The apparatus is placed in the Soil Survey Unit laboratory.

At Misamfu Regional Research Station the SPRP personnel have had access to offices and research facilities. The research station is, however, poorly equipped both administratively and for agricultural research purposes. Therefore, it has been necessary for SPRP to invest in manpower and equipments. These kind of investments are likely to increase in the next phase of SPRP.

8.4. The Obligations of AUN

The AUN obligations in SPRP are presented in Appendix II, item 3 of this part 4. It will be correct to say that the obligations listed have been satisfactory fulfilled. In fact, the AUN contribution regarding inputs and backstopping to the project have become more pronounced than expected. It is believed that these circumstances are due to lack of Zambian fulfillment of the agreement.

8.5. The Advisory Committee

The Advisory Committee has met twice during the phase I period. The function of the committee has been reasonably good. However, the impression is that the committee is too much concerned with detailed problems and results related to SPRP activities rather than in general and main problems facing the designated areas and what kind of research policy should be taken. This will hamper the main objective of the committee, namely to form a research programme strategy for the project. An improvement of the work in the committee could be to let two representatives from Northern Province take seat as members. The representatives should both be political (Permanent Secretary, PS) and professional (Provincial Agricultural Officer, PAO). To avoid a big number of committee members, the numbers represented Mount Makulu Central Research Station should be kept as two, the Chief Agricultural Research Officer (CARO) and the Soil Productivity Research Team leader (SPRT).

8.6. Project Unit

The Project Unit (PU) which is an executive unit of the Advisory Committee came in operation after the first meeting was held in the Advisory Committee, February 1983. The PU has an important function in the SPRP organisation in the sense of translating agrotechnical matters into research projects. Therefore, it is important that the PU receives the Advisory Committee research strategies well defined and in time so that PU has the best possible

background for assigning priorities and designing research projects.

8.7. The Project Coordinator

The Project coordinator is a key person in the whole set up of the SPRP. The person is making all day-to-day decisions at Misamfu Regional Research Station. In this respect good cooperation is essential both with the leadership on the station as well as with SPRP staff members and other commodity research-, advisory- and development teams both locally and externally. The same good relationship is important to Mount Makulu Central Research Station, MAWD and the NORAD Res.Rep. in Lusaka. Taking into consideration the communication problems (telephone, telex, mailings, long distances, bad roads, etc.), the cooperations and contacts with related bodies have been reasonably good. The experience of being the first SPRP Project Coordinator is that the position has required a heavy load of external and local administration which to some extent has reflected the professional work. In the beginning the Misamfu Regional Research Station was used for some of the SPRP administration work, but with little success. The problem was discussed in the Advisory Committee which agreed to the proposal to employ a junior executive officer in SPRP. The engagement started in January 1983. From that time the administration at SPRP improved.

8.8. The NORAD Resident Representative

The cooperation between the NORAD Res. Rep. in Lusaka and SPRP has been good. The SPRP and its expatriate staff members have been given the same services as ordinary NORAD projects and personell. The services given have been much appreciated. In addition NORAD built 3 new houses at Misamfu Regional Research Station allocated for SPRP personell. NORAD/Lusaka has a direct link to the project through its membership in the Advisory Committee.

8.9. The AUN-Zambia Committee

The AUN Board of trustees appointed the AUN-Zambia committee in January 1981, ref. item 4.4. of this part 4. The main objective has been to guide the AUN and NORAD Project coordinator on all major issues concerning the project. The committee has functioned satisfactorily and the relationship between AUN and NORAD has been good. In the future it should be considered to give AUN full responsibility for funds allocated to the project. At AUN it should also be considered to appoint sub-committees in different fields of agricultural disciplines as professional backstoppers.

8.10. The NORAD/AUN Office

The NORAD/AUN Office' main objectives have been to be a secretary for the AUN-Zambia Committee and a backstopper for SPRP. It is assumed that this kind of work will increase in phase II. It has, therefore, been approved by NORAD to appoint a project backstopper based in this office.

