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# ASARECA/CIP TECHNOLOGY TRANSFER PROJECT

## PHASE II

**AWARD NO: 623-A-00-97-00049-00**

**USAID /REDSO/ESA**

**FINAL REPORT: 1st OCT 1997 - 30th SEP 2002**

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**Table of Contents**


I. Background.....1

- Introduction .....1
- Importance of technology transfer in the region..... 1
- Major problems of technology transfer in the region..... 3
- Goals and objectives ..... 3
- Planned outputs.....3
- Planning process.....4

II. Strategic plan and major activities of the technology transfer project .....4

- Strategic plan and conceptual framework.....4
- Governance structure..... 4
- Participating countries..... 4
- Implementing agencies..... 4
- Linkage with other partners..... 5
- Policy..... 5
- Budget/ Expenditures..... 5
- Planning, Monitoring, Evaluation mechanism and system..... 6
- Performance indicators of the technology transfer project..... 6
- Sub-projects management.....8
- Information management .....8
- Publications.....8

III. Competitive grant making system and lessons learned from small pilot sub-projects..8

- Project Implementation.....8
- Partnership.....8
- Criteria for assessment and scoring of proposals.....9
- Number of funded sub-projects.....9
- Number and type of grantee institutions.....10
- Number of funded sub-projects by thematic areas.....10
- Technology transfer processes.....10
- Successful technology delivery system.....10
- Problems in technology delivery system.....11
- Lessons learned about technology transfer.....11
- Factors that will make TTP more effective.....11
- Information and dissemination.....11
- Major achievements.....12
- Recommendations.....12
- Emerging issues in technology transfer.....12

IV. Summary of major lessons learned from pilot sub-projects.....13

V. Appendices


| | | |
|---|---|---|
| Appendix I | List of Steering Committee members | 21 |
| Appendix II | Directory of sub-projects, budget and disbursements | 25 |
| Appendix III | Directory of publications | 32 |
| Appendix IV | Report of the workshop on the study of agricultural technology transfer processes and adoption in ECA ( 24-25 Sep 2001) | 33 |
| Appendix V | Report of the final technology transfer stakeholders symposium (09-11 Sep 2002) | 53 |
| Appendix VI | List of stakeholders symposium participants | 7 |

## I. Background

### ➢ Introduction

The Technology Transfer Project is one of ASARECA's (Association for Strengthening Agricultural Research in East and Central Africa) regional collaborative projects implemented by the International Potato Center (CIP) under the guidance of regional stakeholders. The project is an innovative pilot project that funded 16 small sub-projects in Phase I (1995-97) and 32 small sub-projects in phase II (1997-2002). In both phases, projects that met the guidelines (partnership, sustainability, potential beneficiaries etc) and used innovative approaches to technology transfer were funded and implemented in member countries. The project was funded by USAID/REDSO/ESA.

NARS researchers from member countries, regional IARC institutions, Public Extension, CBO, Farmer Organizations, the Private Sector and other locally based institutions dedicated to technology transfer were encouraged to establish linkages and develop joint project proposals for competitive grants. These partnerships developed innovative mechanisms to bring specific technologies to specific target groups of potential users. The project as a whole was also meant to provide lessons and feedback to all the participating institutions on promising approaches and methods for the improvement of the transfer of improved technologies to farmers and food processors.

The first phase was funded as a two-year pilot project starting in 1 October 1995 by a grant of $300,000 from USAID. The International Potato Center (CIP) was asked to implement the program through its regional office for Sub-Saharan Africa, which is based in Nairobi. In this phase, funds for a maximum of US $ 20,000 per project were distributed to 16 regional sub-projects starting April 1996. The first phase ended on 30 Sept. 1997. The phase I project was evaluated in June 1998. The report reviewed the successes and problems encountered in project implementation as well as the lessons learned in collaborating with new partners and made suggestions and specific recommendations.

The second phase of the project started on 1 October 1997 through a grant of US $ 1.57 million for four years (1 Oct 1997- 30 Sept 2001) from USAID. The project funded 32 sub-projects for a maximum of US$ 40,000 per sub-project and a duration of three years. The International Potato Center (CIP) implemented the project on behalf of ASARECA and partner institutions.

### ➢ Importance of technology transfer in the region

ASARECA is composed of ten member countries (Burundi, Congo D.R, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda) of the Eastern and Central Africa Sub-region. They cover a total area of 8.02 Million km$^2$. Agriculture is the main economic activity, contributing to 29-60% of the GDP, 66-100% of the exports and employs 68-92% of the population. Agriculture is the major source of income, employment, food, foreign exchange and the supplier of raw materials for industry. The major output indicator of the ASARECA Long Term Strategic Plan for Regional Agricultural Research in the ECA countries is stated as " The number of technologies actually developed, transferred and adopted

by farmers and the increased economic growth which can be attributed to the technologies developed through the strategy" (ASARECA Long Term Strategic Plan, Sept. 1997)

The technology Transfer Project is a collaborative activity of ASARECA, International Agricultural Research Centers (IARCs) active in the Sub-region, Regional Commodity Networks operating under the auspices of ASARECA, National Agricultural Research Systems (NARS), NGOs, PVO's, CBO's and local institutions.

A Steering Committee composed of 14 members, (representing 2 each from NARS, Universities, NGO's and 1 each from IARC's Regional Networks, Extension, Private Sector, the Executive Secretary of ASARECA, Representative of USAID, CIP and the Co-ordinator) were elected at the Stakeholders meeting in September 1997, to approve the guidelines for selection and supervise the project ( Appendix I)

A total of 291 project proposals were submitted from national and regional institutions in ASARECA member countries. The proposals were reviewed and assessed by a committee of regional experts. Of the total 291 applications the Steering Committee selected 32 sub-projects funding for up to a maximum of US$ 40,000 per sub-project and a maximum of three years (Appendix II).

Of the 32 project proposals selected for funding, 1 was from Burundi, 2 from DR Congo, 3 from Ethiopia, 8 from Kenya, 3 from Madagascar, 2 from Rwanda, 2 from Sudan, 7 from Tanzania and 4 from Uganda. A grant agreement and a standard reporting format was prepared and agreed upon for submitting quarterly financial and technical reports by each subproject. The first quarterly payments and implementation of the successful fast track subprojects started in December 1998.

In Phase II, a major consultancy study, by Mr Stachys Muturi and Group of Consultants, on agricultural technology Transfer processes and adoption was undertaken in ASARECA member countries, based on the lessons and experiences learned from the 32 funded sub-projects funded by the technology transfer project as well as other similar technology dissemination activities in the region. The study was completed in September 2001. The major findings and recommendations were presented at the Steering Committee, Sub-project and stakeholders symposium in September 2001. A final report was presented at a general Stakeholders Workshop held in September 2002, in Nairobi, Kenya. The major lessons learned and recommendations of the study that was based on the funded pilot sub-projects are incorporated in this report.

In July 1998, a five-year (1998-2003) financing proposal was submitted to the EU to supplement the USAID/REDSO/ESA grant. In January 2001, the EU approved a five-year (2001-2006) total grant of Euro 420,000 (US $ 378,00) to start as soon as the funds are available to ASARECA for disbursement under the supervision of the Steering Committee.

- **Major problems of technology transfer in the region**

The major agricultural technology transfer problems in the ASARECA region are presented as follows:

- poor coordination between national research services and national development programs
- inappropriate policy and regulatory environments
- inadequate supply and /or inaccessibility of improved inputs
- weak partnership /linkages among stakeholders
- lack of incentives for researchers and extension agents
- inappropriate and unfinished technology
- lack of appropriate technology for women
- lack of funds and credit, and;
- inadequate infrastructure and support services

- **Goals and objectives**

**Goal:**

To promote agricultural technology transfer through collaboration between research and partner organizations in East and Central Africa.

**The specific objectives were to:**

a) provide competitive grants for researchers to work together with partner institutions and beneficiaries dedicated to transfer of promising technologies.

b) use experience of these projects to draw up lessons and guidelines applicable to help solve the problems of technology transfer in the region.

- **Planned outputs**

  - Effective and functional partnerships established and strengthened
  - Stakeholder and organizational capacity enhanced
  - Information and dissemination improved
  - Lessons learned fro scaling-up

- **Planning process**

  - Call and submission of proposals
  - Assessment and development of proposals
  - Fund successful projects (Competitive Grants System)
  - Monitoring and evaluation

## II. Strategic plan and major activities of the technology transfer project

- **Strategic plan and conceptual framework**

The strategic plan of the project was to fund small pilot sub-projects from member countries on competitive basis and promote sustainable technology transfer and adoption by enhancing effective partnership by the various stakeholders. Furthermore, the project will undertake analysis of the transfer process and adoption through case studies and special consultancy study of the funded projects and other similar projects in the region.

- **Governance structure**

The Committee of Directors established a Steering Committee (SC) composed of representatives from NARIs (2 members), (Universities (2), IARCs (1), Networks (1). Public extension (1), NGOs (2), and the private sector (1),. The Ex-officio members are ASARECA Executive Secretary, CIP as the executing agency and USAID as the donor.

- **Participating countries**

Although the project's mandate was to fund sub-projects on strictly competitive basis and agreed upon criteria, all ASARECA member countries except Eritrea in Phase II benefited from the project. ( applications were not submitted from Eritrea).

- **Implementing agencies**

The project was implemented by the International Potato Center (CIP) on behalf of all regional stakeholders that included the NARSs, regionally based IARCs, Public extension, ASARECA, NPPs, NGOs, Private sector, CBOs, Farmer Organizations and Women groups.

- **Linkage with other partners**

The project covered all commodities in six thematic areas (Seed production systems 47%. Post-harvest processing 9%, Animal production 19%, Animal health 6%, Mechanization 13% and NRM 6%). These are of strategic importance and priority in the region and in each member country. The sub-projects were implemented by establishing close partnerships among and between technology transfer stakeholders in each country.

- **Policy**

Appropriate policy environment is a key factor in the transfer of agricultural technology in each member country and the region in general. In Kenya and Uganda , there have been radical changes in policy and agricultural extension and technology transfer processes and implementation guidelines. Kenya has established the National Agriculture and Livestock Extension Programme (NALEP). Uganda has initiated the National Agricultural Advisory Services (NAADS). This approach enhances greater participation in priority setting, technology development and dissemination by all beneficiaries and other stakeholders concerned in technology dissemination. The NAADS initiative shifts from traditional public extension delivery approaches to the decentralization of research and extension and the provision of extension based on direct demand by the CBOs and farmers, including services form the private sector.

- **Budget and expenditures (30/09/97-30/09/02)**

| Item | Approved Budget US$ | Disbursement 30/09/02 | % Spent to 30/09/02 |
|---|---|---|---|
| Administration | 415,661 | 405,647 | 98 |
| Planning & Mgt | 139,667 | 113,179 | 81 |
| **Total Support Services** | **555,328** | **518,826** | 93 |
| Competitive Grant | 850,000 | 882,621 | 104 |
| Awards | | | |
| Overhead (22% on Support + 5% on grants) | 164,672 | 158,273 | 96 |
| **TOTAL** | **1,570,000** | **1,559,719** | **99** |

* The remaining balance at the completion of the project on 30th September 2002, was US $ 10,281.00

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- **Planning Monitoring, Evaluation mechanism and system**

Monitoring and evaluation was undertaken by the coordinator, Steering committee members, backstopping scientists and other collaborating partners. M&E reports outlining lessons, success stories and problems were documented for each sub-project that was visited.

- **Goal, purpose, output and indicators for the technology transfer project**

**Goal:**
Promote agricultural technology transfer for sustainable agricultural productivity in ECA. through collaboration between research and partner organizations in ASARECA member countries.

**Indicators for goal:**

Number of technologies adopted through effective partnerships.

**Purpose:**

Effective strategies, processes and mechanism for technology transfer and adoption established.

**Indicators for purpose:**

i. Number, origin and types of sustainable partnerships
ii. Number and types of technologies adopted
iii. The degree/extent of adoption

Outputs:

a. Effective and functional partnerships established and strengthened
b. Stakeholder and organizational capacity enhanced
c. Information and dissemination improved
d. Lessons learned for scaling-up

**Indictor for outputs:**

For output 1:

- Number of effective linkages between regional technology transfer institutions

For output 2:

- Number of exchange visits, study tours and workshops

For output 3:

- Numbers of information leaflets, pamphlet, special case study reports and analytical synthesis reports.

For output 4:

- Number of institutional arrangements for technology transfer that can be potentially replicated in the region

**Activities:**

To deliver output 1 (effective partnerships established):

1. Established criteria for submitting proposals
2. Stakeholders consultative meeting
3. Competitive grant making system developed
4. Selection of sub-projects for funding
5. Funding of sub-projects based on grant agreements
6. Monitoring and evaluation activities carried out in the following manner:

    - Site visits by coordinator and steering committee members, IARCs & NARS scientists.
    - Exchange visits by grantees
    - Quarterly technical and financial reports form grantees
    - Annual reports from grantees

To deliver output 2: (capacity building):

1. Conduct exchange visits
2. Hold workshops
3. Conduct study tours
4. Training

To deliver output 3 (information dissemination):

1. Produce and provide information leaflets, pamphlets and articles

To deliver output 4: (lessons learned for scaling-up):

1. Have special regional studies, special studies on technology transfer processes and adoption in the region and analytical synthesis study reports as follows:

    - Case studies
    - Analytical synthesis reports done (for scaling-up)

Studies on technology transfer and adoption

- **Sub-projects management**

Standard CIP financial liquidation format accompanied by original receipts are used by sub-project leaders to submit quarterly financial reports. Quarterly advances are made only after submission and analysis of satisfactory financial and technical reports. The coordinator supervises all payments and technical management under the supervision of the Regional Director of the International Potato Center (CIP).

- **Information management**

Relevant information from progress reports, monitoring and evaluation reports, special study and analysis reports was compiled and disseminated through extension leaflets, posters. workshop presentations and proceedings, and publication in AgriForum.

- **Publications**

As shown in Appendix table III, twelve articles on different sub-projects funded by the technology transfer project were published in AgriForum. See Appendix table III for list of publications.

