



AFRICAN AGRICULTURAL TECHNOLOGY FOUNDATION

Report of Small Group Meeting (SGM)

ON

**Constraints to Cowpea Production
and Utilization in Sub-Saharan Africa**

10–11 July 2003

AATF Headquarters

Nairobi • Kenya



**Participants in the Constraints to Cowpea Production and Utilization in Sub-Saharan Africa Small Group Meeting,
Held 1—11 July 2003 at AATF Headquarters, ILRI, Nairobi Kenya**

TABLE OF CONTENTS

List of abbreviations	ii
Executive summary	iii
Notes of the meeting	1
Annex I – Increasing cowpea productivity and utilization	15
Annex II – Geographic candidates	19
Annex III – Task Forces	23
Annex IV – Presentations	27
Annex V – Program, background information and list of participants	53

LIST OF ABBREVIATIONS

AATF	African Agricultural Technology Foundation
CGIAR	Consultative Group on International Agricultural Research
CSIR	Council for Scientific and Industrial Research
FAO	Food and Agriculture Organization of the United Nations
FARA	Forum for Agricultural Research in Africa
GMO	Genetically modified organism
IAR	Institute for Agricultural Research
ICRISAT	International Crops Research Institute for the Semi-Arid
IFAD	International Fund for Agricultural Development
IITA	International Institute for Tropical Agriculture
ILRI	International Livestock Research Institute
IP	Intellectual property
IPM	Integrated pest management
ISRA	Institut Sénégalais de Recherche Agricole
MAS	marker assisted selection
NARs	National agricultural research systems
NEPAD	New Partnership For Africa's Development
NGICA	Network for the Genetic Improvement of Cowpea for Africa
PEDUNE	Protection Ecologiquement Durable du Niébé
SAFR	FAO Sub-Regional Office for Southern and Eastern Africa
TCP	Technical cooperation projects
TF	Task forces
TRIPS	Trade-Related aspects of Intellectual Property
TSC	Technical steering committee
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
UZ	University of Zimbabwe
WARDA	West African Rice Development Association
WTO	World Trade Organisation

EXECUTIVE SUMMARY

With the support of the African Agricultural Technology Foundation (AATF), nine scientists met with Eugene Terry, Implementing Director of AATF, in Nairobi, Kenya, on July 10–11, 2003. The framework of the meeting was organized by NGICA, the Network for the Genetic Improvement of Cowpea for Africa. General purpose was to lay the foundation for a future AATF/NGICA technology transfer project. Participants were Ousmane Coulibaly (IITA), Laurie Kitch (FAO), Rose Ndegwa (ILRI), Mohammed Ishiyaku (IAR-Nigeria), Ndiaga Cisse (ISRA-Senegal), Larry Murdock (Purdue, USA), Idah Sithole-Niang (UZ, Zimbabwe), Morag Ferguson (ICRISAT/IITA), Eugenia Barros (CSIR/Bio/Chemtek, South Africa), as well as Eugene Terry (AATF). Discussions ranged over a wide spectrum of issues related to improving cowpea productivity and utilization in Africa. The meeting produced the following results and plan of action.

AATF and NGICA will work in partnership to develop a project concept note, which will later be presented for approval to the AATF Board of Trustees. Steps in the development of the project concept note will be:

- (i) a small group meeting to begin the process of identifying and prioritizing technology goals, creating a strategy, developing approaches, identifying key participants, and defining possible project activities;
- (ii) creation of Task Forces (TF) to carry forward the process of goal selection, prioritization and activity definition to the next level of detail;
- (iii) presentation of the TF-proposed priorities and activities to an assembly of major cowpea stakeholders for discussion, adjustment and modification and eventual approval;
- (iv) preparation of a draft concept note by a professional writer;
- (v) submission of the draft to external reviewers; and
- (vi) presentation of the concept note to the AATF Board for approval.