DRAFT

22.10.80 SM/th

A G R E E M E N T

between

THE GOVERNMENT OF THE KINGDOM OF NORWAY

and

THE GOVERNMENT OF THE REPUBLIC OF ZAMBIA

regarding

the financing of a Soil Productivity Research Programme
in High Rainfall Areas in Zambia.

The Government of the Kingdom of Norway (hereinafter
referred to as "Norway") and the Government of the
Republic of Zambia (hereinafter referred to as "Zambia"),

in pursuance of the Agreement between Norway and Zambia
regarding Economic and Technical Co-operation, dated
20 February 1976 (hereinafter referred to as "the General
Agreement") and with reference to the provisions therein
relating to Specific Agreements,

have reached the following understanding which shall con-
stitute a Specific Agreement:

Article I

Scope - Implementation

1. Norway and Zambia will during the years 1981 - 83 co-operate with regard to the implementation of a Soil Productivity Research Programme in High Rainfall Areas in Zambia as outlined in Annex I to this Agreement (hereinafter referred to as "the Project").
2. Norway will enter into a contract with the Agricultural University of Norway (NLH) which, in co-operation with the Ministry of Agriculture and Water Development, Zambia, will be responsible for the implementation of the Project. NLH will thereafter enter into an agreement with the Ministry of Agriculture and Water Development.

Article II

Obligations of Norway

Norway shall subject to Parliamentary appropriation, provide a financial grant not exceeding Norwegian kroner 3,600,000.- (three million six hundred thousand) (hereinafter referred to as "the Grant") which shall be utilized exclusively for the financing of the Project.

Article III

Obligations of Zambia

Zambia shall:

1. In addition to the Grant provide and bear the costs of all facilities, services, technical staff and other resources that may be required for a successful implementation of the Project;
2. grant all necessary permits, import licences and foreign exchange permissions that may be required in connection

5. Zambia shall grant external account facilities to personnel serving continuously in Zambia for periods of six months or more.
6. No currency or foreign exchange controls shall be imposed upon financial resources brought into Zambia by the Consultant for the purposes of this Agreement.
7. The regulations regarding indemnity, arrest and recall in Article IV paragraphs 4 and 5 in the Main Agreement shall apply to the employees of NLH serving in Zambia under this Agreement.

OBLIGATIONS IN REGARD TO NLH.

1. Zambia shall make available to NLH all existing information and provide other corresponding assistance relating to the implementation of the Project under this Agreement.
2. Zambia shall without costs for NLH issue export and import licences and other necessary permits, and exempt the NLH from payment of import and export duties, taxes and other fees on equipment import to Zambia in connection with consultancy services performed under this Agreement. If any of the items are disposed of in Zambia, duties, taxes or fees will be paid pursuant to the applicable laws and regulations of Zambia.
3. Zambia shall issue necessary entry, exit and other permits for NLH and its employees with their families, including employment permits and identity cards. These services shall be free of charge.
4. The employees of NLH shall be exempted from income taxes and any other personal taxes on the emoluments paid to the personnel by Norway.

The employees of NLH shall be exempted from payment of import and export duties and taxes on used household and personal effects brought into Zambia by the employees or their spouses and dependants within six months of their first arrival in Zambia.

Additionally employees who will serve in Zambia for more than twelve consecutive months shall be allowed to import free of duties and taxes (or purchase from bond) one motor vehicle within six months of their first arrival in Zambia.

If any of the above-mentioned items are disposed of in Zambia otherwise than to a person entitled to the same exemptions, appropriate duty and tax will be paid thereon.

The Project Unit will be under the direction of the Advisory Committee and will consist of members from NLH and Department of Agriculture, Research Branch. The Project Unit shall at regular intervals report to the Advisory Committee on the progress of the Project.

- 5 . Based on the findings resulting from the activities referred to above a plan for soil productivity research is to be prepared. Such a plan shall contain proposals of general aims, research objectives, personnel, equipment and cost estimates for a possible second phase of this Project.

The above plan is expected to be available within the expiry of 1982.