## III Competitive Grant making System and lessons learned from small pilot sub-projects

- **Project Implementation**

| | |
|---|---|
| • Recipient: | ASARECA |
| • Executing Agency: | CIP |
| • Steering Committee: | 14 Members |
| • Funding Agency: | USAID/REDSO/ESA |
| • Regional Stakeholders: | NARSs, IARCs, NGOs, Private Sector, NPPs. Public Extension, CBOs and Women Groups |

- **Partnership**

- NARI's
- Universities
- IARCs
- Networks
- NGOs
- PVOs
- Extension
- Farmer Groups

- Women Groups
- CBOs

**Table 1. Criteria for the assessment and scoring sub-project proposals**

| | Criteria | Maximum |
|---|---|---|
| 1. | Is the Technology ready for transfer? | 20 |
| 2. | Partnership between Techno Transfer organisations | 20 |
| 3. | Evidence that the project will bring new partners | 6 |
| 4. | Contribution from partner organisation | 10 |
| 5. | Active participation of beneficiaries in the project | 10 |
| 6. | Technology Uptake Pathways | 6 |
| 7. | Project duration | 6 |
| 8. | Is the project self | 6 |
| 9. | Use of innovative and experimental approaches | 6 |
| 10. | Monitoring and evaluation system | 10 |

Is this a fundable pre-proposal? Yes _____ No _____
Comments and suggestions:

**Table 2. Number of funded sub-projects during Phase I ( 1995-97) and Phase II (1997-02)**

| COUNTRY | Phase I | Phase II |
|---|---|---|
| Burundi | - | 1 |
| Congo, D.R. | - | 2 |
| Eritrea | 1 | - |
| Ethiopia | - | 3 |
| Kenya | 5 | 8 |
| Madagascar | 1 | 3 |
| Rwanda | 1 | 2 |
| Sudan | 1 | 2 |
| Tanzania | 3 | 7 |
| Uganda | 4 | 4 |
| **Total** | **16** | **32** |

**Table 3. Number and type of grantee institutions Phase II (1997-02)**

| Category of Grantee | Total | % |
|---|---|---|
| NARIs | 19 | 59 |
| Universities | 3 | 9 |
| Extensions Services | 1 | 3 |
| NGOs/ CBOs | 4 | 13 |
| Development Projects | 1 | 3 |
| Farmer Organizations | 1 | 3 |
| Research Foundations | 1 | 3 |
| IARC/ Networks | 2 | 6 |
| Total Grantees | 32 | 100 |

**Table 4. Number of funded sub-projects by thematic area Phase II (1997-02)**

| **Thematic Area** | **Total** | **%** |
|---|---|---|
| Production/ Seed systems | 15 | 47 |
| Post Harvest/ processing | 3 | 9 |
| Animal Production | 6 | 9 |
| Animal Health | 2 | 6 |
| Mechanization | 4 | 3 |
| Natural Resources Manager | 2 | 6 |
| Total projects funded | 32 | 100 |
| Thematic areas funded | 6 | |

- Technology transfer processes

  - Partner institutions – NARS, IARC, Networks, Extension, NGOs, CBOs, Private sector
  - Strong vertical but weak horizontal linkages between partners
  - Generally uptake pathways were similar – Research institutions < = = > Intermediaries < = = > Beneficiaries
  - High adoption in seed systems due to effective partnerships

- **Successful technology delivery system**

  - Used innovative TT Mechanism
  - Technology ready for transfer
  - Made sufficient needs assessment and analysis of the technology
  - High adoption rates e.g. seed systems

- **Problems in technology transfer delivery systems**

  - Mobility
  - Availability of funds and credit
  - Lack of capacity
  - Technological constraint
  - Poverty of beneficiaries
  - Market availability
  - Attributes of the Technology – e.g. Banana, ECF
  - Resistance to accept the technology
  - Inappropriate policy and regulatory environments
  - Poor infrastructure

- **Lessons learned**

  **Sustainability could be threatened by:**

  - Lack of needs assessment
  - Inefficient Delivery System
  - Poor transfer methods and approaches
  - Dependence on external funding
  - Lack of markets for products
  - Instability of partnership arrangements

  **Scaling-up depends on:**

  - Attributes of the Technology
  - Constraints in Implementation
  - Policy and Regulatory Environment
  - Participation of Key Partners along the Technology Uptake Pathways

- **Factors that will make TTP more effective**

  - Modify or improve selection criteria
  - Document and disseminate proven delivery mechanism for specific technologies
  - Improve coordination of funded sub-projects
  - Clearly specify roles of Networks in funded sub-projects
  - Use innovative technology transfer approaches

- **Information dissemination**

  - 14 articles published in Agriforum on funded TT Sub-projects.

- Special case study and analytical reports
- Monitoring and evaluation reports
- Training and study visit reports
- Extension leaflets and posters
- Special seminar presentations and workshop proceedings papers
- Sub-project progress and final reports

➢ **Major achievements**

- Funded 48 sub-projects in 6 thematic areas in 10 countries in the region
- Enhanced multiple stakeholder partnership to work with beneficiaries
- Identified appropriate partners and suitable transfer approaches and adoption
- Identified innovative approaches, priority needs of beneficiaries and appropriate delivery systems.
- Facilitated capacity building through training
- Identified holistic approach in technology transfer as the most successful transfer process

➢ **Recommendations**

**Technology Transfer Processes and Delivery System**

- Strengthen weak linkages e.g. by formalizing partnerships
- Demonstrate needs assessment and use holistic approach
- Modify sub-project selection criteria and improve dissemination of proven delivery mechanisms
- To ensure successful scaling-up, use efficient delivery systems, marketing and appropriate policies
- Future Partners should dearly specify roles at an early stage

➢ **What is the way forward for effective TT in ASARECA member countries?**

**Emerging Issues:**

- Changing Global environment
- Competition for limited resources
- Capacity
- No impact no money
- The need for increased support to all ASARECA partners

## IV. Summary of major lessons learned from pilot sub-projects

- **The major lessons learned were from the 48 sub-projects funded in Phase I (1995-97) and Phase II ( 1997-02) in six thematic areas implemented in ten countries in the ASARECA member countries (ECA region) were:**

  - It has brought together diverse technology transfer institutions and beneficiaries and in turn confirmed that working with multiple partners enhances the transfer process and adoption.

  - It has identified appropriate partners and suitable approaches and methods for transfer of specific technologies (farmer-based multiplication and dissemination of high quality seed e.g. potato, sweetpotato and cassava planting, improved bee keeping, introduction of dairy goats, grain storage structure, rice puddling mechanization, pigeon pea and sweetpotato processing and dissemination of climbing bean technologies).

  - It has demonstrated that ability to adapt the approach in technology delivery so as to address emerging priority needs of beneficiaries leads to success of the process

  - It has facilitated capacity building through synergism through research institutions, networks and technology transfer intermediaries and has empowered the sub-project beneficiaries through training.

  - It has shown that with the current level of funding it is possible to have economic leverage and synergism in the transfer and dissemination activities.

The project has also shown that if the approach in technology transfer is not **holistic** the process is likely to be unsuccessful. Marketing functions are some of the elements that should be included in the holistic approach.

TTP has brought together diverse technology transfer institutions and beneficiaries and in turn confirmed that working with **multiple partners** enhances the transfer process and adoption. It has identified appropriate partners, approaches and methods suitable for transfer of a number of technologies. Among the innovative approaches noted were adapting the transfer technique to address emerging priority needs of beneficiaries, creating capacity through synergism and economic leverages.

- **Strategic plan and conceptual framework**

There were some difficulties in sustaining the partnerships established at the beginning of some sub-projects. As per the original plan and criteria it was assumed that all partners will remain engaged until the conclusion of all the sub-project activities. Some partners changed their policy and withdrew from the partnership because there were no contractual agreements between them when implementation started. in the future there should be clear contractual or

written agreements between the partners.

- **Governance structure**

The governance structure as directed by the Committee of Directors consisted 14 members representing the various stakeholders in the region i.e NARS, IAR, Regional NPPs, NGOs, Private Sector, Public Extension, the implementing institution and the donor. In the future, the Steering Committee should include members that have specific expertise in technology transfer, policy and information dissemination.

- **Participating countries**

As shown in Appendix table II, all ASARECA member countries except Eritrea participated in Phase II of the project. See list and level of funding of sub-projects in Appendix table II.

- **Implementing agencies**

Project implementation by some grantee institutions was disrupted due to transfer, change, retirement, departure of staff for further training or employment elsewhere. Commencement in some projects was delayed due to delay in signing the standard grant agreements and institutional administrative problems. Many sub-projects also failed to submit timely technical and financial reports.

- **Linkage with other partners**

Vertical linkages with partners was effective. The project collaborated closely with NARS scientists (the originators of most of the technologies), NPPs, NGOs and public extension staff. The private Sector was not active in many projects. Horizontal linkages e.g between NGOs and between NGOs, the Private sector and NARSs not strong.

- **Policy**

Technology transfer and adoption can be enhanced only if appropriate policy is in place. Kenya through the National Livestock and Extension Programme (NALEP) and Uganda through the National Agricultural Advisory Services (NAADS) have initiated new policies that can improve sustainable production by small-sale farmers.

- **Budget/Funding**

Lacks of funds are major constraints to technology transfer in the ASARECA region. In the sub-projects funded most implementing partners e.g. NGOs contributed in-kind. NARS scientists were the key partners but their institutions did not have the funds to implement the projects on their own.

- **Planning, monitoring and evaluation**

All sub-projects were monitored and evaluated routinely by the coordinator and backstopping partners. A standard M&E format was approved by the Steering Committee in consultation with sub-project leaders. In the future a closer and more frequent monitoring and evaluation system should be developed.

- **Project management**

There were no management problems arising from the executing office, the donor or the grantees. The major problem was the delay in submission of quarterly technical reports by some sub-project leaders.

- **Information management**

Information from sub-projects was disseminated via publications in AgriForum. leaflets. posters, workshop proceedings and special study reports. Twelve articles on funded technology transfer projects were published in AgriForum. In September 2000, the coordinator attended a website course in Entebbe. The course was organized by Africa-Link collaboration with a commissioned consultant. Africa-link was very active in the design of the TTP website that need updating of the contents and uploading to the ASARECA site.

- **Major activities and work plans for 2001-2002**

The following activities and work plan was approved by the Steering Committee:

- Arrange project monitoring and evaluation visits for Steering Committee members
- Arrange exchange visits and study tours for technology transfer sub-project leaders/staff
- Analytical synthesis reports based on case studies, final sub-project reports and S. Muturi's consultancy study report on " Agricultural Technology transfer and Adoption in Eastern and Central Africa".
- Final stakeholders symposium was held in September 2002. The full report and the recommendations from symposium were synthesized By Dr Sue Caney Davison, the facilitator and are outlined in Appendix V.
- The current Phase II project was originally designed to end on 30th September 20[illegible].
- At the request of the Steering Committee, the project was granted a one-year no-cost extension to end on 30th September 2002.
- A workshop in which ASARECA/CIP Technology Transfer Project Steering Committee Members, NARS Project Leader, Regional IARC Representatives. ASARECA Staff and NPP Coordinators: Public Extension, NGO. private Sector. CEO and USAID/REDSO/ESA Representatives was held on 24-26 September 2001. in Nairobi, Kenya. The workshop report is summarized in Appendix IV.
- The draft report of the consultancy study on "Agricultural technology transfer processes and Adoption in East and Central Africa (ASARECA member countries [illegible]as

presented by the consultants at the same workshop.

- The final revised report of the consultancy study was submitted in November 2001. The coordinator presented the major findings and recommendations of the study at the 21st Annual ASARECA CD meeting in December 2001. Bound copies were distributed to all stakeholders within and outside the region.
- A consultative meeting of an advisory group of expert regional stakeholders of the ASARECA technology transfer project was held on 28th February – 1st March 2002, in Nairobi, Kenya.
- The major goal of the meeting was to plan activities to be undertaken until the satisfactory completion of the technology transfer project in September 2002.
- The advisory group recommended that the ASARECA Committee of Directors commission a consultant(s) to undertake a comprehensive study on the way forward for technology transfer in ASARECA sub-region. The TOR was developed by 13th March.
- The consultant will be based at the ASARECA Secretariat and assist in formulating an ASARECA technology transfer strategy. The consultant will be knowledgeable about technology transfer methods and programs in the ASARECA sub-region and other parts of the world.
- The proposal to commission a consultant was presented and approved by the ASARECA CD at their 22nd meeting held on 8-8 March 2002, in Nairobi, Kenya.
- The coordinator prepared a tentative TOR and circulated a call for application from qualified consultants, to facilitate and recommend the way forward for agricultural technology transfer in the ASARECA sub-region. The call for consultant was widely advertised in March 2002.
- The consultant Dr. John Disney , NR International, UK worked in collaboration with the ASARECA secretariat staff , the coordinator of the TTP ad the regional Director of CIP starting in April-May 2002 and developed a strategy, a goal, a purpose, outputs and work plan for a five year project by consulting with NPP coordinators and other key technology transfer partners in the region.
- The original work plan for the EU grant to the technology transfer project was redesigned in view of emerging approaches and priorities in technology transfer processes and adoption. Dr John Disney presented a paper entitled " New thinking on Technology Transfer" at the final TTP stakeholders symposium held on 09-11 September 2002, in Nairobi, Kenya. He also presented a paper on future strategic plans for the ASARECA Secretariat at the CD meeting held in Kigali, 30 September –04 October 2002.

## ➢ Monitoring and evaluation

Standard guidelines for submitting quarterly technical and financial reports from sub-projects were approved by the Steering Committee. The coordinator used these guidelines, during visits, as the basis for monitoring and evaluating the progress made by the sub-projects. As per the agreed grant conditions, financial advances were made after satisfactory submission of technical and financial reports by all grantees of sub-projects

By the end of the project on 30th September 2002, the coordinator has monitored 26 sub-

projects i.e. 8 in Kenya, 4 in Uganda, 3 in Madagascar, 2 in Rwanda ,7 in Tanzania and 2 in Sudan. Steering Committee members and Network Coordinators were also invited to visit and assess projects. Completed monitoring reports were distributed to the ASARECA Secretariat, Chairman of the Steering Committee, project leaders and stakeholder representatives involved in backstopping sub-projects.

- **Performance indicators**

  - Technology transfer project (TTP) indicators were agreed upon at the NPPs Annual Consultative workshop in Dar Es Salaam in September 2001 as per ASARECA guidelines and Steering Committee recommendations.

- **Information and dissemination**

  - 14 Articles published in AgriForum
  - Special case study and progress reports
  - Monitoring and evaluation reports
  - Training and study visit report
  - Extension leaflets and posters
  - Workshop proceedings papers
  - Special presentations

- **Consultancy study on Agricultural Technology Transfer Processes and Adoption in ECA by Mr Stachys Muturi and group of consultants**

  - Draft consultancy study report presented and discussed at a stakeholders workshop on 24-26 September 2001, in Nairobi, Kenya
  - Workshop participants USAID and CIP staff provided major and indepth verbal and written comments and recommendations that were used to finalize the report by the stakeholders
  - 12 Sub-project reports (Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda) presented
  - Major issues (Scaling-up, linkages and marketing) discussed and recommendations made by working group. The full report of the workshop on the study of Agricultural technology transfer processes and adoption in ECA that was held 24-25 September 2002 and presentations by 12 sub-project leaders is summarized in Appendix IV.

## ➢ Publications

Fourteen articles on technology transfer were published in AgriForum. The articles were based on results from sub-projects funded in Phases I and II of the project. These were one each from Tanzania (forage chopper), Madagascar (Potato Storage), Rwanda (Bean root rot), Uganda (Banana), and three each from Sudan( Pigeon Pea , Grain Storage Methods and increasing sheep production) , Kenya (Sorghum & millet processing , East Coast Fever control and Promoting climbing beans) and two general papers on technology transfer. The list of publications is shown in Appendix table III.

## ➢ No-cost project extension

In view of the delay in the commencement dates/start-up dates of sub-projects arising from the long period of time required to review and evaluate the proposals that were submitted for funding, the Steering Committee recommended to USAID/REDSO/ESA for a no cost extension of the project by one year. Based on the recommendation, the project was granted a no-cost extension for a period of one year from 1st October 2001 to 30th September 2002.

The Steering Committee recommended that all sub-projects be completed/terminated by 15th June 2002, latest, i.e at least three months before the extended completion date of the project.

## ➢ Status of technology transfer in East and Central Africa

- Technology transfer is undertaken by different transfer agents( NARS, Public Extension, NGO's, CBOs and the Private Sector)
- Many countries adopting innovative/radical decentralized extension and technology transfer institutional arrangements e.g NALEP in Kenya and NAADS in Uganda.
- Inadequate operating fund for technology transfer
- Widely used dissemination mechanisms are: Group participatory approaches, demonstration, field days, farmer contact and capacity building.

## ➢ Technology transfer process

- Strong vertical but weak horizontal linkages between partners.
- Generally uptake Pathways were similar: Research Institutions< = > Intermediaries < = >Beneficiaries
- High adoption in seed systems due to effective partnerships

## ➢ Successful technology transfer delivery system

- High adoption rates e.g Seed Systems

- Used innovative technology transfer mechanism
- Technology was ready for transfer
- Made sufficient needs assessment and analysis of the technology

➢ **Problems in technology delivery systems**

- Mobility
- Availability of funds
- Lack of capacity
- Technological constraint
- Poverty of beneficiaries
- Market availability
- Attributes of the technology – e.g cost and adoption problems of Banana.