Specific decisions related to this process were:

1. Idah Sithole-Niang will serve as liaison between NGICA, cowpea scientists, and AATF and will prepare the technical report for the July 10–11 SGM.
2. Five cowpea production constraint areas were identified
 - (i) seed production/access
 - (ii) field production
 - (iii) storage/utilization
 - (iv) marketing
 - (v) intellectual property.Task force leaders were identified in each constraint area, namely seed (Mohammed Ishiyaku), field (Larry Murdock), storage/utilization (Laurie Kitch), marketing (Ousmane Coulibaly), and intellectual property (Idah Sithole-Niang). For each constraint area several experts were identified who will be asked to be part of the TFs. They will be contacted by the TF Chairs for possible participation.
3. Task Forces will complete their work by about October 1, and present their recommendations to Larry Murdock, who will then finalize the agenda of the Cowpea Stakeholders' Meeting (see below).
4. On behalf of NGICA and with the assistance of Idah Sithole-Niang and Katy Ibrahim and in consultation with Eugene Terry, Larry Murdock will plan and organize the Cowpea Stakeholders' Meeting. This core meeting is planned for Accra, Ghana, during November 18–20, 2003.

5. The participants in the SGM will constitute the AATF/NGICA Technical Steering Committee (TSC). To ensure that the TSC has adequate technical coverage, individuals who could not attend the Nairobi SGM meeting will be asked if they are willing to serve on the TSC and participate in its future deliberations. These were George Bruening (University of California-Davis, USA), Muffy Koch (Africa/Bio, South Africa) and Esther Sakyi-Dawson (Food Science, University of Ghana – Legon). The TSC will hold a meeting on Friday, November 21, after the Cowpea Stakeholders' Meeting in Accra.
6. One of the central issues facing the cowpea productivity/utilization project will need substantial additional discussion and consideration, namely, the geographical focus of the project. Activities in the Nigerian cowpea grain shed, the Senegalese grain shed, and in eastern and southern Africa will be considered as venues for project activities.
7. The cowpea project will work against three time horizons: short (1–3 years), medium (4–7 years) and long-term (7–10 years). The TSC decided that project interventions should seek to have impact in the near-term time frame by activities like promoting the availability of cowpea seed, working with policymakers to reduce tariffs on insecticides, plus other quick interventions using already available technology. Benefits from the early time frame would continue to be felt during all subsequent time frames – e.g., a viable seed producing system developed in the first time horizon would in fact be the foundation on which we could build other improvements such as genetically modified insect resistant cowpeas. In the medium-term time horizon the project will seek to improve cowpeas through the use of marker-assisted selection. In the longer time horizon, the project hopes to bring genetically modified cowpea to growers.

AATF/NGICA
Cowpea Productivity Technical Standing Committee, 10 – 11 July 2003,
Nairobi, Kenya

NOTES OF THE MEETING

THURSDAY, JULY 10

Morning Session

BACKGROUND OF AATF

The African Agricultural Technology Foundation (AATF) is an African public/private partnership, led by Africans and designed to respond to the needs of resource-poor farmers in sub-Saharan Africa. One of the main objectives of the AATF is food security and poverty reduction within the African continent.

In pursuing its mission, the AATF will link the needs of resource-poor farmers with potential technological solutions; it will acquire technologies from technology providers through royalty-free licenses or agreements along with associated materials and know-how for use on behalf of Africa's resource-poor farmers; it will ensure compliance with all laws associated with the use of these technologies; and it will promote the wide distribution of the technologies as appropriate.

The AATF will facilitate partnerships and networks that link food security, poverty reduction, market development and economic growth in ways that will change the conventional approaches employed by African producers engaged in agri-business, to make these activities sustainable over time.

INTRODUCTION AND WELCOME

Dr. Eugene Terry, Implementing Director of AATF, welcomed participants to the meeting and gave a brief summary of his background. He spent 23 years working with the Consultative Group of International Agricultural Research (CGIAR). He was the Director General of the West African Rice Development Association (WARDA) a position that he held for 9 years. Dr. Terry worked with the World Bank until 2002, where he held the position of Advisor on Crops in the Rural Development Department. He also worked as a Crops Adviser from 1987 to 1996 at the International Institute for Tropical Agriculture (IITA).