3. The Grant made available under this Agreement is expected to be utilized according to the following approximations:
- | | |
|---|----------------------|
| - Services of NLH | NOK 2.300.000 |
| - procurement of equipment, vehicles etc. | " 300.000 |
| - recurrent expenditure | " 1.000.000 |
| Total | <u>NOK 3.600.000</u> |

If any of the above amounts are not fully utilized for the purpose indicated the balance may be utilized upon agreement between the Parties to the benefit of the Project.

4. Administration of the Project.

An Advisory Committee and a Project Unit shall be responsible for the administration of the Project.

The main task of the Advisory Committee will be to supervise the implementation of the Project and advise the Project Unit. The Committee which will meet at regular intervals to discuss all major issues pertaining to the Project shall comprise representatives from the following institutions:

- a. The Director of Agriculture
- b. The University of Zambia, School of Agricultural Sciences
- c. Senior Soil Surveyor
- d. Chief Agricultural Research Officer and one more representative, Mount Makulu Central Research Station
- e. Permanent Secretary (MAWD)
- f. The Officer in Charge, Misamfu
- g. NORAD Res. Rep., Lusaka
- h. The Project Coordinator
- i. The Agricultural University of Norway.

A N N E X I

The main features of the Project "Soil Productivity Research Programme in High Rainfall Areas in Zambia" are as follows:

Objectives of the Project.

The overall aim of the Project is to enable Zambian authorities to design new agricultural systems at low, intermediate and high level of technology. The Project will comprise an evaluation of existing farming systems in high rainfall areas and of the capacity of the small peasant households to modify their existing productive strategies in order to increase production.

1. Project activities.

- Collection and evaluation of existing data on long term soil fertility experiments, on effects of wood burning etc., and make relevant laboratory analyses.
- Investigation and review of agronomic effects of traditional farming systems.
- Investigation of present allocation of internal resources both human, natural and technical and how resources are reflected in the farming systems.
- Analyse of types of external factors affecting the process of decisions at farm level and elaborate alternative development models based on previous experiences incorporating new knowledge of soil conditions.

2. Staff development.

An important task of the Project is to build up professional competence within Zambia on farming systems by training Zambian graduates. The training programme shall be developed in collaboration between NLH and Zambian authorities.

with the orderly implementation of the Project;

3. establish procedures whereby customs duties, taxes or any other fees normally imposed in Zambia shall not be charged in relation to equipment, vehicles etc. made available under this Agreement;
4. promptly inform Norway or its representatives of any condition which interferes or threatens to interfere with the successful realization of the purpose of the Agreement;
5. undertake obligations in regard to NLH, as defined in Annex II to this Agreement.

Article IV Disbursements

The expenses connected with the implementation of the Project shall be disbursed directly by Norway to NLH,

Article V Co-operation and Administration

1. Norway and Zambia shall co-operate fully to ensure that the Project is implemented in an efficient manner. To that end, each Party shall furnish to the other all such information as it may reasonably require, and shall be free to send its representatives to visit the sites of the activities undertaken under the Project.
2. In matters relating to the implementation of the Project the Norwegian Agency for International Development (NORAD) shall represent Norway, and the Ministry of Agriculture and Water Development (represented by the Department of Agriculture Research Branch) shall represent Zambia.

APPENDIX II

A G R E E M E N T

between

THE AGRICULTURAL UNIVERSITY OF NORWAY

and

THE MINISTRY OF AGRICULTURE AND WATER DEVELOPMENT

The Agricultural University of Norway (hereinafter referred to as "NLH") and the Ministry of Agriculture and Water Development (hereinafter referred to as "the Ministry") have today entered into the following Agreement:

1. Scope.

NLH and the Ministry represented by the Department of Agriculture, Research Branch (hereinafter referred to as "the Department") will co-operate on a Research Programme in High Rainfall Areas in Zambia (hereinafter referred to as "the Project"). The Project is described in the Annex attached hereto.

2. Financing.

The Project will be financed by the Norwegian Agency for International Development (hereinafter referred to as "NORAD") within the financial limits and on the terms and conditions set forth in a Contract to be entered into between NORAD and NLH.