  ECF sub-projects
- Resistance to accept the Technology
- Policy
- Poor infrastructure

➢ **Lessons learned about technology transfer**

**Sustainability could be threatened by:**

- Lack of needs assessment
- Inefficient delivery system
- Poor transfer methods and approaches
- Dependence on external funding
- Lack of markets for products
- Instability of partnership arrangements

**Scaling-up depends on:**

- Attributes of the technology
- Constraints in implementation
- Policy and regulatory environment

- Participation of key partners along the technology uptake pathways

➢ **Factors that will make the technology transfer project more effective**

- Modify or improve selection criteria
- Document and disseminate proven delivery mechanisms for specific technology
- Improve coordination of funded sub-projects
- Clearly specify roles of Networks in funded sub-projects
- Use innovative technology transfer approaches
- Continue with small grants to broaden knowledge base

➢ **Recommendations**

- Future Partners should clearly specify roles at an early stage
- Strengthen weak linkages e.g by formalizing partnerships
- Demonstrate needs assessment and use holistic approach
- Modify sub-project selection criteria and improve dissemination of proven delivery mechanisms.
- To ensure successful scaling-up, use efficient delivery systems, marketing and appropriate policies.

## Appendix I. ASARECA/CIP TECHNOLOGY TRANSFER PROJECT

### List of Steering Committee members

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## Appendix II. ASARECA/CIP TECHNOLOGY TRANSFER PROJECT

### Directory of sub-projects, budgets and disbursements

| Project No. | Project Title | Grantee | Budget & Duration | Disbursements | | |
|---|---|---|---|---|---|---|
| | | | | Date | Amount | Balance |
| 5 BU 99 | Edible Mushrooms Burundi | University of Burundi | 22,500<br>3 yrs | 22/04/99<br>27/09/99<br>30/11/01<br>27/08/02 | 5,000<br>7,000<br>6,000<br>4,500 | 17,500<br>10,500<br>4,500<br>0 |
| 6 CO 99 | Potato Seed Congo, DR | INERA-Mulungu | 25,000<br>3 yrs | 22/04/99<br>30/08/99<br>04/04/00<br>07/11/00<br>25/04/01<br>18/12/01 | 5,000<br>7,000<br>3,000<br>4,000<br>3,000<br>1,500 | 20,000<br>13,000<br>10,000<br>6,000<br>3,000<br>1,500 |
| 7 CO 99 | Natural Resources Congo, DR | BECA-Kivu | 25,000<br>3 yrs | 13/05/99<br>28/12/99<br>28/04/00<br>18/08/00<br>28/11/00<br>25/04/01<br>12/10/01<br>19/03/02<br>27/08/02 | 7,000<br>6,000<br>2,000<br>2,000<br>3,000<br>2,000<br>1,500<br>1,000<br>500 | 18,000<br>12,000<br>10,000<br>8,000<br>5,000<br>3,000<br>1,500<br>500<br>0 |
| 10 ET 99 | Potato Seed Ethiopia | ARC-Bako | 30,000<br>3 yrs | 22/05/99<br>02/02/00<br>24/01/01<br>13/07/01<br>27/08/02 | 5,500<br>12,000<br>6,000<br>3,000<br>3,500 | 24,500<br>12,500<br>6,500<br>3,500<br>0 |
| 12 ET 99 | Dairy Cattle Ethiopia | ARC-Bako | 30,000<br>3 yrs | 22/05/99<br>03/03/00<br>13/07/01<br>18/02/02<br>28/06/02<br>27/08/02 | 5,500<br>6,000<br>10,000<br>5,000<br>3,000<br>500 | 24,500<br>18,500<br>8,500<br>3,500<br>500<br>0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 13 ET 00 | Animal Drawn Planter<br>Ethiopia | EARO-Nazareth | 30,000<br><br>2 yrs | 08/05/00<br>30/05/02<br>16/09/02 | 10,000<br>15,000<br>5,000 | 20,000<br>5,000<br>0 |
| 20 KE 99 | Forage Crops<br>Kenya | KARI-Mtwapa | 10,000<br><br>3 yrs | 25/02/99<br>30/08/99<br>28/10/99<br>28/04/00<br>02/10/00<br>28/02/01<br>31/05/01<br>18/02/02 | 2,000<br>2,000<br>1,000<br>1,000<br>2,000<br>1,000<br>500<br>500 | 8,000<br>6,000<br>5,000<br>4,000<br>2,000<br>1,000<br>500<br>0 |
| 32 KE 98 | ECF Control<br>Kenya | AGREF-Mtwapa | 18,900<br><br>2 yrs | 09/12/98<br>09/06/99<br>23/09/99<br>04/04/00<br>02/10/00<br>18/12/01 | 3,000<br>2,000<br>3,000<br>5,500<br>4,000<br>1,400 | 15,900<br>13,900<br>10,900<br>5,400<br>1,400<br>0 |
| 64 KE 99 | Bee Keeping<br>Kenya | GENESIS-<br>Matuu | 25,000<br><br>2 yrs | 11/03/99<br>30/08/99<br>04/04/00<br>02/10/00<br>31/05/01<br>30/05/02<br>27/08/02 | 5,000<br>5,500<br>6,500<br>3,000<br>3,000<br>1,500<br>500 | 20,000<br>14,500<br>8,000<br>5,000<br>2,000<br>500<br>0 |
| 77 KE 99 | Climbing Beans<br>Kenya | KARI-Embu | 20,000<br><br>3 yrs | 29/01/99<br>22/07/99<br>02/02/00<br>07/11/00<br>30/04/01<br>30/11/01<br>27/08/02 | 3,000<br>4,000<br>3,000<br>3,000<br>3,000<br>3,000<br>1,000 | 17,000<br>13,000<br>10,000<br>7,000<br>4,000<br>1,000<br>0 |
| 93 KE 99 | Forage Crops<br>Kenya | KARI-Katumani | 10,000<br><br>3 yrs | 11/03/99<br>22/07/99<br>24/12/99<br>12/07/00<br>07/11/00<br>28/02/01<br>31/05/01<br>18/02/02 | 1,500<br>2,000<br>2,000<br>1,000<br>1,000<br>1,000<br>1,000<br>500 | 8,500<br>6,500<br>4,500<br>3,500<br>2,500<br>1,500<br>500<br>0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 103 KE 99 | Pigeon Pea Process. Kenya | KARI-Katumani | 30,000<br><br>2 yrs | 29/01/99<br>22/04/99<br>29/11/99<br>23/08/01<br>18/02/02<br>12/07/02 | 5,000<br>6,000<br>4,000<br>7,000<br>5,000<br>3,000 | 25,000<br>19,000<br>15,000<br>8,000<br>3,000<br>0 |
| 114 KE 99 | Sweetpotato Process. Kenya | KIRDI-Nairobi | 25,000<br><br>3 yrs | 11/03/99<br>08/05/00<br>28/11/00<br>31/05/01<br>18/12/01<br>27/08/02 | 5,000<br>9,000<br>4,000<br>4,000<br>1,500<br>1,500 | 20,000<br>11,000<br>7,000<br>3,000<br>1,500<br>0 |
| 129 KE 99 | Cassava/Sweetpotato Kenya | REFSO-Busia | 30,000<br><br>3 yrs | 22/03/99<br>23/07/99<br>28/10/99<br>03/03/00<br>08/06/00<br>31/08/00<br>07/11/00<br>28/02/01<br>31/05/01<br>30/11/01<br>19/03/02<br>12/07/02 | 2,500<br>5,000<br>3,500<br>3,000<br>3,000<br>3,000<br>2,000<br>2,000<br>2,500<br>2,000<br>1,000<br>500 | 27,500<br>22,500<br>19,000<br>16,000<br>13,000<br>10,000<br>8,000<br>6,000<br>3,500<br>1,500<br>500<br>0 |
| 133 MA 98 | Rice Mechnization Madagascar | IRRI-Mahajanga | 16,650<br><br>1.5 yrs | 22/12/98<br>09/06/99<br>23/07/99<br>24/12/99<br>03/03/00 | 5,000<br>3,000<br>3,000<br>2,000<br>1,500 | 11,650<br>8,650<br>5,650<br>3,650<br>2,150 |
| 135 MA 99 | Rice Cleaner Madagascar | FOFIFA-Antananarivo | 25,000<br><br>3 yrs | 22/04/99<br>03/03/00<br>30/06/00<br>02/10/00<br>19/12/00<br>25/04/01<br>13/07/01<br>12/10/01<br>18/02/02 | 5,000<br>5,000<br>3,000<br>3,000<br>3,000<br>3,000<br>1,000<br>1,000<br>1,000 | 20,000<br>15,000<br>12,000<br>9,000<br>6,000<br>3,000<br>2,000<br>1,000<br>0 |

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|---|---|---|---|---|---|---|
| 138 MA 99 | Zero Tillage/Legume Madagascar | FIFAMANOR-Antsirabe | 30,000<br><br>3 yrs | 25/02/99<br>30/08/99<br>24/12/99<br>03/03/00<br>08/06/00<br>31/08/00<br>19/12/00<br>28/02/01<br>23/08/01<br>12/10/01<br>19/03/02<br>12/07/02 | 5,000<br>5,000<br>3,000<br>4,000<br>2,000<br>1,000<br>2,000<br>2,000<br>3,000<br>1.500<br>1.000<br>500 | 25,000<br>20,000<br>17,000<br>13,000<br>11,000<br>10,000<br>8,000<br>6,000<br>3,000<br>1,500<br>500<br>0 |
| 141 RW 99 | Banana Rwanda | ISAR-Rubona | 30,000<br><br>3 yrs | 24/03/99<br>30/08/99<br>24/12/99<br>28/07/00<br>07/11/00<br>30/11/01<br>12/07/02 | 5.000<br>5.000<br>3.000<br>3.000<br>5.000<br>6.000<br>3.000 | 25,000<br>20,000<br>17,000<br>14,000<br>9,000<br>3.000<br>0 |
| 144 RW 98 | Climbing Beans Rwanda | ISAR-Rubona | 38,000<br><br>3 yrs | 08/01/99<br>28/07/00<br>12/10/01<br>15/07/02<br>27/08/02 | 5.000<br>7.000<br>10.000<br>6.000<br>10.000 | 33,000<br>26,000<br>16,000<br>10,000<br>0 |
| 150 SU 99 | Ewe Feeding Sudan | ARC-El-Obeid | 26,000<br><br>3 yrs | 09/06/99<br>02/11/99<br>03/03/00<br>28/07/00<br>28/02/01<br>11/04/01<br>23/08/01<br>18/02/02<br>30/05/02<br>12/07/02 | 7.000<br>6.500<br>4.000<br>2.000<br>3.000<br>270<br>1.230<br>1.000<br>500<br>500 | 19,000<br>12,500<br>8,500<br>6,500<br>3,500<br>3,230<br>2,000<br>1,000<br>500<br>0 |
| 157 SU 99 | Grain Storage Sudan | ARC-Shambat | 28,000<br><br>2 yrs | 23/07/99<br>18/08/00<br>26/03/01<br>23/08/01<br>12/10/01<br>18/02/02 | 8.000<br>7.000<br>8.000<br>3.000<br>1.000<br>1.000 | 20.000<br>13.000<br>5,000<br>2.000<br>1,000<br>0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 160 TA 99 | Animal Traction Tanzania | ARI-Ilonga | 20,000<br><br>2 yrs | 11/03/99<br>30/08/99<br>25/04/01 | 3,000<br>5,000<br>5,000 | 17,000<br>12,000<br>7,000 |
| 175 TA 99 | Cassava- Sweetpotato Tanzania | ARI-Ukiriguru | 32,250<br><br>3 yrs | 29/01/99<br>09/06/99<br>01/11/99<br>04/04/00<br>18/08/00<br>25/04/01<br>30/05/02<br>27/08/02 | 5,000<br>7,000<br>7,000<br>3,000<br>3,000<br>3,000<br>3250<br>1,000 | 27,250<br>20,250<br>13,250<br>10,250<br>7,250<br>4,250<br>1,000<br>0 |
| 179 TA 98 | Forage Baler Tanzania | AE-SUA-Morogoro | 27,900<br><br>2 yrs | 09/12/98<br>09/06/99<br>01/11/99<br>08/06/00<br>07/11/00<br>31/05/01<br>19/03/02<br>12/07/02 | 5.000<br>10.000<br>3.000<br>3,000<br>3,000<br>3.000<br>500<br>400 | 22,900<br>12,900<br>9,900<br>6,900<br>3,900<br>900<br>400<br>0 |
| 190 TA 99 | Dairy Goats Tanzania | AS-SUA-Morogoro | 30,000<br><br>3 yrs | 25/02/99<br>24/12/99<br>28/11/00<br>31/05/01<br>27/08/02 | 5.000<br>5.000<br>5.000<br>10.000<br>5.000 | 25,000<br>20,000<br>15,000<br>5,000<br>0 |
| 192 TA 99 | Bean Seed Dissem. Tanzania | SARI-Arusha | 15,000<br><br>2 yrs | 25/02/99<br>24/12/99<br>28/11/00<br>23/08/01 | 3.000<br>4.500<br>5.000<br>1.500 | 12,000<br>7,500<br>2,500<br>1,000 |
| 194 TA 99 | Rice-Bean Tanzania | SARI- Arusha | 15,000<br><br>3 yrs | 25/02/99<br>24/12/99<br>28/11/00<br>23/08/01 | 2.000<br>3.000<br>5.000<br>3.000 | 13,000<br>10,000<br>5,000<br>2.000 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 204 TA 99 | Banana<br>Tanzania | PPD-Zanzibar | 21,000<br><br>3 yrs | 24/03/99<br>23/07/99<br>24/12/99<br>08/06/00<br>02/10/00<br>28/02/01<br>13/07/01<br>12/10/01<br>19/03/02<br>12/07/02 | 3,000<br>3,000<br>2,000<br>2,000<br>2,000<br>3,000<br>3,000<br>1,500<br>1,000<br>500 | 18,000<br>15,000<br>13,000<br>11,000<br>9,000<br>6,000<br>3,000<br>1,500<br>500<br>0 |
| 227UG 98 | Sweet Potato<br>Uganda | SOCADIDO-<br>Soroti | 38,800<br><br>3 yrs | 09/12/98<br>31/05/99<br>27/09/99<br>28/02/01<br>18/12/01<br>27/08/02 | 7,000<br>6,000<br>5,000<br>8,000<br>7,000<br>5,800 | 31,800<br>25,800<br>20,800<br>12,800<br>5,800<br>0 |
| 265 UG 99 | Tsetse Control<br>Uganda | COVECO-<br>Tororo | 20,000<br><br>3 yrs | 31/03/99<br>30/08/99<br>29/11/99<br>18/08/00<br>28/02/01<br>12/10/01<br>18/02/02<br>27/08/02 | 5,000<br>2,000<br>2,000<br>2,000<br>3,000<br>3,000<br>2,000<br>1,000 | 15,000<br>13,000<br>11,000<br>9,000<br>6,000<br>3,000<br>1,000<br>0 |
| 275 UG 99 | Banana<br>Uganda | NARO-Kawanda | 30,000<br><br>2 yrs | 11/03/99<br>28/12/99<br>25/04/01<br>18/02/02<br>27/08/02 | 5,000<br>7,000<br>9,000<br>7,000<br>2,000 | 25,000<br>18,000<br>9,000<br>2,000<br>0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 278 UG 99 | Potato Seed Uganda | UNSPPA-Kabale | 30,000<br><br>3 yrs | 25/02/99 | 5,000 | 25,000 |
| | | | | 09/06/99 | 4,000 | 21,000 |
| | | | | 27/09/99 | 5,000 | 16,000 |
| | | | | 02/02/00 | 3,000 | 13,000 |
| | | | | 28/04/00 | 1,000 | 12,000 |
| | | | | 31/08/00 | 2,000 | 10,000 |
| | | | | 07/11/00 | 2,000 | 8,000 |
| | | | | 24/01/01 | 2,000 | 6,000 |
| | | | | 25/04/01 | 2,000 | 4,000 |
| | | | | 23/08/01 | 2,000 | 2,000 |
| | | | | 30/11/01 | 1,000 | 1,000 |
| | | | | 19/03/02 | 500 | 500 |
| | | | | 27/08/02 | 500 | 0 |
| TTP STUDY 01 | Technology Transfer Study ASARECA | Stachys N. Muturi Team | 58,430 | 13/03/01 | 5,000 | 53,430 |
| | | | | 17/04/01 | 8,000 | 45,430 |
| | | | | 12/07/01 | 1,500 | 43,930 |
| | | | | 00/08/01 | 15,000 | 28,930 |
| | | | | 30/11/01 | 15,000 | 13,930 |
| | | | | 18/12/01 | 10,000 | 3,930 |
| | | | | 18/02/02 | 3,266.54 | 0 |
| SC-M&E Travel | Monitoring & Evaluation | SC of TTP | 45,000 | | | |