Participants were asked to introduce themselves by giving a brief summary of their background (see Annex V).

OBJECTIVES OF THE MEETING

The objectives of the meeting were defined as to:

1. Gain a new and in-depth understanding of AATF, its potentialities, roles, activities, and leadership by members of the Technical Steering Committee (TSC).
2. Acquaint AATF leadership with some of the experts in cowpea agriculture and economics in Africa.
3. Identify all cowpea stakeholders in Africa and internationally and estimate the potential role they might play in increasing cowpea productivity.
4. Formulate a draft project concept or plan that could be fleshed out after the TSC meeting and presented for discussion and development at the large stakeholders' meeting tentatively planned for Accra, Ghana late in 2003. (Concept/plan would encompass short-, mid-, and long-term objectives, organizational plan, geographical strategy.)
5. Formulate an outline plan for the Accra meeting and allocate responsibilities for fundraising, organizing the meeting, and propose tentative dates.
6. Increase understanding of status of outstanding issues such as technology ownership, project organization, funding sources and technology partners.

PRESENTATION I

Topic: **THE AATF – A NEW MECHANISM**

Presenter: ***Dr Eugene Terry*** (*See annex IV for presentation*)

DISCUSSIONS AND COMMENTS ARISING FROM PRESENTATION

Participants

Problems faced by this group apply not only to cowpeas but to other crops too. It appeared that there was too much focus on facilitating technological inputs by AATF whereas experience in Ethiopia for instance had shown that whenever FAO had been requested to come up with the technological packages they had successfully done so. This increased yields and contributed to food security.

Nevertheless, it was important to address the issue of why most projects failed.

Presenter

Even as we looked at the AATF initiative, it was important to look at the content of the next part of food security, which was poverty alleviation and income generation. There was need to come up with marketable products which were of interest to the local people in order to earn them a livelihood income. "Although we want to focus on the food security part of the chain, we cannot afford to ignore the income part".

Participants

- There was need to ensure that any intervention technologies were sustainable in order to generate incomes and reduce poverty.
- Regarding specific technology promotion, the idea would be fitted into a sustainable system or a system that did not require subsidies.
- There was need to address the problem of storage and transportation of cowpeas.

Presenter

In order to capture subsequent constraints, it was necessary to identify and address them. Some of them could be addressed by policy reforms while marketing constraints could be addressed as we approached formulating the technology interventions.

Participants

On the issue of why projects collapsed, another participant indicated that this was due to the fact that the system was linked to a number of issues which made them complex resulting in catastrophic outcomes. He hoped that the AATF would examine and facilitate the often confusing and negative policies put in place for lack of political will.

He implored AATF to ensure that policy makers provided the support required for these technologies to work. At the same time, he emphasized the need to consult project implementers especially those with CGIAR and World Bank experience when introducing the technologies.

Presenter

“... Focus on what AATF can do as well as look at the African context in terms of negative, stagnant economic problem. You may be able to identify four or five reasons why the stagnation has taken place. One of the most important reasons is lack of investment in developing private sectors. All components that need to be developed have not been developed; the private sector stays undeveloped. Lack of appropriate development of private sector, lack of technology transfer, lack of investment of transfer. There is need for capacity building and institutional reforms to deal with policies. All these areas require a significant amount of human and financial resources to move them forward. The AATF will address technology transfer, especially access and delivery. Institutions should not be overloaded with too many tasks to do; they should identify narrow tasks and insist on doing them well. Some institutions attempt to address problems outside the scope of the component. It would be wrong if the AATF tried to address these issues. It is useful to focus on what we can do with the resources we have and focus on the problems defined. We could also lobby governments to put policies in place, which may or may not work in some countries...”