3. Obligations of NLH

NLH is in co-operation with the Department, responsible for the implementation of the Project and will hereunder provide the professional leadership required for its

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successful accomplishment.

In addition, NLH will provide the following services and facilities:

a) Technical assistance comprising:

Agronomist - 24 Man months

Soil fertility specialist - 24 Man months

Agricultural economist - at least 3 - 4 Man months initially and possibly some time during the final stages according to need.

b) laboratory equipment, chemicals, requisites for trials, tools for field work including 2 landrovers and 3 motor cycles,

c) processing of statistical data,

d) typing and printing facilities at NLH,

e) laboratory facilities with basic equipment in Norway that may be required for the Project.

NLH will furnish to Zambia semi-annual reports on the expenditure incurred.

4. Obligations of the Department

The Department shall make available free of charge all services and facilities promptly as needed for the successful implementation of the Project, hereunder;

- suitable housing with furniture for the expatriate personnel with families,
- access for the expatriate personnel to offices and research facilities at Misamfu Research Station,
- the services of Mount Makulu Central Research Station, Lusaka,

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- technical staff.

In addition the Department shall co-operate in the implementation of the Project and shall hereunder i.a. appoint young graduates to receive education in farming systems under this Agreement.

5. Right of disposal of equipment etc.

NLH shall have an unlimited right of disposal of the equipment and vehicles and undertakes adequate maintenance of the vehicles and to keep them properly insured during the Project period.

The vehicles are understood to be registered in the name of NORAD.

6. Amendments.

Any amendment to the present Agreement will be subject to the approval of NORAD.

7. Entry into force. Termination.

The present Agreement will enter into force upon the signing of the Contract between NORAD and NLH referred to in paragraph 2 above.

The present Agreement shall terminate on the date upon which both parties have fulfilled all obligations arising from it.

Norwithstanding the preceding paragraph, both parties shall be entitled to terminate the present Agreement by giving six months prior written notice to the other party and to NORAD.

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Done at Lusaka this 10th day of April 1981
in two originals in the English Language.

For the Agricultural
University in Norway

For the Ministry of Agri-
culture and Water Develop-
ment of Zambia

Arnar Njeps

A.N.

A N N E X

SOIL PRODUCTIVITY RESEARCH PROGRAMME IN HIGH RAINFALL AREAS IN ZAMBIA.

1. Introduction.

1.1 The Norwegian Agency for International Development (hereinafter referred to as "NORAD") has received a request of 19th September 1978 from Zambia for support for a soil productivity research project in high rainfall areas. The request outlines a project in two phases. It is assumed that NORAD will support phase 1. A project committee at the Agricultural University of Norway (hereinafter referred to as "AUN"), consisting of experts in fields related to farming problems in these areas, has prepared the following proposals for phase 1 (hereinafter referred to as "the Project").

1.2 Title

Soil Productivity Research Programme in High Rainfall Areas in Zambia.

2. Research institutions involved.

- 2.1 Mount Makulu Central Research Station, Chilanga, Zambia
- 2.2 Agricultural University of Norway, Ås-NLH, Norway
- 2.3 Possible co-operation from international research institutes, such as IITA, Ibadan, Nigeria.

3. Objectives.

- 3.1 The Project will comprise an evaluation of previous (chitemene grass mounds) and existing farming systems in the high rainfall areas in Zambia with regard to soil fertility, soil structure, soil erosion, methods of

fertilization and liming, crop rotation systems, methods of basic tillage, cultivation and plant protection with due regard to long term productivity in the soil.

- 3.2 The Project will also include an evaluation of the capacity of the small peasant households to modify their existing productive strategies when confronted with new farming techniques and their capacity to adapt to changes favouring the growth of production and the expansion of the surplus oriented to the urban market.
- 3.3 Based on informations collected from the Project recommendations will be made for phase II with regard to main research fields, research facilities in the high rainfall areas of Zambia, personnel, cost estimates, etc.