## Appendix III. Directory of Publications

i) The Technology Transfer Project, Dr Berhane Kiflewahid, CIP, Nairobi, Kenya, AgriForum No. 4, July 1998

ii) Technology Transfer Project: Twenty Seven Projects Selected, Dr Berhane Kiflewahid. AgriForum, No. 6, January 1999

iii) Introducing Forage Choppers in Tanzania, Dr E.A. Lazaro, Sokoine University of Agriculture, Morogoro,Tanzania, AgriForum, No.7, April 1999

iv) From Seed to Bread: Women's Group Promotes New Crops, Mrs D. M. Nzomo, Ivuso Ya Manyatta Women Group, Makindu, Kenya, AgriForum, No. 7, April 1999

v) Disseminating Bean Root Rot Management Technologies in Rwanda, Mr Augustine Musoni, ISAR-Rubona, Butare, Rwanda, AgriForum, No. 8, July 1999

vi) Improving the Potential of the Pigeonpea in Sudan, Prof. Mohammed A.M. Khair, ARC-Wad Medani, Sudan, AgriForum, No. 9, October 1999

vii) Clean Planting Materials for Bananas and Yams, Dr Paul Speijer, IITA/ESARC, Kampala, Uganda, AgriForum, No. 9, October 1999

viii) Madagascar: Improved Potato Storage, Dr Rakotondramanana, FIFAMANOR, Antsirabe, Madagascar, AgriForum, No. 10, January 2000

ix) Transfer of East Coast Fever Immunisation Technology, Dr Sam Chema, AGREF, Nairobi, Kenya, AgriForum No 10, January 2000

x) Sudan: Improving Traditional Storage Methods, Prof. M.E. Hassan Shazali, Grain Storage Research Unit, ARC, Khartoum North, Sudan, AgriForum, No 12, July 2000

xi) Increasing Sheep Production, Dr faisal M. El Hag, ARC, El-Obeid Research Station, El-Obeid, Sudan, AgriForum, No 17 , October 2001

xii) Promoting Climbing Beans in Kenya, Dr John G.N. Muthamia, Regional Research Center – Embu, KARI, Embu, Kenya, AgriForum, No 17, October 2001

xiii) Appropriate Technology for Pigeonpea Processing, Dr Wilson Ronno, Project Leader, NDFRC-Katumani, Kenya, AgriForum No 18, January 2002

xiv) Profile of an ASARECA project. The Technology Transfer Project, Dr Berhane Kiflewahid, CIP, Kenya, AgriForum No 19 , April-June 2002

## Appendix IV. ASARECA/CIP TECHNOLOGY TRANSFER PROJECT

# REPORT OF THE WORKSHOP ON "THE STUDY OF AGRICULTURAL TECHNOLOGY TRANSFER PROCESSES AND ADOPTION IN EAST AND CENTRAL AFRICA"

**24-25 September, 2001 ILRI-CIP Campus, Nairobi, Kenya**

*Berhane Kiflewahid*
*Coordinator, ASARECA/CIP Technology Project*

Table of Contents


*1.* Introduction..... 39

1.1. Opening remarks ..... 39
1.2 Background ..... 40

2.1. Session I ..... 41

3.1. Session II ..... 43

3.1.1. Cassava and Sweetpotato-Tanzania ..... 43

3.1.2. Potato Seed-Uganda ..... 43

3.2. Session III ..... 44

3.2.1. Potato Seed-Ethiopia ..... 44

3.2.2. Banana-Rwanda ..... 44

3.2.3. Climbing Beans –Kenya ..... 44

3.3. Session IV ..... 45

3.3.1. Forage Chopper-Tanzania ..... 45

3.3.2 Dairy Goats-Tanzania ..... 45

3.3.3. East Coast Fever-Kenya .....45

3.4 Session V .....46

3.4.1. Grain Storage-Sudan ..... 46

3.4.2 Bee Keeping-Kenya ..... . 43

3.4.3 Sweetpotato Processing-Kenya .....48

3.4.4. Zero Tillage and Legumineous Trees-Madagascar..... 49

4. Session VI-Main recommendations from working Group discussions...50

4.1. Scaling-up .....50

4.1.1. Key elements for scaling-up ... ..... 50

4.1.2. Recommendations ... ..... 51

4.2. Linkages ..... 52

4.2.1. Key elements for linkages ..... 52

4.3. Marketing ..... 52

4.3.1. Key elements for marketing ..... 52

5. Way forward for Phase III project.....52

5.1. Recommendations ..... .....53
5.2. Final Discussions ..... 53

5.2.1. Policy issues ..... 54
5.2.2. Partnerships ..... 54
5.2.3. General questions and comments ..... 55

## 1. Introduction

The Technology Transfer Workshop was held on 24-25 September 2001 at ILRI/CIP Campus, Nairobi, Kenya. It was attended by stakeholders from NARS project leaders, regional IARC representatives, ASARECA secretariat staff, NPP Coordinators, Public Extension, NGO, Private Sector, CBO, USAID/REDSO/ESA representatives and members of the TTP Steering Committee.

The major goal of the workshop was to present the draft report of the consultancy study on "Agricultural Technology Transfer Processes and Adoption in ASARECA member countries and to plan future forward technology transfer and adoption strategies in the sub-region.

**The specific objectives were:**

- To present consultant's draft report on the study of agricultural technology transfer processes and adoption in ASARECA member countries.
- To present progress reports and lessons learned on technology transfer by leaders of a representative sample of funded sub-projects in ASARECA member countries.
- To recommend the way forward for effective technology transfer activities in ASARECA member countries based on presentations and thematic area discussions.

**The Workshop was organized into four major sessions. These were:**

- Brief opening remarks
- Presentation of workshop objectives
- Presentation of Consultants draft report
- Presentation of case study reports by 12 sub-project leaders, and
- Working Group discussion and Recommendations

### 1.1. Opening Remarks.

Dr. Peter Ewell, the Chairman of Session 1 opened the workshop by inviting Prof. James Tuitock, Deputy Vice Chancellor, Egerton University and Acting Chairman ASARECA/CIP TTP; Prof. Geoffrey Mrema, Executive Secretary, ASARECA and Dr. Jerry Cashion, Deputy Director, USAID/REDSO/ESA to make brief welcome remarks.

The speakers emphasized the need for strong partnership of the various regional stakeholders, researchers, transfer agents and beneficiaries in the transfer of agricultural technology from the source of technology to the different users of technology in the region. Furthermore, they emphasized that the lessons and experiences learned from the small-pilot sub-projects could be used for scaling-up similar technology transfer activities in the region. In his concluding remarks, Dr. Cashion expressed USAID commitment to support technology transfer that could contribute to sustainable food security, income and natural environment in the sub-region.

### 1.2 Background

An overview of the goal, objectives, expected outputs of the TTP, and the objectives and terms of reference (TOR) of the Consultancy study and the case study presentations by the 12 sub-project leaders was presented by the Coordinator of TTP. The Coordinator also presented the thematic areas proposed for discussion by the working group. The issues for discussion by the working groups were, i) Scaling-up from pilot projects ii) Linkages and iii) Sustainability and marketing. Dr. Peter Ewell led the discussion on forming the groups, the issues to be addressed and the expected outputs from the working Group discussions. Three working Groups were formed. Each group discussed one thematic area and presented the major highlight of the recommendations to the plenary during the final session of the workshop.

The consultants draft report on the "study of Agricultural Technology Transfer processes and Adoption in ASARECA member countries was presented by Prof. Paul Mbugua and Mr. Stachys Muturi, the team leader.

The report was extensively discussed by the participants and recommendations made on how the ultimate objectives of the study could be met. Participants were requested to submit written comments and clarifications to enable the Consultants improve on the outputs of the report. The major issues were on how to synthesize and make recommendations based on the lessons and experiences learned from successful pilot projects for scaling up technologies within and between countries in the sub-region.

Twelve case studies of sub-projects from Ethiopia, Sudan, Kenya, Uganda, Rwanda, Tanzania and Madagascar funded by the TTP were also presented. The experiences from these sub-projects will be incorporated in the final consultant study report.

2. Main comments on the consultants draft report on the study of agricultural technology transfer processes and adoption in East and Central Africa.

## 2.1 Session I

Major questions, answers and comments on the consultants report on the "Study of agricultural Technology Transfer Processes and adoption in East and Central Africa.

Q. The cost benefit ratio analysis (BCR), has not been mentioned in your presentation which is a very important indicator as to whether the project is feasible or not. It can also indicate the sustainability and also whether or not it can be easily adopted by the farmers. Can you therefore, say something about the benefit cost ratio in some of the pilot projects you studied or evaluated?

A. Although, the benefit cost ratio is not in the terms of reference (TOR) for the consultant team, the exercise can be done but would require the team to collect additional information from the sub-projects visited.

Q. The study should answer questions such as the suitability of the technology that is specific to a commodity, and the cost effectiveness in the approaches?.

A. Each sub-project has used appropriate approaches and processes suitable for transferring specific technologies for their specific activity.

Q. Is there any evidence that shows the suitability of specific TT approaches for specific technologies/factors e.g animal health (men's domain) and dairy (women's domain)?

Q. Is there a possibility to establish cost effectiveness of TT approaches (how many farmers reached, what impacts possible at what cost)?

Q. Do we have information to make recommendations to policy makers on better approaches/extension policy?

Q. Please specify which approaches worked and which did not work and why? This TTP is about processes, not about commodities/factors, so we have to find ways and get recommendations on how to change these processes of technology transfer to make them more effective and efficient?

A. Evidence of specific technology suitability studies of projects that were divided into five thematic areas show that similar methodologies, participatory approaches and use of similar partnerships arrangements were used.

Work done and reported by Merryl Sands indicate that linkages among partners is important. If the linkages are poor you get poor participation and poor results. Formation of groups is important, as they require less manpower to disseminate the technology etc. It is important to note that some approaches (methods) are more

suitable than others for transfer of specific technologies and this also depended on communities. Finally, there is need to involve all partners in technology transfer.

**General Comments:**

- Use of extension material-leaflets, bulletins and electronic media, such as FM radio that is popular and can deliver messages in local languages

- Use of FM radio is limited and does not penetrate deep in the interior. Interpersonal communication in TT is more effective than impersonal communication. Furthermore, FM radio is costly.

Q. How do we go about needs assessment, funding, flexibility in the use of funds and extension material?

A. There is need to come up with an inventory of technologies.

Funds depended on proposals. In the TTP capital items were not covered. Funds were used as approved by the Steering Committee.

IARC can assist and produce extension materials and build capacities in information dissemination.

General Comment. There is need to do marketing studies

- Market analysis and Market linkages etc.

- There is need to know partnerships arrangements that are working together with clear recommendations of what the networks can borrow.

- There is also need to know what to do with surplus production and what actually the farmers do with excess products.

- We need to know what methodologies worked and which did not. There is need to know how these methodologies can work better.

- Partnerships have been found to be important but some are weak. We need to know what can be done to include other partners – e.g. private sector, and how public extension service is a formidable force and should not be ignored.

Based on the recommendations of the organizing committee, the consultants' presentation and the plenary discussions, three working groups were formed to discuss and recommend on the issues related to:

- Scaling up

- Linkages and
- Marketing

3. Experiences and Lessons learned from sub-projects

   Case studies of a representative sample of 12 funded sub-projects representing Seven of the total ten ASARECA member countries.

## 3.1 Session II

### 3.1.1. Cassava and Sweetpotato -Tanzania

- What is the role of the other Networks in roots and tubers
  The project collaborates with SARNET.

- Why is there an over-production of sweet potatoes in Kagera but not in Shinyanga, Tanzania.

Sweet potato is a new commodity in Kagera compared to Shinyanga where they have a tradition of using sweetpotato. They also have developed ways and means of processing.

Are you sure you had over production in Kagera because of the US$ 30,000 grant from the TT Project?

In the project areas yes, because there were no improved varieties were used before.

### 3.1.2. Potato Seed - Uganda.

- What are the possibilities of sustainability if the Potato Seed Producers Association (UNSPPA) was entirely depending on donor funds?

- The Association has created a revolving fund from the TT grant which is used to procure inputs.

- Members subscribe annual contributions to run the day to day activities of the Association.

Q. The involvement of NGOs and other institutions in buying seed from the Association members for distribution to other potato farmers may undermine the members market

A: By so doing, the NGO's and institutions involved would be promoting the dissemination of technology to a wider area.

Q. What are the major criteria for farmers to join the Association?

A A system is in place to maintain health standards of the seed. The building of a defused light store for seed potatoes is one of the pre-conditions for aspiring members intending to join.

## 3.2. Session III

### 3.2.1. Potato Seed-Ethiopia

**Comments**: The reason for high adoption of the improved potato seed varieties was due to lack of suitable varieties that all were susceptible to late blight and bacterial wilt.

From the discussions, it was observed that farmers are aware of good healthy seeds and are willing to pay for this. They are ready to sell seeds that could be reimbursed latter. The extension service was assisting farmers to look for markets.

### 3.2.2. Banana Rwanda

**Comments:** The project is implemented in new settlement areas where banana is a cash crop.

The project was providing planting material after treatment with hot water.

It is backstopped by (ISAR/Banana), Extension, NGO's and CBO's.

From the discussions, it appears that NGO's are just alternative to Extension service. There was also a high interaction with ATDT, another project that had a lot of funds. In conclusion, the project can be considered as a USAID funded technology transfer project success due to the available market for the commodity chosen.

### 3.2.3 Climbing beans, Kenya

Climbing beans are suited to high rainfall area where bush beans are not doing well. The project was distributing small quantity of seeds to farmers and resulted in high adoption rates from 30 farmers in 1995 to 5800 farmers in 2000.

The main reasons for high adoption were:

- High yielding
- Improvement of soil fertility
- Demand driven project
- The collaboration of NPPs (i.e AHI and ECABREN) in dissemination
- Farmer to farmer supply of seeds was very efficient
- Low cost because project have to supply only small quantity of seeds.
- Yield per planted area was very high

**Session IV**

### 3.3.1. Forage Chopper/Baler-Tanzania

Q. How many farmers were convinced about its utilization?

A. More than 80% of the participating farmers adopted the technology inspite of intensive labour requirement. Forage and wastage declined the time needed to collect forage decreased.

Q. How many manufactures were contracted to fabricate the choppers.

A. Two manufacturers were contracted but they had problems of providing the technology in terms of time and quality.

Q. Is the role of social capital, useful?

A. Lack of credit implies that local farmer organizations help. The same applies to output/input market organizations.

### 3.3.2. Dairy Goats, Tanzania

Q. Have you considered marketing of the milk from goats?

A. There is scarcity of goat milk and marketing will not be a major issue for some time to come.

Q. What is the acceptability of the goat milk?

A. I think people can easily adapt to new products. Our experience elsewhere shows that there are no strong taboos for goat milk in Tanzania.

Goats can survive in a harsh environment and I am sure it will be a success.

### 3.3.3. East Coast Fever – Kenya

Q. What are the activities done by the project and the other partners collaborating in the project?

A. The partnership did not proceed as originally envisaged due to conflict of interest – i.e vaccination vs dipping against ticks.

Q. How do you empower farmers to demand the vaccine technology.

Q. What are the technology uptake pathways/processes?

A. Vaccine Production (Cooper) → Veterinary Extension Services → Dairy Farmers

## 3.4. Session V

### 3.4.1. Grain Storage-Sudan

The objective of the project was to achieve increased food security through avoiding or reducing grain storage losses and maintaining quality in major staple grains such as Sorghum at on-farm and village level rural households in Sudan.