Participants

- ◆ It was noted that in some countries, the infrastructure required to make these technology initiatives work exists and this needs to be taken into account when considering where and how to intervene.
- ◆ There is need to include potentially sustainable technological solutions [in any cowpea project]. Although food security is the core-business, the issue of effective demand should also be addressed.
- ◆ The initial impression of many people was that the AATF was primarily concerned with transfer and consultation of biotechnology. A participant was thrilled to note that the foundation would also endeavour to utilize what already exists on the shelves. There is however need to ensure that we are not caught up in the media trap that thought it sexy to concentrate on biotechnology. There is need to use all the available opportunities to create awareness that we are dealing with a much broader range of technologies in order not to get involved in the anti-GMO

debate. There was is need to generate an agreement on issues such as whether we have a food and poverty problem, then identify why we have them in order to search for appropriate tools for addressing them. If necessary, a communications expert to deal with the interface between the scientific problems and the public could be hired.

Presenter

It was noted that out of the eight problem areas identified by the AATF, the one on maize had the greatest promise to move rapidly.

PRESENTATION II

Topic: **THE ROLE OF NGICA IN THE COWPEA BIOTECHNOLOGY GLOBAL ARENA**

Presenter: ***Drs Idah Sithole-Niang and Larry Murdock (See annex IV for presentation – file in Power Point)***

Management constraints of NGICA

- No budgetary allocations for telephone bills/communication.
- There is need to have a website.
- Currently members were working on voluntary basis.

DISCUSSIONS AND COMMENTS ARISING FROM PRESENTATION

Participants

The presentation focused on NGICA. A partnership between NGICA and AATF has been formed; what remains is to discuss elements of the relationship. There is need to talk about website arrangements between NGICA and AATF as these arrangements will be a visible manifestation of this partnership.

Presenter

It was noted that for perspective NGICA has always thought of in terms of genetic improvement of cowpea. In the first two and half years, emphasis had been on mobilizing resources. It was felt that the best approach to do this was to mobilize laboratories to work separately on transformation problems. All of NGICA's energy had focused mainly on the genetic transformation of cowpea. In the meantime, there was need to get everybody, internationally, to work on cowpea, and in this regard getting new partners involved was creating a structure.

The AATF should be the automatic licensor for all projects/institutions working under its umbrella. If AATF were interested in accessing experience on cowpea, it would be better to have a specific project with a set of specific objectives. This development would allow things to be done more effectively.

Participants

The institutions that form NGICA should be the ones to formulate its policies. Issues regarding legal authority should be handled by the institutions themselves. Help and assistance on these issues should be sought on a case-by-case basis. For this reason the set of conditionalities would need to be looked at closely.

AATF Implementing Director

“... There was need to have concrete decisions on how to implement the partnership with regard to the website (the one stop arrangement and, how to make it functional and visible) which should show in reality a manifestation of this partnership. We should have an agreement to make a joint website on genetic improvement of cowpea in Africa. Make sure the partners for NGICA agree and since AATF is independent, it does not require this agreement. Furthermore the AATF already has a website, it is simply a matter of linking the different components of the work that the partners are doing. What is developed might be utilized by the other network partners...”

PRESENTATION III

Topic: **OVERVIEW OF COWPEA AND COWPEA ECONOMICS**

Presenter: ***Dr. Ousmane Coulibaly***

“... PEDUNE is funded by IFAD and USAID. Some of the activities of PEDUNE include: economic backstopping of biological scientists in making sure that technology is efficient and relevant. Any technology for national or international system is aimed at resolving the problem to relieve the constraints. There are a lot of studies that are being done in terms of characteristics of technologies in connection with the needs of people, for example the colour of seeds, etc.

It was noted that IITA has a cowpea production utilization package.

Work on the cowpea utilization package is done in collaboration with National Agricultural Research systems (NARs). IITA works in partnership with NARs for cowpea utilization and is doing a lot of work on cowpea transformation.

DISCUSSIONS AND COMMENTS ARISING FROM PRESENTATION

Participants

There was need to identify the elements of transformation targets. What degree of facilitation helped transfer of technology? e.g. cowpea, concept development etc. There was need to have a session to document and discuss this in order to develop the product concept further.

It is very important to get high quality seeds to farmers both in the short- and long-term. We should explore ways of having excellent seed production without subsidizing the production.