4. Importance of research.

- 4.1 The high rainfall areas of Zambia which includes the Northern, Luapula, Copperbelt and North Western provinces account for approx. half the total land areas of Zambia, i.e. 370.000 sq. km. The average annual rainfall (October-April) is about 1000-1400 mm. The rain appears in heavy showers of short duration on vegetation mainly covered with Miombo woodland. The soils are predominately sandy in the top layer with increasing clay content with depth, acidic, strongly weathered and deeply leached with low cation exchange capacities. The soil structure becomes unstable when exposed to cultivation.
- 4.2 The traditional system of agriculture is one of forest burn Chitemene, or grass mounds where tree cover is sparse. Both systems are still practised, but they have a low productivity and require a long fallow period.
- 4.3 Attempts to introduce a more stable and productive system based on the use of mineral fertilizers face problems. Evidence indicates that soil fertility, particularly exchangeable potassium, phosphorus, sulphur, pH, together

with exchangeable calcium and magnesium, and soil structure declines at a rapid rate, say 4-5 years, under arable conditions. There is some evidence based on results of long term maize trials started in 1965, to indicate that with the continued use of fertilizers (N,P,K,S,Zn) and lime, productivity can be maintained. However, such a high technology approach is in most cases beyond the resources of the small scale farmer who represent 95 per cent of the farming population in these areas.

- 4.4 The significance of the proposed investigations is to provide a better understanding of the shifting cultivation system in the northern regions of Zambia before designing new agricultural systems at low, intermediate and high level of technology. In an area where soil fertility is probably a minimum factor in food production a thorough effort to collect all relevant informations on these problems is necessary as a first step in a long range farm management systems research for the future. Equally important is to evaluate all other facets of the previous systems where informations are still available. Information sources are old cultivated fields, areas in different stages of forest regrowth, Department of Agriculture extension branch, chiefs in villages, and relevant literature.

5. Previous research.

- 5.1 The classical work of C.G Trapnell (1953) is a valuable information source on agricultural systems in Zambia. The general aspects of shifting cultivation is covered by Ney and Greenland (1960). Important work has been carried out at the international centres, such as IITA in Nigeria and CIAT in Colombia.
- 5.2 In Zambia itself the long term soil fertility trials have thrown light on soil nutrients in the high rainfall areas. Many experiments carried out at Misamfu Regional Research Station at Kasama cover several agronomic aspects of these problems.

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5.3 Soils information may be found in soil survey carried out by the DOS (Mansfield et. al. 1975), as well as in all soil survey reports from these areas produced by the Survey Unit at Mount Makulu Central Research Station.

6. Research programme.

The processes leading to declining productivity from agricultural activities in the northern part of Zambia are thought to be complex. Therefore no research programme will vary according to the field of research. In the following a brief description of investigation methods are given for the respective fields.

6.1 Soil fertility.

- 6.1.1 Collect and evaluate data from long term soil fertility experiments (lime, fertilizer, micronutrients).
- 6.1.2 Collect and evaluate data from experiments and soil profiles regarding organic matter and nitrogen regime in soils.
- 6.1.3 Collect and evaluate data on effects of wood burning on soil fertility (pH, plant nutrients) and microbiological changes.
- 6.1.4 Collect and evaluate data concerning effects of grass mulching on organic matter and nitrogen regime in soils, as well as on microbiological populations.
- 6.1.5 Collect soil samples from village gardens in different stages after clearing, as well as from uncleared woodland and from bush in different stages of regrowth after cultivation. Sites to be selected in cooperation with the Soil Survey Unit, District Agricultural Officers and village elders. Soils samples to be thoroughly analysed at Mount Makulu Soils Laboratory and at the Agricultural University of Norway.