The approach used was multidisplinary team work inviting group discussions, use of farmers field schools, field days, radio, workshops and farmer to farmer dissemination of the technology. Main achievements were that farmers perceived differences between traditional and improved storage methods in terms of prevention of insects, rodents and moisture, reduction of storage losses, favourable cost benefit ratio and maintenance of good seed quality.

Constraints to adopt technology completely were lack of credit funds, transport facilities, NGO's and agric development projects that don't have post-harvest component and were reluctant to collaborate in such activities.

Major lessons learned were participatory approach was essential; farmers were interested in simple, affective and affordable technology; technology should be built on the basis of existing storage structures; exotic techniques have failed; technology evaluated by farmers panels is more convincing to them; women involvement is vital.

**At the end of the presentation, it was recommended that:**

- There should be a follow up to enhance and determine adoption rate.
- The extension service needs to be activated and to motivate people.
- There is a need for similar technology transfer projects in other ecological zones and for other food grains.

Q. You said, nobody is interested in your technology like extension and NGO's partners What would be your approach to solve the situation?

A. Partners might be convinced when they see advantages from the technology.

Q. Do you find farmers' schools effective in dissemination?

In schools, we show the benefit, advantages of pest control in comparison to chemical control and farmers have chance to observe and learn. I find it effective.

Q. How expensive is the improved method of storage?

A. It is not so expensive as farmers can meet the cost.

### 3.4.2. Bee Keeping –Kenya

The Honey bee keeping project was based on a partnership between NGO (Genesis). National Bee Keeping Station/Kenya and a private firm with strong orientation towards accessing markets and involvement of other stakeholders in the sector.

The project has introduced improved technology of bee keeping (modified hives) and honey extraction/processing facilities. The improved technology provides increased honey production and income from sale of honey and by products such as bees-wax.

It was shown that 147 farmers and 11 artisans have been trained. 150 improved hives were produced and sold for 180, 000 Kshs; 480 farmers participated in a field day and level of adoption of modern hives and honey processing technology. Were 20% and 80% respectively.

There were some unanticipated achievements as we have influenced other agencies in promotion and funding bee keeping activities eg (GTZ, ICIPE, KARI, UNDP etc). engaged government in lobbying for policy changes in agriculture; quality control and enhancing of standards; improved honey sale due to improved information flow. increasing demand for harvesting, processing and handling equipment. Bee-keepers also accessed new markets.

The major constraints and limitations were that community response overwhelmed the capacity of Genesis and that the projects coverage was highly restricted to meet the demand. However, the lack of credit facilities has reduced adoption. Major lessons learnt from this project were the following:

- Selective adoption by the farmers
- Improved hives were adopted by 100 women in 10 groups
- Processing technology was adopted and new market accessed
- Time was insufficient to show impact
- Policy has to support technology transfer.

At the end of his presentation, the project leader concluded that the project is viable and more resources should be committed to it since its results affect the farmers income directly.

Q. What would be the strategies for the future development of Bee Keeping business?

Q. What are Genesis and its mandate?

A. It is a local NGO operating independently in Machakos and Mwingi Districts. We are dealing with CBO's and identify what are their needs and help them to meet it.

### 3.4.3 Sweetpotato Processing – Kenya

The goal of the project was food security, income generation and job creation through introduction of orange-fleshed sweetpotato varieties, innovative processing technologies and initiating micro-enterprises based on improved sweet potato production. The main approaches were interactive participation of partners, targeted groups of farmers, women, small-scale entrepreneurs and sweetpotato consumers.

Principal partners for the project were the Ministry of Agriculture Livestock and Rural Development, KARI, CIP, CBO, women groups, Institute for Rural Development, private entrepreneurs. The major constraints were:

- Limited markets for sweet potato products
- Low awareness of sweetpotato products
- Unwillingness of entrepreneurs to invest on new technologies and products
- Limited funds for TT and promotional activities of our products.

**Major achievements in this project were:**

- Conducting baseline survey.
- Introduction of three Provitamin A rich varieties.
- Multisite adoption of these varieties by farmers.
- Farmers training on sweet potato husbandry.
- Establishment of two processing sites.
- Distribution of hand books on sweetpotato agronomy and bakery redesigning and fabrication of sweet potato chipper.
- Trainings on sweetpotato processing.

**Major lessons learned were:**

- Transfer, adoption and commercialisation of technology should be coupled with income generation and adequate promotion campaigns.

- Creation of market outlets is key for long-term adoption and sustainability of the products.

- Technology should be adapted for use of local available materials.

- Collaboration and integrated approach is important for TT success.

- TT requires adequate resources. The recommendations from this project would be creating of integrated awareness and promotion campaign on sweet potato products and their role in combating vitamin A deficiency, strengthen partnership, conduct further research on sweetpotato and its products, adopt aggressive marketing strategies, assist budding entrepreneurs.

Q. You mentioned about modifying the sweet potato chipper. Is it the one from IITA? What modifications did you do? Where can we get the improved prototype?

A. Yes, the chipper was originally from IITA. The blades were modified to give an even cut. The metal blades were reloaded with aluminium ones and a hood (cover) was included. There is a private firm that manufactures it and the address is available upon request.

Q. You talked about sweetpotato processing units. Are they established in town or in rural areas? How is the private sector involved in that process?

A Initially once we had problems with storage and transportation facilities. All our processing units were established in rural areas where sweetpotato was multiplied and grown. A lot of commitment was needed from entrepreneurs for collaboration and convincing them. We found only one entrepreneur very interested and at the end of this year he will open a bigger processing unit.

Q. What are you doing to promote production and how are your new varieties adopted?

A. Two orange-fleshed varieties were adopted but consumption is still limited to the areas of production although processors are also there.

### 3.4.4. Zero tillage and Leguminous trees (NRM) – Madagascar

The climatic conditions and environment of the highlands of Madagascar cause high hill erosion, low soil fertility and compactness. These problems require an immediate solution with new approaches in improved soil management. The new concept for soil fertility management was proposed for the transfer and implementation in target areas. It is based on permanent soil cover, use of leguminous crops with strong root system. When organic matter (OM) content is

high there is high release of minerals that enrich the soil. Cover crops used were Desmodium, Acacia magnum and Tephzosia vogelli. Land slopes were also protected with forage grasses such as pennisetum purpureum var. Kizozi. Crop residues and cut grasses were used as mulch material. Results showed perfect erosion control, good capture of moisture and its conservation during drought, increase in soil fertility and decrease in soil compactness.

Demonstration of zero tillage using leguminous trees was established at 24 sites with 4 plots. 2 tilled and 2 with trees. Study tours, trainings, field visits and group appraisal session were organized involving all partners, Scientists from FIFAMANOR, rural development agents and farmers. Suggestions made by this appraisal are vital to reinforce collaboration and improve layout. Plots should be sown earlier and local visits should be reinforced. Framers involved should demonstrate the technology to their neighbours. Monitoring should be improved. Better results are expected at the 3rd season as was shown by on-station research experiments.

The major constraints affecting this project were mulch deficiency and management, strong erosion at one site after heavy rains, weed control related to mulch deficiency. Zero tillage was also not yet well understood by many people.

Q. What was the method of treatment for controlling weeds?

A. Mulch was the only method and it can control weeds very well.

Q. Do people grow banana on these highlands?

Q. What were the results for K dynamic with the time when using zero tillage?

A. K is increasing as well.

Q. It is a new approach of introducing new practices. Is it convincing Farmers?

A. Yes, generally, through better yields.

## 4. SESSION VI- Main recommendations from Working Group discussion

### 4.1. Scaling-up from pilot projects

- The process of reaching the target numbers based on experiences and lessons from small pilot project

#### 4.1.1. Key Elements

- Demand for technology

- Markets
- Constraints

- Partnerships (effective partnership)
  - Constitutions and commitment (e.g MoU)
  - Responsibilities and participation
  - Capacity building (training)
  - Sharing of information

- Creation of awareness of technology to end users
  - Barazas
  - Low cost avenues to disseminate

- Start small develop delivery methods
- Holistic or package e.g. goat project

- Cost-benefit of the technology delivery
  - Move as far, as fast at minimum cost
  - Taking advantage of partners
  - Interesting to the private sector

- Commercial demand
- Supportive policy
- Understanding of target areas
- Insufficient analysis cause for failure (unsuccessful) (e.g. vaccine for ECF central)

### 4.1.2. Recommendations

- What are the innovative delivery mechanisms
- Are delivery mechanisms appropriate for certain technologies and not others

- Delivery mechanisms that may be replicable or used in scaling-up of similar technologies

  - Package for goat may be applicable for honey bees

- The consultant team consider:
  - need to distil and bring out delivery mechanisms that can be generalized over a number of technologies
  - Use reports and additional interview to address the cost-benefit analysis

### 4.2. Linkages

#### 4.2.1. Key elements

- Need holistic approach
- Clarify if this is complete package
- Need observable benefits

- Technology must be simple, relevant, cheap, cost-effective

- Partnerships among all stakeholders vital, all must have common understanding of package

- If in conflict with policies technology will fail
- Partnerships must be based on comparative advantage

### 4.3. Marketing

#### 4.3.1. Key elements

What have been the key elements in the successful and unsuccessful projects?

- Most successful projects were responding to clear market demand, i.e. bee project which led to increased sales and need for improved quality

- Unsuccessful projects had no market demand, shown by fodder chopper. i.e. no market demand for milk.

- For technologies with low market incentives such as self pollinating beans. Strategy is to catalyse the system for farmers

- If seeking higher value markets, such as green beans then need to adopt a clearly market driven approach to seed supplies.

- If there is enough incentive for private sector this should be encouraged. but policy situation in specific countries needs to be studied. (Case of farmers not being able to sell seed directly).

- Policy stopped testing of project in high demand area such as the Dairy Sector in Kenya, therefore policy needs to encourage/facilitate, (not discourage) private sector development eg East Coast Fever (ECF).

- Food processing projects need to show clear evidence of consumer demand

## 5. Way forward for Phase III project

- Key elements must be in place

- TT should be guided by national policies and structures.

## 5.1 Recommendations

- All projects should demonstrate demand and buyers for their products.
- All proposals should therefore have a market demand study and supply chain analysis.
- Business plan with clear investments and targets.
- Indicate if technical support is needed and where that will be sourced.
- Well quantified indicators.
- Economic cost: benefit, estimate of demand and provide indicators, required capacity, rate of transfer/adoption, ex-ante and ex-post analysis.

### How can TTP help NPPs?

- Networks should be involved in approval and implementation process
- The TTP project should ensure funding of different types of scaling-up mechanisms being developed
- TTP should be used to evaluate ongoing transfer activities focused on evaluation and not implementation
- Question: How do we ensure that funds are targeted to identified (growth) markets
- Question: Do we need some strategic studies to identify growth/higher prospect market sectors and use this as a means to steer the grant mechanism
- Question: Should we analyse methodologies for uptake pathways and adoption rates.

Structure projects such that they meet the following requirements:

- Competitive grants that are based on clear impact targets
- Projects could be based on some strategic thinking and not totally "shot gun" approach.
- Projects require market analysis and have a business plan
- They should be a process to evaluate projects and then support further development such as marketing studies/business plan.

## 5.2. Final Discussion Session

- Should the TTP focus on the demand for the technologies, or demand for the final products, or both?

- Some of the proposed guidelines could be used as criteria for the competitive system, by which NPPs will compete for a pool of funds after 2002.

### General points:

The most successful projects have been those with a clear demand for the final

product
arising out of the use of technologies

- Need different strategies for technologies directed to farmers with either high or low market access/orientation.

- Even in marginal areas with poor market access, we are trying to improve market access and economic returns

- Research should aim to make a difference. Should research focus on areas with high agricultural potential, and use other instruments to improve the livelihoods of the poor? "Social demand" is still very important for many partners like NGOs and some donors.

- Agriculture will continue to be the backbone of economic growth, but should we move off the exclusive focus on production to the rest of the food chain.

### 5.2.1. Policy issues

- Do we need studies of what policy environments or specific policies encourage and which hinder technology transfer? Should these be done in the TPP, or should they be passed over to ECAPAPA? This is a way to link several NPPs.

- At the same time, the TTP projects ought to be informed by policy studies. These are both regional and national sources of information.

- We need to expect that unexpected problems will come up. Projects need to start with the best information available and then be flexible to learn along the way, find new partners, etc. But, there is enough information available in the region to avoid many mistakes and inefficiencies.

- Need an interdisciplinary approach in fact, not just on paper, to look at a wide range of issues related to our technologies.

### 5.2.2. Partnerships

- A number of projects have listed " partners" on paper who have not really provided the promised inputs. Also, some partners have changed their focus in mid-stream

- Important to clarify roles of responsibilities of all partners, relative to the expected outputs. Need better stakeholder analysis to achieve this. Need to share resources and risk, which is difficult. The ways of working, the ways duties are defined, etc. vary among different kinds of institutions. Leads to mistrust conflicts over resources, conflicts over credit for impact, etc. Just a list of partners in the proposal (or in reports) is not enough.

- Many partners are in fact contributing resources, manpower, etc, but these are not well documented. This complicates cost-benefit calculations. The open recognition of the contributions of partners is an issue.

- Many grantees were not very clear about the process of technology transfer

- There is a difference between "core" partners who are the main implementors, and other partners who come in for specific services, information, etc.

- Consultants should clarify their analysis and recommendations about partnerships and linkage methods.

- In two-tier project development, partnerships should be spelled out in the second round

- There were some cases where the goals and behaviour of some of the partners undermined the sustainability of the project

**5.2.4.General questions and comments.**

- More broadly, what options should be considered in terms of the best relationship between research and technology transfer.

- Should there be an "isolated" TTP, separate from the other NPPs. More processes and approaches, to add value to other NPPs, rather than implement technology transfer? This was the broad conclusion of the ECART study leading to the EU funding.

- Whatever we have learned in the 48 subprojects should be focused on how to scale up and expand.

- What are the new challenges from the reorganization of research and extension in some countries?

- The TTP has been biased towards NARIs, with low involvement from the state extension system, and also from the private sector. How can we broaden focus of the project in Phase III, to bring in extension in innovative ways?

- Should we put more emphasis on public-private consortia, which have been important in Latin America, but not yet in Africa? There are groups there pushing market analysis. Both might be represented on the steering committee in Phase III.

- Inputs to the consultants are welcome, and should be channelled through the coordinator.

# Appendix V. ASARECA/CIP Technology Transfer Project

**Stakeholders Symposium**

Date 09-11 September 2002
Venue; ILRI/CIP campus Naivasha Road Nairobi. Kenya
**Draft report on the Workshop**

**Partcipants.** TTP Steering Committee Members, NARS Project leaders, Regional IARC Representatives, ASARECA Staff and NPP Coordinators, CIP Staff, Public extension NGO. Private Sector, CBO and USAID/REDSO/ESA Representatives.
(Details listed in Appendix 1)

*SESSIONS 1 and VI.*

Chairperson: Peter Ewell.
Rapporteur: Dr Wilson Ronno

*1) Welcome* by James Tuitoek on behalf of Dr Francis Rasolo. Director General FOFIFA Chairman of Steering committee. Madagascar; Seyfu Ketema, Executive Secretary ASARECA Uganda, Dr Diana Putman Director Food security office, USAID/REDSO/ESA Kenya.