- 6.1.6 Collect soil samples from long term fertilized and cultivated farms at Mkushi (C.P.), and elsewhere in the + 1000 mm annual precipitation areas as well as from uncleared woodland adjacent to these farms.
- 6.1.7 Collect soil samples from successful and not successful settlements in high rainfall areas for thorough analyses.
- 6.1.8 Collect and evaluate data from soil survey reports concerning the high rainfall areas in Zambia in cooperation with the Soil Survey Unit at Mount Makulu Central Research Station.
- 6.1.9 Pay visits to research centres in other countries dealing with problems similar to the high rainfall areas of Zambia.
- 6.2 Agronomy
 - 6.2.1 Investigate and review the traditional farming systems such as forest burn, grass mound culture, etc. with regard to crop production, quality of the produce, plant diseases, weed problems, etc.
 - 6.2.2 Investigate and review data from long term trials of grass on yield, plant diseases, weed control, etc.
 - 6.2.3 Evaluate the importance of crop rotation systems.
 - 6.2.4 Evaluate the importance of the fallow period.
 - 6.2.5 Initiate rotation studies.
 - 6.2.6 Initiate studies to determine the optimum fallow period.
 - 6.2.7 Investigate and review the traditional farming systems in dambo areas such as grazing, burning of grass with regard to beef production.
 - 6.2.8 Investigate and review data from trials in dambo areas on grass and crop production.
 - 6.2.9 Initiate farming systems in dambo areas.
 - 6.2.10 Pay visits to research centres in other parts of the world with related problems as in the high rainfall areas of Zambia.

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6.3 Agricultural economy.

- 6.3.1 Investigations of the present allocation of internal resources to the farmers, human as well as natural and technical resources and the interaction between them. How these resources are reflected in the farming system, type and volume of production, output and use of the produce, cultural constraints, etc. As the small peasant households are immersed in many types of relationship with the market a special attention will be given to a careful description of the situation of production with regard to the incidence of this dimension.
- 6.3.2 Analyse the peasant households within a wider context, focusing on the multiple types of external factors that affect the process of decisions at the farm level of production, such as market conditions for production, output/input, labour and land, credit, extension services as well as services in general, governmental policy etc.
- 6.3.3 Elaborate alternative development models based on previous steps incorporating new knowledge of soil conditions and plant production which will be further explored in subsequent studies (phase 2).
- 6.3.4 A collaboration with research institutions working on similar problems will be useful. Primarily this refers to the planned Adaptive Research Planning Team. The above outlines (6.3.1 - 6.3.3.) may be adjusted in cooperation with the said agencies both with reference to duration and research program.

7. Staff development

- 7.1 An important task in the Project will be to build up professional competence within Zambia on farming systems by training Zambian graduates. The training programme should be developed in collaboration with Zambian authorities.
- 7.2 Senior students from University of Zambia and NLH may be employed on short term contracts for defined field investigations.

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8. Seminars (tentatively December 1982)

Seminars will be arranged on findings within the fields of soil fertility, agronomy and agro-economy. Based on these facts proposals of general aims, research objectives, personnel, equipment and cost estimates for a possible second phase will be put forward.

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APPENDIX III

NORWEGIAN AGENCY FOR INTERNATIONAL DEVELOPMENT
(NORAD)

C O N T R A C T

Contract No. 02191 21.5.81

between

THE NORWEGIAN AGENCY FOR INTERNATIONAL DEVELOPMENT (NORAD)

and

THE AGRICULTURAL UNIVERSITY OF NORWAY (NLH)

regarding

Financial assistance from NORAD in connection with the implementation of a Soil Productivity Research Programme in High Rainfall Areas in Zambia (the Project).

WHEREAS the Government of the Kingdom of Norway and the Government of the Republic of Zambia entered into an Agreement dated 7 May 1981 concerning financial assistance in connection with the implementation of a Soil Productivity Research Programme in High Rainfall Areas in Zambia (hereinafter referred to as "the Agreement")

WHEREAS NLH and the Ministry of Agriculture and Water Development represented by the Department of Agriculture (hereinafter referred to as "the Department") have entered into an Agreement concerning co-operation in the implementation of the Project, dated 1981.

NOW THEREFORE NORAD and NLH have agreed as follows:

1. Scope

This Contract sets forth the procedures for the administration of the financial assistance made available under

NORWEGIAN AGENCY FOR INTERNATIONAL DEVELOPMENT
(NORAD)

the aforesaid Agreement.