*2) Goals of workshop*; Dr Peter Ewell, Regional representative CIP-SSA
*3) Experiences from the TTP Competitive grant making system and lessons learned from funded sub-project.* Berhane Kiflewahid Coordinator TTP. (Presentation 1 Appendix 2)
*4) New thinking on technology transfer.* John Disney Consultant NR UK
(Presentation 11 Appendix 2)

**Q:** *Seyfu Ketema:* It is important to recognise that there are many players to bring about impact. And it is important to think what is the particular role that need to be played by RSU - Gaps should be analyzed and a clear role should be defined in order to achieve our goal.
**A:** Agreed. There are multiple pathways and multiple players depending on the nature and subject of the research. All researchers should assess the potential gaps and attempt to fill them with the appropriate skills and expertise.
**Q:** *Ali Ramadan:* Could you give or explain an example of the issues the scientists need to get from other sectors
**A:** From the literature review carried out, the more valuable papers had compared agricultural innovation/research with that carried out in other sectors such as manufacturing. The lessons learned included the need to bring into the process all of the skills and expertise needed to ensure successful application regardless of the discipline or area of specialisation
**Q:** *John Monyo:* Do we know what proportion of resources invested in agric. R & D in Eastern and Southern Africa are devoted to technology uptake vs technology generation? Is it appropriate to compare this with Europe where there is a long history of technology generation?
**A:** The example given in Europe was for research directed towards developing countries and

not Europe. From the work carried out in ASARECA funding directed towards application of technology would fall in the range 10 – 40 % compare to the 60% figure I quoted.
**Q:** *Berga Lemaga:* I was expecting to see a brief analysis of the major T.T. approaches that have been used and which one have been more successful; and which ones not without doing this, there may not be enough information to agree on the way forward, neither can we be in a position to justify the formation of PRU – can you please elaborate on this?
**A:** As indicated during the first session of the meeting there are multiple uptake pathways depending upon the nature of the research. In terms of lessons learned on effective approaches, the message is to have the uptake mechanism in place before conducting the research. Dissemination with network coordinators indicated that they have had difficulty in accessing/finding the skills and expertise needed to foster TT. This is the aim of the proposed PRU project.
**Q:** ASARECA is about comparative advantages of networking in research, why do you think there are comparative advantages of a PRU over the attempts of NARS in this uptake pathway in use e.g. ATIRI of KARI?
**A:** ATIRI in Kenya has been very successful. The proposed project is intended to supplement issues and fostering uptake by all of the ASARECA networks.
**Q:** *R.B Jones* You have proposed establishing a new project to promote uptake. Isn't this the same as the FOODNET model that is established to support marketing. Berhane also mentioned the input of the networks to the TTP? What is different about your suggestion?
**A:** The proposed new project is indeed an attempt to apply the principles being applied by FOODNET to the other network. Discussions with network coordinators indicated that there are 'gaps' that they have been unable to fill, ranging from market analysis, dissemination expertise, use of media, investment skills etc. The proposed project is intended as a source of inputs to foster intake and goes beyond the scope of FOODNET. It would also have funds that could be accessed by all networks.
*Q: Elon Gilbert* Is there really a strong relationship between demonstrating impact and obtaining additional funding?
*A:* USAID and other donors required and supported studies of impacts in the late 80's/early90's in SSA which showed high impacts but support for agri R and D declined dramatically during the 90's nonetheless. Evidence of impact may be a necessary, but hardly sufficient condition for sustaining support. A range of other considerations (politics!!) are arguably more important in donor decisions on programs than evidence of impacts. Perhaps DFID/EU have a better/more consistent record in this area than USAID?

*After these introductory presentations, the group then set some few working agreements.*

5) ***Working agreements***; Come back from office breaks and lunch on time , No long winded questions with multiple questions – 2 minutes; Switch off mobile phones; Speak Clearly

*It was also agreed that based on a simple model of there being multiple pathway and interdependent feedback mechanisms between the research results, intermediaries and users/beneficiaries, that participants would post cards on large boards after their presentations and during breaks. Six boards were introduced during the workshop which read.*

1) ***Institutions/networks,***
2) ***Methodologies***
3) ***Processes and linkages***
4) ***What was successful?***
5) ***What did not work well?***
6) *What key actions would have improved impact.*

*As the results to these questions represent a summations of the presentations, they are presented here first before the individual project presentations and questions and answers.*

## ***THE GROUP WORK RESULTS AND COLLATED LEARNINGS***

*1) INSTITUTIONS/NETWORKS*

- NARI – KARI, AIRA – CIP, GOK – MOALARD, PRIVATE – 5 ENTERPRISES **(Project: 114 KE 99 – KIRDI Sweetpotato processing TTP)**
- NAARI, CIP,KAAR – Technical assistance and backstopping, Farmers groups – implementation and farmers, Local Govt. – linking to farmers ( not so good)
- UNSPPA, NARO, CIP/ASARECA, PRACACE *(SOCADIDO)*
- KARI, MOALARD, ICRAF MENRE (forest dept.), KEFRI *(REFSO)*
- ISAR, NGO's: World Vision International, SNV, LWF, CBO: ADEBECYA ORSA (National Extension) *(Banana project Rwanda)*
- NARO, IITA, Buganda cultural groups, NGO*(Banana Uganda)*
- CARE, BRDP, Farmers groups, TAHEA, CBO – Masala Kulangwa, CIP/ASARECA. Research *(Sweet potato/Cassava TZ)*
- ASARECA/CIP TTP, ISAR/CIAT/USAID/ATDT Project in developing and dissemination technologies, CARE International/Gikongoro, World Vision International/Butare, CRS/Butare, CSC/Gitarama and DERN/Rehengeri as extension units, MINAGRI ( DRSA,PGERB,DRB II), ISAR/PCA/ C Project in Cyangugu,ISAR/ACRAF Project, Farmers groups *(Climbing bean Rwanda)*
- PPD – Min. of Agriculture, IITA – Only initially *(PPD Zanzibar)*
- Ministry of Agriculture and Rural Development, Farmers Groups, Catholic Diocesian Development Services *(Forage)*
- KARI, MOARD, HPI, PI *(Forage crop KARI Mtwapa)*
- Extension - Link the partners, Farmers – Beneficiaries, University – Monitoring. Need assessment, Camartec – Manufacture Technology *(Forage Chopper)*
- ECABREW, AHI, ICRAF, PI, ABLH *(Climbing beans – Kenya)*
- EARO, ASARECA/CIP, Farmers group, Individual farmers, Zonal Agri. Office. Fona Trading Private Company *(Animal Drawn Planter)*
- Bako Research Center, ASARECA/CIP, District Bureau of Agriculture, UNDP – regional program – (credit), Farmer *(Dairy Cattle Ethiopia)*
- COVECO, ILRI, TODIFA, LC, FARMERS, GOVT *(Tsetse)*

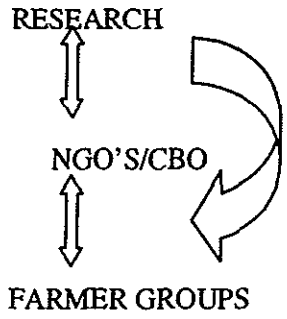
## 2) *METHODOLOGIES*

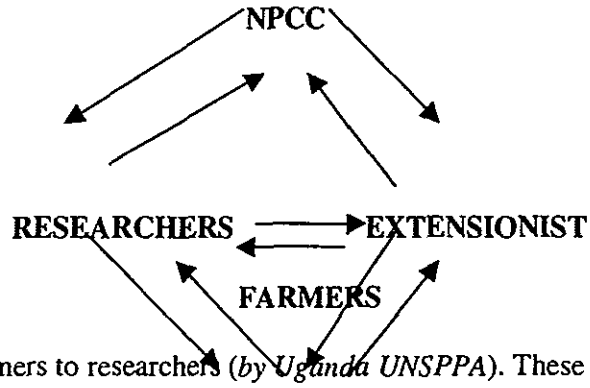
- Study tours/ farmer to farmer exchanges, Training only technical management skills. Group (farmer) discussion. *(SOCADIDO)*, TTP need risk funds, private sector (encouragement), Agricultural shows, Radio programs *(SOCADIDO)*
- Identification of target groups, training on bulking skills, Multiplication in sales establishment, Acquisition of germplasm, On farm trials, distribution of cuttings *(REFSO)*
- Meeting with partners (farmers, farmers association, extension and NGO's. Farmers training in banana pest and their control. Technology demonstration and follow up of clean plots.
- Shows, identification of target area, Holistic approaches, Participatory training. Interactive participation of Org. concerned with food security, poverty *(KIRDI's Sweetpotato processing TTP).*
- Farmer's, women groups, small-scale entrepreneurs and consumer involved in TT.
- Participatory plant breedings (PPB) in on farm research. Participatory rural appraisal in identification of problems and farmers needs. Dissemination done by ISAR bean program, NGO's and ASSR, dissemination by farmers to farmers *(Climbing bean Rwanda)*
- Farmer training/demonstrations, farm visits and advise to farmers. *(Forage crop KARI Mtwapa)*
- Incorporation of other important aspects in potato training e.g. group development.
- Demonstration exchange visits training course field days. Multiplication and dissemination of clean seed Potatoes (from Uganda National seed potato producer Association).
- We formed farmers groups, farmer group training, individual farmer training, and demonstration of the technology to farmers groups *(PPD Zanzibar).*
- Farmer participation, training of trainers (farmers especially opinion leaders and existing farmer groups *(Banana Uganda).*
- Identification of farmers, fabrication of the implementation, training stakeholders. Radio programs and demonstrations *(Animal drawn Planter – Ethiopia)*
- Encouraged development of micro-enterprises as a mean of ensuring sustainability, Involvement of key contact groups/leaders to promote and coordinate technology and utilization *(KIRDI Sweetpotato processing 114 KE 99)*
- Training, farmer discussion, farmer to farmer visits, dissemination and field visit.*(Forage)*
- Training workshops, video shows, follow ups and farmer to farmer visit.*(Tsetse)*
- To scale-up, bring in new partners and through exposure visits. *(REFSO)*
- Exposure to number of multiplication /bulking sites and field days on demonstration sites *(Beekeeping)*
- Quality control: Form farmers cooperative, lobby for policy implementation KBS. To promote sustainability: use farmers to farmer's field schools. Farmer's trips are important as they encourage performance and competition among the farmers. *(Beekeeping in Kenya).*

*3) PROCESSES/LINKAGES*

- Collaboration with IARCs/res. institutions – critical linkages. MAGANJO grain millers in Uganda *(SOCADIDO)*.
- Linking to programs or institution with marketing outlets/information.
- Use of cultural leaders.
- **ASARECA Network** Horizontal linkages – weak. Vertical linkages – quite good

PATHWAYS




- Linkage of farmers to researchers (*by Uganda UNSPPA*). These are regarded with high respect and carry weight, therefore great influence on adoption.
- Private sector linkages, businessmen for marketing and fabrication of equipment *(KIRDI sweetpotato processing 114 KE)*.
- Poor linkages between NGO's, good linkages between NARS and NGO's, NGO's and farmers *(Rwanda banana project)*.
- Linkages among farmers groups, farmer to farmer linkage were facilitated (PPD Zanzibar)
- Farmers to researchers, researchers visits and demonstration.*(Forages)*.
- Use of farmer to farmers' visits to train and encourage other farmers. *(Tsetse Uganda)*.
- Research to extension, farmer to farmer and NGO's and farmers. Strong linkage with research/extension Indirect linkages with NGO's because facility development *(Forage crop KARI Mtwapa)*.
- Use of NGO's as these have a stronger link with the grass root farmers. Critical linkages – buyer's e.g. schools, coordinating consumers to producers i.e seed producers to commercial growers *(Climbing bean)*.

- ISAR/bean program foundation seed, ASSR, basic seeds, NGO's Ministry of Agriculture, farmers, commercial seeds and dissemination *(Climbing beans Rwanda)*
- Media involvement in technology transfer. Researchers+GOK+FTCs+NGOs+Schools+Churches+CBOs+contact farmers *(REFSO)*
- We created collaboration with zonal Agricultural officers, with private small farm Prod Company. *(Ethiopia Animal drawn planter).*

### *4) WHAT WAS SUCCESSFUL?*

*More specific project successes*

- *(Climbing beans- Rwanda)* -In the dissemination of new small packages of quarter and half kilo were helpful in growing a wide range of improved climbing bean cultivars. In producing staking material through introducing agro-forestry species, farmers contribute in soil conservation against erosion and by increasing soil fertility Dissemination done by farmers to farmers has been quick; Farmers are stronger extensionists
- *(Forages)*- Small quantities of seed → large quantities of yield achieved
- Multifaceted approaches: Seed production, Support Methods, Soil fertility improvement
- Have capacity to multiply seed, market potential – exists, awareness created, importance of forages demonstrated.
- *(Forage crops – KARI Mtwapa)*- Farmer awareness created, Farmers adopted seed bulking
- *(Rwanda Banana project)*-Successful: Large technology dissemination
- *(PPD Zanzibar)*-Technology of paring suckers was readily adopted (Over 80%)
- *(Uganda national seed potato producers)*-Dissemination of improved seed potatoes and technologies.
- *(Potato seed Ethiopia)*-Variety and DLS found superior in performance over the local
- Farmers training and involvement from early start of the project
- *(KIRDI's Sweetpotato Processing)* TTP- successful
- Adoption of new provitamin A -rich Sweet-potato variety - SPK 004
- Technology adoption, Sweetpotato chipping and drying.
- *(Sweetpotato TZ)*-A system of multiplication and distribution of planting materials has been established.
- *(Tsetse)*- Training, Tsetse trapping, awareness raised and integration of Tsetse control with economic activities

- *(Dairy cattle Ethiopia)* Increased income, Increased demand for the tech, high milk yield and calf crop production, opportunity to disseminate forage technologies, improve awareness of farmers, efficient husbandry practices.
- *(Ethiopia animal drawn planter)* Awareness created, farmers benefited

**More generic successes**

- Product quality control by farmers themselves, success in processing and marketing, good networking of farmers, high rate of technology adoption, eradication of adulterated (poor quality) honey through the assistance of the government. *(Bee keeping Kenya – Genesis).*
- Easy to learn and adopt, quick income, spread fast, country wide project and high demand for organic honey *(Beekeeping)*

- Linkages between institutions, acceptance of technology and farmers ***demand for technology*** *(Forage Chopper)*

- ***Clear Advantages*** for farmer's new technologies and ***affordability of technologies.***

- ***Critical reviews/technologies/process*** by groups/with groups.

- ***Involvement of key partners for scaling up.***
- The presence of many NGO's and USAID/ATDT project funds contributed to the scaling up of the technologies. Availability of funds is a must for success.
- Motivated and cooperative action of the partners and particularly the active ones. researchers, extensionist and farmers. Strengthening of farmer knowledge via continuous training.

- ***A market is available and successful involvement of the private sector.***
- Market orientation. Market assurance encourages farmers to produce more example of beekeeping project. *(Tsetse)*
- Participation of private sector (like supermarket) reduce the market constraints *(Sweetpotato/Cassava – TZ)*
- Success on beekeeping was because of market availability. Clear production to consumption chain. Demand was identified and technology assisted to meet this demand *(Beekeeping- Honey)*

- ***Consideration of socio and cultural aspects improves the acceptance of projects.*** Use of cultural groups t assist in the transfer of technology gaining the confidence of farmers *(Uganda banana and yams).*

- ***Innovative thinking, Combining inputs, adapting and combining outputs , involving credit. Etc***
- Joint procurement of agricultural inputs to increase market power and decrease control prod.
- Uses of innovative thinking to reduce cost and increase acceptability by other farmers (e.g. Oil drums) *(Nematodes in bananas, Zanzibar, Uganda)*
- Integration of the technology with an in-come generating activity *(Tsetse Uganda)*
- *(Dairy Cattle Ethiopia)*- Was able to secure credit facilities from other partners e.g. UNDP. This is a good achievement

- **Incorporation/appreciation of gender issues/concerns.** Gender sensitivity in any community work will certainly end up to the benefit of all *(NRM Project)*

    - *Empowerment, ownership and creating associations of farmers/groups*
- Social organisations are very important for sustainability plus end user ownership. *(Beekeeping – Honey)*
- Farmers contribution of the 40 % to the goat project which led to a sense of ownership Farmers involvement in multiplication (Sustainability and cost effective). *(Goat project -TZ.)*
- Establishment of strong linkage between the action actors, consistency of the project with farmer's priority concern.
- Proper identification of co-workers, good initial training and exposure of farmers to the stories of the improved potato variety and DLS.
- Match between the technology being disseminated and local resources.
- Farmers empowerment and sense of project co-ownership for sustainability.