2. Co-operation

NLH shall co-operate with the Department in order to secure a successful implementation of the Project.

3. Administration

Funds made available under the Agreement shall be utilized to cover:

3.1. Services rendered and equipment provided by NLH in connection with the Project as described in para. 3 of the agreement dated between NLH and the Department of Agriculture.

3.2. Recurrent costs as outlined in Annex I to the Agreement

3.3. Travel expenses and expenses for food and accommodation covered in accordance with relevant Norwegian Government Regulations. Airflight expenses not to exceed the applicable economy class rate.

All international travels to be approved by NORAD in advance.

4. Disbursement of funds

4.1. NLH shall forward to NORAD semi-annual requests for reimbursements of expenditures incurred in connection with the implementation of the Project within 1 June and 1 November each year.

The request shall contain i.a.:

- Statement of expenditure incurred during the preceding period. This includes expenses incurred both in Norway and Zambia;

- progress reports on the implementation of the Project;

- a budget proposal for the coming half year.

NORWEGIAN AGENCY FOR INTERNATIONAL DEVELOPMENT
(NORAD)

NORAD will undertake reimbursements upon approval of the requests.

- 4.2. Within 1 July each year NLH shall forward to NORAD audited accounts in respect of the Project.
- 4.3. The costs to be defrayed by NORAD under this Contract are estimated to the maximum amount of NOK 3.600.000. NLH undertakes to inform NORAD, promptly, in writing on the occurrence of any event which might involve costs exceeding the aforesaid amount.

The performance of services under this Contract which involves costs exceeding the aforesaid amount presupposes an advance approval of NORAD in writing.

5. Personnel

- 5.1. Personnel from NLH serving continuously at Hisarfu Research Station for a period of 6 months or more shall receive remuneration according to the regulation in force for NORAD- experts.

Other personnel from NLH serving at Hisarfu Research Station shall in addition to their ordinary salary receive subsistence allowance according to Norwegian Government Regulations, provided that these costs are not otherwise covered.

6. Procurement of laboratory equipment etc. and vehicles to be imported for Project purposes.

- 6.1. NLH shall on behalf of NORAD undertake these procurements in compliance with Norwegian Government Regulations for procurements and shall hereunder be responsible for all practical arrangements in connection with the transportation to the final place of destination in Zambia hereunder keep the goods adequately insured.

- 6.2. NLH shall forward to NORAD a specified list of equipment and vehicles to be imported under Project. NLH shall call for tenders,

NORWEGIAN AGENCY FOR INTERNATIONAL DEVELOPMENT
(NORAD)

evaluate the tenders received and submit to NORAD a recommendation. Upon approval of the recommendation NLH will on behalf of NORAD enter into contract with the supplier in question.

7. Entry into force - Termination

7.1. This Contract shall enter into force upon its signature provided that the Agreement has been signed.

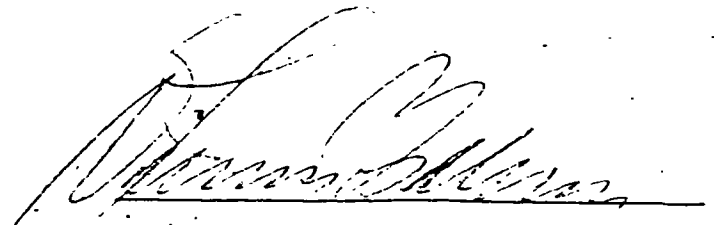
Otherwise this Contract shall enter into force upon the signature of the said Agreement.

7.2. The Contract shall terminate when all obligations arising from it have been fulfilled.

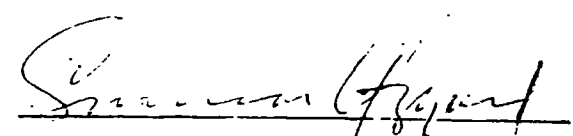
Done at Oslo this day of 19 May 1981.

For the Norwegian Agency for
International Development
(NORAD)

For the Agricultural
University of Norway



Vidkunn Isaksen
Director
Administrative Department



Gunnar Øygard
Høgskoledirektør