*5) WHAT DID NOT WORK WELL?*

- ***Lack of market and private sector involvement***
- Linkages to private sector to: Supply of inputs, Provide finance, Marketing services, Develop scaling up processes, Lack of private sector market studies, Market studies not included to identify **demand** plus finance.
- Overproduction where there is no markets
- UNSPPA Africare (NGO) provide seed free to farmers thus distorting markets.

- ***Insustainable*** eg: Poor consideration of market for products e.g. market shops for milk and output should be planned. *(Forage)*

- ***Marketing strategies should have been part and parcel of the projects*** Sustainability issues have not been given due attention ( general)
- In-sustainability of backstopping linkages.
- Marketing components not considered, increased productivity can mean lower local market prices.
- Timing of market survey before or after project.
- Commercialisation of hot water treatment, *(Banana project)*
- Marketing of seed *(Climbing beans)*
- Marketing limited demand, *(KIRDI – Sweetpotato processing TTP)*
- Lack of clearly identified market outlets for products.

- *Timing*: **eg: Is the length of projects too short for dairy, fodder etc to show impact?**
- Time limit, limited method of dissemination, TODIFA *(Tsetse)*-
- A periodical activity, processing problems, lack of appropriate packaging materials, careless handling by some farmers *(Beekeeping)*

- ***Technology not adopted or appropriate.***
- Technology adoption not high (About 40 – 55 %). The forage bailer technology as an addittion on technology to forage chopper. Technologies leading to labor constraints. Technology of paring plus hot water therapy nor readily adopted (only 17%) *(Banana Zanzibar).*
- All four papers illustrate the need for more planning before conduction research. *(forage papers)* Several references to collapse of traditional extension services (e.g. Kenya and Tanzania). Communication problems.
- Do you provide training or respond to demand – many more farmers trained than implement (*e.g. Tsetse, forage crops*). Impasse of passive farmers, passive vets led to modification (*ECF*).

- ***Poor linkage with farmers attitudes, needs, priorities and groups***
- Difficulty forming farmers groups (*PPD ZANZIBAR*). Failure of farmers to follow advice. Contact farmers Management of bulking sites/multiplication sites (weaving interests) *(REFSO).*
- Extension services weak and declining which affected adoption. Limited farmers participation observed in most projects. Closer involvement of farmers in planning. Difficulty in identifying suitable farmers.
- Farmer preference to food crop production – this should be expected. Researchers should have captured this information during baseline studies. *(Forage projects)* Collaborators supervising groups/farmers. No linkage between KARI (Crop Res) and KARI (Livestock Res). The two should be involved at planning, implementation and M&E.

- ***Other things:*** Poor monitoring by the end of the project, sustainability aspects were not successful and market component was not considered (*Rwanda Banana project)*
- Weather and Transport facilities (*Climbing bean Rwanda*).
- Expanded partnership resource consuming. Limited expertise of researchers in TT.

*6) WHAT KEY ACTIONS WOULD HAVE IMPROVED IMPACT?*

- Concerted promotional and public awareness campaigns (*KIRDI Sweetpotato Processing*).
- M & E activities seem to have been top → down in both the forage crops project of Kenya.
- The linkage between Katumani and Mtwapa forage crops is not clear. This would have contributed to the success of the projects.
- Identification of specific roles of partners and commitments to meet them (*Forage crops Kenya*).
- Increased consumer awareness on product quality. Standardization of products for consumer demand satisfaction (*Honey*).
- Credit provision, provision of training, visits etc, strong collaboration of partners. use of technology, which have an impact within shorter period and funds provided by ASARECA and others.

- **Technologies that need high initial investment need more secure funding e.g. Dairy cows/goats (*Tanzania and Ethiopia project*)**
- **Actual planning and implementation for fodder banks technology be clarified and followed to avoid a backlash.**
- PRA could be considered to inculcate ownership of project by community. Extent period of project, include income-generating activities, subsidise trap materials initially and improve dissemination method *(Tsetse)*, involvement of more partners *(PPD* ZANZIBAR)
- Need for a mechanism for sustainability on technology transfers. Project funding end before success is guaranteed.*(Forage bailer)*
- Use of group approach rather than individual (farmer networks) *(Forage chopper)*
- Need to scale up adoption by collaboration with other programs/initiative project doing similar work. *(Forage crop Mtwapa)*.
- **Recommendation:** Need for training, improved linkages (collaboration) and need more time.
- Involve business communities, Training on business mgt and involve business communities at onset of project formulation (*Pigeon pea processing utility*)

*The groups were then asked if the output of the last day answers the question: - What is the way forward?, What are the 1-3 things you want to see achieved by lunch – time tomorrow?*

The discussion groups came up with :

1. Feedback on the performance of T.T.P since its inception. *(Done)*
2. Regional plan for T.T.P phase III? ***2,3,4,9 and 10 combine***
3. Priority issues for T.T in ECA region
4. Future role of ASARECA networks in T.T.
5. Market perspective for scaling up – ***Link to foodnet and clearly articulate role***
6. How to strengthen partnerships for impact?
7. What criteria do we use to assess technologies for transfer to beneficiaries e.g. Beneficiary/client involvement.
8. Strengths and weaknesses of T.T identified.
9. Opportunities for improving T.T identified – how to do TT better.
10. Sustainability of TT identified
11. TTP phase III should focus on demand – driven technologies.
12. Functional linkages (↕ + ↔) among stakeholders including marketing should be established.
13. Identify gap, put in place proper strategies that include sustainability networks.
14. ASARECA should be more proactive in T.T
15. Build capacities among T.T institutions.
16. Strengthen ↔ linkages between key strategic partners.

John Disney - Introduction to final session 11/9/02

**1. Success and progress**

- Many examples of successful input
- Progress on multidisciplinary approach, partnerships

  **But;**
- Marketing and private sector involvement largely neglected

**2. Issues from days 1 and 2**

- 16 topics identified by working groups
- Many were already identified in consultancy
- Some highlighted for discussion today

**3. Practical issues**

1) Linkages and partnerships
2) Marketing and the role of the private sector

**4. Strategic Issues**

3) Sustainability of TT
4) Networks to be more proactive in TT
5) More effort on planning

**5. Methodologies and Processes**

- Multiple pathways illustrated
- Involvement of more partners and innovative method ten to be more successful

  Quote (paper on pigeon peas) "Different technologies require different transfer approaches"

**6. The way forward for discussion**

- Sustainable funding mechanisms
- More detailed planning of projects prior to funding

**Questions and comments.**

*Q: Kapinga:* What about market studies on the type of technology being transferred eg the case of improved varieties to be transferred.

*A:* Let us not take much on the definitions but rather do assessment studies to identify opportunities that would be crucial in this case.

*Q: Kapinga*: We need private sector involvement in the steering committees of the networks. How do we make the team participate actively?

*A:* It is crucial and mechanisms should be worked out to have the cross cutting stakeholders involved

*Q:* What is our knowledge base on T.T. delivery systems in the region (not from outside?). Should ASARECA NPP's undertake research on T.T.?

*A: Jones:* This is a desired activity but it is a step ahead

*A: Disney:* A lot of research has been undertaken and there is considerable literature but not in this region.

*Comment: Berga:* It seems a lot of burden is going to be put on the networks. However networks are only a partner. To be successful in T.T., it needs a concerted effort. Adoption depends on a number of factors. What is adopted today might be dropped tomorrow. Each stakeholder needs to be committed to be successful. After all networks do not have staff apart from the national staff

*Comment: Berga*: You recommended that the networks need to be more proactive in T.T. and also directly involve in T.T. If you see, all networks do have TT as a component and networks should add value to what is being done by the different projects in each country. Can you please specifically indicate some of the steps that the networks need to take. ( Answer not recorded)

Comment: *E Lazaro.* Looking at practical issues, marketing is on output side but we need to include credit issues as one of the important inputs of T.T.

Comment *J.K/Tuitoek*: On the issue of involving the beneficiaries in T.T there is a suggestion that in the planning process the beneficiaries should be involved in designing the projects and activities of the NPP's.

*Q: JK Tuitoek:* How can we involve the national extension systems in ASARECA's technology transfer efforts i.e. Improve communication.

*A: Disney:* This is a complex issue since some national extension systems are seen to be disintegrating.

This led to four questions which were brainstormed on the last morning.

### *1) HOW TO IMPROVE LINKAGES AND PARTNERSHIP?*

- Carry out joint M& E (Participatory). Package information targeting horizontal partners. Joint workshops, exchange tours, training etc. Clearly identify/define roles and responsibilities based on comparative advantages
- Signing MOU spelling out everything and each private sector partner should have

clearly specified duties at the beginning of the project

- Identify key partner stakeholders.
- To rethink how each partner shares resources, use partners for those activities that you cannot do alone: complementary partners doing different things 1 + 1 >2 and private sector attitudes might be overcome when they start to benefit from the technology
- Define a common goal/purpose.
- Role of the beneficiaries should be well defined for the development of the project, involve more relevant disciplines within the organisation, include external monitoring and evaluation, have a memorandum of *understanding* with *flexibility* built in,
- There should be a *clear* role definition of linkages and partners at the outset and role of ASARECA /networks in M&E should be part of the MOU.
- The private sector is flexible. We need to make use of this opportunity by creating space for more partners to join the projects along the way.

***2) HOW TO PAY MORE ATTENTION TO MARKETING AND THE ROLE OF THE PRIVATE SECTOR?***

- Need for market study depending on type of technology
- Market policy on marketing structure and system. ASARECA may come in to help. ASARECA to include a revolving fund for the credit and saving system, seed money to facilitate the involvement of key partners in the project development
- Baseline survey or disseminate marketing of the technology and the product, incorporate marketing strategies at the planning stage and mark the role of the private sector .
- Use better existing market opportunities, researchers should have wider vision of technology application plus farmers problems.
- Researchers should closely involve private sector in commercialization of the technology.
- Market study before technology transfer starts and think about comparative advantages of the technology when market it
- Involvement of the private sector from the beginning of the project to the end depending on technology.
- Involve private sector at planning phase and implementation and identify the different types and roles that they can play, -Manufacturers – Producers- Financiers -Other intermediaries- inventors
- *Marketing can :* - Add value to products, policy advocacy support,
- Undertake market study (to establish demand level and delivery systems),
- Forging partnership for promotion of market.

***3) HOW TO MAKE TECHNOLOGY TRANSFER MORE SUSTAINABLE?***

- Train staff in T.T concepts, seminars, exchange programs, workshops and publication. Establish sustainable financing mechanism
- Build sense of ownership by all stakeholders.
- T.T framework should include a program time horizon, which should include project period.

- **Sustainability**
  - **PROGRAM HORIZON**

| | | |
|---|---|---|
| ➢ $TTP_1$ | ➢ $TTP_2$ | ➢ $TTP_3$ |

o 1 ➜ 2 ➜ 3 ➜

- Attach monetary value to the technology gradual withdrawal of researchers from the project (exit strategy)
- Integration of technology into existing programs at community level
- Empowerment of beneficiaries (ownership i.e. capacity building in marketing skills )
- Provision of an associate to manage revolving funds and institutional arrangement.
- Planning plays an important role in effective and successful technology transfer.
- Preparation of guidelines for technology transfer would be useful.
- During planning production to consumption should be considered.

### *4) HOW CAN ASARECA NETWORKS BE MORE PROACTIVE ON TECHNOLOGY TRANSFER?*

- Set up a fund to facilitate pre-planning of T.T. activities.
- Strengthen linkages among stakeholders (NGO's, CBO, farmers, GP's, Ext. services) and joint meetings.
- Capacity building for stakeholder on T.T. training, seminars workshop, etc.
- Information exchange, pamphlets, promotional material, web page.
- Create incentives such as competitive grants and funding pools.
- NPPS should establish linkages among themselves on T.T. and create incentives.
- Review representation of the Steering committee to include committed stakeholders who will provide guidance.
- More emphasis to funds projects that are more in favour of technology transfer.
- Networks in their planning should involve ASARECA Promotion Research Unit (PRU
- Networks should get funds allocated to support activities to be proactive.
- A need to ***redefine*** the mandate of Networks to include technology transfer/dissemination. Networks should reallocate their resources to include T.T. The competitive grant scheme should include T.T component. Strengthen information exchange in T.T. between networks.
- Budget allocation for network activities for technology transfer.
- Networks should have mobile team of experts that could be appealed to come in TT projects to provide necessary backstopping or react on some problem (through motivation/incentives system.
- Networks should contribute in capacity building on NARS level in T.T skills (e.g. partnership creation, technology promotion.
- Revisit the mix of objectives, operations, governance, planning and implementation of networks and ASARECA
- Clearly determine what the networks could do in each T. T. project, work plans, monitoring and evaluation.

- Networks should specify area of activities for each country to create maximum possible impact with limited funds
- Impact orientation in technology development and application

## *General comments and Plenary discussions*

- *Disney:* Need for changes in representation on steering committees to include private sector and other stakeholders
- Need to develop skills and expertise in networks
- Frustrating to come to end of project, with a successful project but no clear way forward.
- *Jones:* Is the planning process within networks explicit and good enough. No clear division of labor, too much spreading around of small resources.
- *Okoth:* too many things are not working well, which have not been analyzed carefully enough.
- *Kapinga:* Network SCs should include more stakeholders, but experiences show that they don't stay after their own presentation. What mechanism will really make them interested.
- *Grace Agwaru:* What is this network? Are NGOs really proactive members.
- *Ewell:* What are needed are the skills and experience in the private sector, not sectoral representation
- *Putman:* Why do we need a separate project in addition to FoodNet.
- *Disney:* The source of expertise has not been available from FoodNet
- *Recke:* The cards are relevant to any kind of project – how can a regional network specifically add value to projects in particular projects. Private sector will only become involved in *win-win* situations.
- *Jones:* This is a common issue across networks
- *Muturi:* TT projects have been technology oriented. Should ASARECA have research capacity on technology transfer – what works, what does not work, etc.
- *Jones:* People need support in how to develop partnerships.
- *Disney:* The study found that the processes are fairly well understood, while more research maybe necessary, not a priority
- *Jones:* These projects have not paid much attention to impact assessment.
- *Putman:* Where to the users of these technologies fit? Users want technologies that they can use to make money.
- *Jones:* One thing that came out earlier was that clear market demand is a clear issue.
- *Putman:* What do you mean by market studies? Who want the product, or who wants to produce those products, or use the technology. Technologies are those that can be used easily, and those for which there are markets. Technologies too expensive, too hard to

use by women, etc.

- *Tuitoek:* The stakeholders, particularly users, must be with you throughout the process, or the output will not be useful.
- *Disney:* More attention to the planning process, to look explicitly at criteria for success, including user characteristics, from production to consumption
- *Cortbaoui:* All of us must think carefully at the mix of objectives, SC representation, etc. in the networks. 10 years ago, NARIs dominated. Now environment is changing, and networks need to adjust.
- *Seyfu:* 1) The planning process is critical – who is involved, is it demand-driven, market-oriented, etc. 2) Need to look at value chains in production-to-consumption context, 3) Can we come up with recommendations for technology transfer that will work across the board? Difficult, as it depends on the commodity, and on the farming system, proximity to markets, etc. Instead of coming up with one process and methodology, should identify guidelines, a kind of check-list that projects should go through, to better link with users and markets.
- *Jones:* Want a synthesis coming out of this project, to help the networks to incorporate the lessons.
- *Seyfu:* How to judge the appropriateness of the technologies in specific areas or farming system contexts. Failure in one area does not necessarily mean that it won't work somewhere else. Need to assess technologies across contexts.
- *Berga:* Don't put too much burden on networks, which don't have staff to take on complex tasks – it is partnerships, all partners must take responsibility. What is adopted today may be dropped next year, due to problems of seed, prices, etc.

## *THE PRESENTATIONS*

## *SESSION 11.*

1) ***Potato seed- Uganda – Steven Tindimubona UNSPPA. Kabale Uganda.***
Presentation 1. Appendix 3.

*Q: Berhane Kiflewahid:* How do you reduce the cost of potato seed production that can eventually reduce the cost to potato ware producers?
*A:* Using new technologies such as stem cuttings by farmers can reduce the cost of potato seed production that can impact on potato producers.

Comment/question: *E. Gilbert* The difficulties NARO is having in meeting its staff commitments to UNSPPA are traceable in large part to 1. Pressure to staff from the ARDCs and 2. Hiring freeze. The transfer of staff from NARO institute projects to ARDCs is a case of robbing Peter to pay Paul and is negatively impacting the ability of the institute programms and projects to do research and play their role in projects such as UNSPPA.

1. Has UNSPPA and NARO explored the possibility of seeking assistance directly or indirectly to provide operational support perhaps support to hire additional staff to cover gaps that NARO was supposed to fill?
2. What role can/should the ARDC in Kabale play in support of the UNSPPA activities? Has this been explored with NARO?
3. What services can be transferred to private sector ( and /or supported by private sector/NGO's/others)?

2. ***Potato seed Ethiopia. Girma Abera. BARC Bako Ethiopia***
***(Presentation 2. Appendix 3)***

*Q: A. Kirui* There was no mention on linkages between farmers and private sector for market outlets and inputs?
*A:* Private sector were encouraged to participate in marketing seeds but it was early during the project life.

3. ***Sweet Potato Seed- Uganda – Grace Agwaru, SOCADIDO, Soroti, Uganda***
***(Presentation 3. Appendix 3)***
*Q:* What was the network composed of: What do they get involved in.?
*A:* There is a need for newsletter of communication on new interventions.

4. ***Cassava and Sweetpotato- Kenya. George Etindi, REFSO Busia. Kenya***
***(Presentation 4 Appendix 3.)***

*Q: Okoth* A successful transferred technology is that which does not require researchers any more. Why do you still need research?
*A:* They need research for monitoring quality of other seed

Comment. *A Taha:* the three studies/projects presented so far are very comprehensive in describing the technology and processes used. However they lack attempts to monitor and assess the promoted technology against the prevailing or alternative ones. Therefore the contributions and recommendations are of a descriptive nature and not driven by the stated objectives. We may need to discuss this more in the general session.

## *SESSION 111*

Chairperson Alex Kirui
Rapporteur Dr Josue Okoth

5. ***Cassava and Sweetpotato – Tanzania- S Jeremiah ARI Ukiguru Mwanza, Tanzania (Presentation 5 Appendix 3)***

*Q: Dr.W.Ronno* How did expanded partnership become a problem to the extent of being time consuming rather than beneficial to the project?
*A:* Partners like NGO's had their own objectives. This means it was difficult task to convince them to include component of agriculture for the partner who have had agricultural component.

*Q: John Disney* Of the 5 or 6 partners, were some more important in terms of success than others?
*A:* All were equally important..

*Q:* Do NGO's involved in distribution of planting material charge the full cost, subsidize it or give it free to farmers?
*A:* The NGO's have their own farmer groups. It is hoped that the farmer groups sell planting material to new group farmers.

**Comment** *E.Lazaro*: The linkage with the market (supermarket) is unique in this project (Cassava and Sweetpotato – Tanzania). Markets are important in technology transfer process. We should therefore include/record the supermarkets as emerging partner for this project.

6. ***Climbing bean – Kenya – John Muthamia KARI Embu Kenya (Presentation 6 Appendix 3)***

*Q:* From your experience, do you think farmers have the capacity to handle the six varieties you were working with.
*A:* Each farmer group was given one variety.

7. ***Climbing beans – Rwanda _ Louis Butare, ISAR Rubona, Rwanda( Presentation 7 Appendix 3)***

*Q:* One of the final bullet points said a market study will complete this work. Why was the market study not carried out first?
*A:* General nod expressing relevance of the question.

*Q: Kapinga:* For the two crops ( beans and sweet potato) how are they perceived by gender?
*A:* Many activities are done by women but decisions taken by men.

***8. Banana and Yams – Uganda- Christine Kajumba KARI-NARO, Kawanda, Uganda (Presentation 8 Appendix 3)***

Comment *J.Disney.* "Collaboration with cultural group boosted mobilization due to increased farmer confidence" This is a good example of a novel approach to successful application of the research.

***9. Banana –Tanzania_ Khadija Rajab PPD Zanzibar, Tanzania( Presentation 9 Appendix 3)***

*Q:* Partners only involve crop protection division directly to farmers. Why not involve the extension Service?
*A:* There is an extension service as part of the crop protection PPD.
*Q:* Are there NGO's in Zanzibar? Why did the project not involve them as partners?
*A:* There are NGO's. We sought help but they did not cooperate.
*Q: Jean Ndikumana*: What is the adoption rate of alternative methods to hot water treatment?
*A:* The adoption rate is still being monitored.

***10. Banana – Rwanda- Sveta Gaidashova, ISAR Rubona Rwanda. ( Presentation 10 Appendix 3)***

*Q: James K Tuitoek* How was adoption rate measured? How were yield and pest infestation measured?
*A:* **By going back to the trained farmers and asking how many had adopted the CPM technology.**

*Q: Berga Lemaga (PRAPACE)* You said that hot water treatment of banana CPM is effective but you said that the tank is expensive. Will it be possible to facilitate many farmer to join hands and buy one tank to use it for a long time? what about a credit or revolving funds options?

## *SESSION IV*

Chairperson: Dr Jean Ndikumana
Rapporteur: Ms Khadija Rajab

**11. Forage Crops Kenya – Donald Njarui, KARI, Katumani, Kenya. – (Presentation 11 Appendix 3)**

*Q: Berge Lemaga:* It was a very good presentation and clear. However, it seems that farmers in most cases were told what to do and not regarded as equal partners in giving inputs. This negatively affects adoption and results in disregarding the indigenous knowledge. Can you please comment on this?

*Q:* In your recommendation you suggested that NGO's give more attention to marketing forage seed. Why do you think NGO's still do this?
*A:* NGO's have a good network and can organize markets for farmer groups.

12. Forage crop- Kenya-Ali Ramadan- KARI Mtwapa Kenya ( Presentation 12 Appendix 3)

*Q: Reverend Mutemi:* Farmers need more training. Who is demanding the training?
*A:* The farmers didn't ask for it directly, but it was evident that they needed it.

*Q:* Field day is not enough for training, Why did you not make proper selection of farmers and proper training?
*A:* The field day was not the ordinary field day. It was for project farmers only.

***13. Dairy Cattle Ethiopia. Gebre. E Gebreyohannes,BARC, Bako. Ethiopia ( Presentation 13 Appendix 3)***
*Q:* Local breeds when kept well can yield more milk, did you compare milk production of local breed and crossbreed?
*A:* This has been done at the institute and it was found that local breeds produce less milk.
*Q:* What effort is being made to preserve local genes of cattle?
*A:* Government has opened a national ranch and is taking care of this problem

14. Dairy Goats – Tanzania L Mtenga SUA, Morogoro Tanzania. ( Presentation 14 Appendix 3)
*Q:* Types de croisement- pour controller le performance en F2 et en F3
*A:* Croisement D'absoprtion avec les races exotiques

15. ***African Agricultural technology Foundation Dr Eugene Terry. AATF Washington DC ( Presentation 15 Appendix 3)***

*Q: Berhane Kiflewahid:* What percent of the grant is for technology generation vs technology transfer?
*A:* The project funds technology transfer, although research and technology generation can be done as a component of the transfer process downstream.

*16. East Coast Fever – Sam Chema, AGREF Kenya ( Presentation 16 Appendix 3)*

Q: *J Okoth*: The ECF vaccine is live, which means vaccinated animals require great care. Also you loose 1% of the vaccinated animals. Are there not reasons why uptake is poor. As a farmer, I lost one animal.
*A:* Other farmers have benefited, so it is your own choice.

Q: *A Kirui* Is it possible that some of the animals which died were already sick with ECF before being vaccinated?
*A:* All animals treated or infected with the vaccine were assumed to be in good health and there was no need to take blood sample for diagnosis. The medicine given to treat the vaccine

should also kill any existing viruses

***17. Tsetse Control Uganda. Josue Okoth, COVECO, Tororo Uganda. (Presentation 17 Appendix 3)***

*Q:* Since Tripanosomiasis affects both man and livestock, why were medical personnel not incorporated as partners in technology transfer?
*A:* The project was biased towards agriculture (i.e. livestock)

***18. Beekeeping – Kenya. Rev Robert Mutemi, Genesis, Kithyoko. Kenya. ( Presentation 18 Appendix 3)***

*Q:* Do you promote farmer to farmer field school for beekeepers?
*A:* From marketing cooperative of bee farmers to market honey and guarantee quality.

*Q:* If you were starting all over what is the one thing to change to improve success?
*A:* Start with the farmers and address their demands. Form Beekeeping CBO's to identify priorities.

*Q: JK Tuitoek* Has Genesis attempted to institutionalise marketing or involve private entrepreneur?
*A:* Yes. We have encouraged cooperative societies to set up market outlets.

***19. Edible Mushrooms, Burund,. Gerard Rusuku, UOB Bujumbura, Burundi. – (presentation 19 Appendix 3)***
*Q:* Can sawdust be used as a substrate in mushroom growing?
*A:* **Mushroom does not do well on sawdust.**
*Q:* Can you make a comment on the overall profitability of mushroom production in terms of input versus output?
*A:* It is a profitable enterprise as the inputs are agricultural by-products, which have very low costs.
*Q: JK Tuitoek* Spore production is a problem in Kenya? What is the experience in Burundi?
*A:* Spores imported from Belgium but multiplied at University.
*Q:* You said that you are not able to satisfy the demand. Are you talking about local market or export market? Is a plan to export mushroom in future?
*A:* 1) Local 2) It will depend on quality of production.

***20: NRM – Congo DRC. – Sudy Simulilo. BECA, Bukuva.Congo ( Presentation- report 20 Appendix 3)***

*Q:* Was the synergy between men and women new?
*A:* Yes in Bantu men used to make the decisions
*Q:* Was there resistance from the men?
*A:* At first but now the men accept the role of women and they work together.
*Q: Mtenga:* Gender issues in potato farming DRC: If women are more involved in this activity, what will be the role of women in utilization of the income?

*A:* The women must report to the men about the income. This is still the culture in that area.

## *SESSION V*

Chairperson: Prof James Tuitoek
Rapporteur: Mr Girma Abera

*21. Animal Drawn Planter- Ethiopia, Chimdo Anchala EARO Melkasa Ethiopia. (Presentation 21 Appendix 3)*
*Q:* Have you done any comparison between the improved planter and the traditional local practices
*A:* Yes we have established three plots for comparison. 1. row planter + weeder, 2. Rowplanter and hand weeding 3. Farmers traditional practice of broadcasting seed.
*Q:* Can you explain Quintals in Kilos?
*A:* 100 Kilos = 1 quintal 10 Quintals = I ton.
*Q:* Why do you think that the plots established using planter emerged 4-6 days earlier?
*A:* Probably it is due to depth of planting when planted using planter the seeds may not be buried too much. But when it is planted with farmers practice, seeds can be buried at all sorts of depths and this can affect germination which will have an effect on earliness.

*22. Forage Chopper – Tanzania – Evleyne Lazaro SUA, Morogor Tanzania. (Presentation 22 Appendix 3)*

*Q:* Forage choppers are expensive and should only be introduced in areas where the dairy industry is well developed and milk market is assured.
*A:*The dairy industry is well developed especially in the highland areas. There is plenty of planted fodder in the area
*Q: J Okoth* I thought that agricultural equipment is exempted from tax in East Africa.
*A:* In Tanzania they exempt agricultural equipment which are imported but not those made locally

*23. Pigeon Pea Processing – Kenya. Wilson Ronno KARI, Katumani Kenya. (Presentation 23 Appendix 3)*
Q: *Would it be better to promote mills which would mill the pigeon peas on a large scale and quicker than the chukki? Experience in some communities shows that people have left grinding manually. This has also changed gender roles.*
A: *The argument is true, but we are trying to introduce the pigeon pea in a new area where it is not used and the people are poor. Later what you are saying could be promoted.*
Q: *When chakkis were evaluated, did the evaluators come up with the superior ones?*
A: *3 chakkis were found to be superior. – wooden, cement and sand, and cement and metal.*

*24. Rice Cleaner Madagascar, Lanto Ravalitera, FOFIFACALA Madagascar (Presentation 24 Appendix 3)*

*25. Sweet Potato Processing Kenya, Linus Kosambo, KIRDI Othoro Kenya. (Presentation 25 Appendix 3)*

*Q: Regina Kapinga* The supply of I ton of dried chips by farmers to Nairobi . Is there any market structures in place to sustain this?
*A:* Yes, farmers have the right varieties and targeted markets are in Nairobi and Busia.
*Q:* The project leader is based in Nairobi and managing the project in the far away Western Kenya and elsewhere. Is this a cost effective way? with limited funds.
*A:* Agreed that the approach is expensive. This was a learning process. In future KIRDI will empower locally based organizations to implement technology promotion.
*Q:* Has KIRDI developed literature on processing and utilization of sweet-potato products?
*A:* KIRDI has collected literature on processing and utilisation of the potato from other sources both within and outside Kenya. The literature is available at KIRDI premises.
*Q: Mtenga:* There is a claim that processing of Vitamin A rich potatoes destroys the vitamin content. Can you make a comment on this? A: It is true some of the Vitamin A is destroyed, effects are made to be minimal in the processing and it is still rich in such products as sweet potato juice. Experiences show that losses are small.
*Berga:* as long as the varieties have orange colour, the amount of Vit A ( beta carotene) left is quite high because only a small amount gets lost during processing. The key issues are to consume sufficient amount and that fat is needed for the utilisation of beta carotene in the body.

## *WORKSHOP EVALUATION*

### *WHAT WORKED WELL FOR YOU IN THE WORKSHOP?*

- Interaction, exchange and sharing ideas among members/participants which led to learning more skills.
  Group and plenary discussions. A lot of constructive views and ideas came up
  Good presentation of technologies transferred and full participation in discussions of issues.
- Working group discussion and plenary
  Group discussions were good, discussions yield good results and stimulate thinking therefore good ideas. Sharing ideas with fellow participants. Active participation of participants discussions, constructive discussions during plenary sessions. Good communication between members. Thematic discussion in groups were productive and made more active participation by all members (French group included)
- Card system worked very well especially as a guidance to move.
- Good opportunity to review results and diverse projects
- Facilitator role essential and guided well with good participation of all
- Explanation on how the different projects were implemented
- The group works and presentation were of high quality, excellent and people learnt more on what the project has done. Mechanism for views expression , posters clear recording
- I like the participatory nature of the workshop.
- Sub-projects have done a good job and this has been well reported.
- Shared experiences with different projects on methodologies and approaches to TT.

diversity of technologies presented from different countries

- Provided a good learning environment and facilitation, the organisation of the workshop was very well done
- Respect of time.
- Insight of the planned changes/new thinking e.g. PRU and AATF.
- Production of the papers to participants for future reference, sending tentative programs earlier, after invitation.
- If everything mentioned here is well incorporated, a reasonable way forward may be arrived at.

*WHAT WOULD HAVE MADE THE WORKSHOP MORE EFFECTIVE?*

- Focused conclusion on way forward
- Few project presentations
- More attention should be given to French speaking countries to enable good participation -
- Absence of translation, avoid linguistic barrier
- Presentations took time and working groups had less time for discussion, more time allocated for questions and clarifications, longer /more time for group discussions, more time in working groups and smaller, more focused discussion of cross-cutting issues. Presentation more focused on TT approaches plus lessons learnt from those rather than technical issues. Presentation standards and delivery set prior to presenters, more time was needed for presentations. Individual presentations should have focused more on lessons learned rather than research findings.
- Shorter presentation and more discussion of issues
- Linkages between presentations and working groups, more focused presentations
- Participative approach need more time (group discussion)
- At the end, we need recommendations (general for TT)
- Setting limits/guidelines of presentations and enforce
- Inclusion of more stakeholders
- Abstracts of presentation should have been sent prior to the workshop
- More issues based discussions at plenary to spell out way forward on TT
- Participants confused on the future arrangements of TT
- Critical analysis of lessons learnt from TTP
- Synthesis of group work should have been completed before departure
- Analysis of group work

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