In Cameroon it was noted that technicians used storage techniques to maintain the seeds in a hash environment. A South African company was exporting cowpeas. This implies that there is an opportunity to gain money in selling cowpeas.

Coming back to the Cameroonian situation on storage facilities, it was noted that farmers realized there was no seed to use during the planting season. Out growers do not know much about seeds and this affected quantity and quality. There is therefore need to establish a government-related seed company to make sure seeds were available. We should emphasize to farmers that once they bought a cowpea they did not need to go back for seeds.

AATF Implementing Director

AATF is looking for appropriate institutions which would lead them to good project formulation.

Some of the technical aspects of this discussion have to lead to the formation of a task force or set of tasks which will derive on a technical presentation.

If possible we would like that to evolve into a set of tasks and to get a task force to address these strategic issues and for a purpose. The purpose of addressing these aspects was to determine what should feature very prominently as we develop the project and identify what tasks/activities should drive the way in developing the project.

We need to identify a set of very important strategic tasks and allocate assignments in order to help in project development.

How would the economic issues and transformation help in defining the project?

Participants

A participant was surprised to hear that things like seed type were important as they have always been taken for granted. The assumption has been that the farmers' preference is in the overall yield.

Presenter

“... The most important issue for consumers according to the study was that colour is important; in some countries consumers prefer red and some white-seeded varieties. Some prefer small grains. More of these characteristics should be forwarded to scientist for breeding purposes...”

Participants

Impact assessment studies do not take into account the reality of what is happening in the field. We need to think about extension of the project and diffusion of a variety.

Presenter

It was observed that most economists in different programmes did not know about impact assessment. That's why IITA is engaged in training. Most of the impact assessors were not well trained to do this kind of impact assessment; training assists proper assessment. In terms of pesticide application, if there was resistance in the variety, it means the additional insecticide should decrease. Most data should be collected from the field. Impact assessment knowledge is required not only for economists but for biological scientists too.

Afternoon Session

PRESENTATION IV

Topic: **FARMER FIELD SCHOOLS AS A VEHICLE FOR TRAINING: POTENTIAL INVOLVEMENT OF FAO**

Presenter: ***Dr. Laurie Kitch***

“... FAO has other bio-activities in Africa.

Regional office for Africa

The FAO Sub-Regional Office for Southern and Eastern Africa (SAFR) was established in 1994 to serve 22 countries in Eastern and Southern Africa. As part of its mandate to disseminate information relating to agriculture and to provide advice on agricultural policy and planning, the SAFR office has been involved in efforts to provide a range of biotechnology/biosafety information materials to both the public and administrators/decision makers in the region.

The FAO Sub-Regional Office for Southern Africa is proposing a new initiative to assist governments in making biosafety risk assessments of GM crops.

There are various codes of conduct that have been developed on an international level with regard to GMOs. The latest thing which fits with discussions here is that recently the Assistant Director General for Agriculture has strongly emphasized one issue – the molecular divide between industrialized and developing countries.

- ◆ *In collaboration with Dr Idah Sithole we started two years ago putting together a working paper for member countries.*
- ◆ *In Africa there is not a tremendous amount of biotechnology or biosafety expertise, and the realization that there is a need for expertise is increasing.*
- ◆ *The work in FAO is divided between ongoing regional programme and field programme activities. Field programme activities are funded projects. The other one involves writing books, disseminating information, holding discussions on specific issues, etc. About 70 percent of the time is spent on writing and running projects.*
- ◆ *The food crisis in southern Africa – during a period of time governments continuously contacted FAO on whether they should take GM food-aid, and these issues were handled by the headquarters in Rome.*
- ◆ *It's not the role of FAO to impose decisions on member countries, but to advise. It's up to the member countries to decide what they wish FAO to do.*
- ◆ *There are certain elements e.g., when a country requests help in biosafety issues, technical persons are sent to the countries along with scientists.*
- *Consultants are needed to look into the situation and help them formulate projects.*

One of the things that have just come through in FAO is that they have received some money to establish a network in Africa on biotechnology. Some of the activities will include:

- ◆ *Establishing a technical secretariat to facilitate communication as well as capacity building. This secretariat will work closely with various donors to ensure extra-budgetary funding for activities and the sustainability of the network.*
- ◆ *Identify and assist African scientists with good knowledge of crop improvement and biotechnological tools.*

- ◆ *Assist various countries in developing technical cooperation projects (TCP) and other projects dealing with development of their biotechnology and crop improvement activities.*
- ◆ *In 2005 establish an information system. This will help develop criteria and gather relevant information regarding GMOs.*
- ◆ *Assess biosafety risk assessment methods.*
- ◆ *Regional survey on resource allocations, breeding and biotechnology in African countries.*
- ◆ *The study on the biodiversity for some key African crops has not been totally decided yet.*
- ◆ *Finally, the idea of having an expert consultation where you bring together experts in biosafety and food safety along with facilitators in a country where assessments have been done. They will have a workshop which should come up with a document that is developed by the African scientists – still being debated.*
- ◆ *Timeframe for the workshop and document – Trying to identify what crops and constructs would take a four-day workshop that would look at a compilation of relevant safety data, discuss these and make a decision...”*

Participants

- ◆ How much do we know about the risks and benefits of the project?
With regard to the expert consultation on crops it might be possible to integrate a gene/construct. We could propose a statement from the group urging elements relating to gene construct to be used in several crops giving examples of others.
- ◆ Can find a way to influence the choice of target crops during this meeting.

Presenter

There is a lot of room for changes.

AATF Implementing Director

- ◆ NEPAD as we say is still a concept not an institution finding a way on how to begin to influence decision making on the continent. It has a Science and Technology Commission headed by Dr. John Mugabe. Working on a proposition of linking NEPAD, FARA and AATF initiative to look at some key issues of bio-technology which focus on biosafety and food safety issues. The safety issues would be a major part of that assessment. They would like a group to sit down and identify some key strategic risks and benefits of biotechnology to be able to address and advise the council of Ministers of the African Union so that in future when decisions are taken which have regional or cross boundary implications, those decisions are based on some sound scientific assessment. If this decision is made that an assessment should be made of the risks and benefits for agricultural technology, products and tools, if a group of legitimate organizations we believe say these are the target ones to focus on... then a decision would be taken.
- ◆ Identify target genes, target crops and target systems...

Participant

- ◆ The Steering Committee of NGICA Cowpea Productivity and Utilization urges that an expert consultation be convened to assess the risks of *Bt cry* genes.
- ◆ Need to mention unintended effects.
- ◆ Should not raise the alarm or change risk to concerns. Advised not to talk about concerns but talk about benefits and unintended effects.

- ◆ Final products were raising concern.
- ◆ How do you identify unintended risks?
- ◆ In order to influence policy decisions, there was need to be unambiguous in the language used; there is need to be as simple and straightforward as possible. The communities we are working with are familiar with risks and benefits. It was important to stick to what was expected by the community. The need to assess the risks was important. What was needed was to influence the targets, identify the amount of money to be spent on investigations, example food security, poverty alleviation and trade in Africa. Cotton is the most important trade commodity for Africa.
- ◆ There was need to make a statement from the group on how the study of cowpeas would be made. A biodiversity component should be included in the cowpea project.

Presenter

Regarding the issue of network and secretariat the idea had been accepted by FAO and some nationals had been identified to be part of the project.

The concept of farmer field schools has a role in this project. FAO has two TCP projects; one in Nigeria and one ready to be signed in Cameroon setting up farmer field schools with respect to IPM for cowpeas dealing with timing and insecticide use and storage technologies and varieties and also develop seed production or improve seed production, associations combined with the storage. There has been a lot of success with that throughout Asia and Africa. In terms of short-term horizon, the farmer field schools approach could be helpful to this group.

Participants

- ◆ What was the cost effectiveness of these schools?
- ◆ The task force should define how, the way or direction in which the project should move.
- ◆ Farmer field schools should be used as an advance for this project.
- ◆ Tasks forces to determine the issue of farmer field schools.
- ◆ Decisions on contexts of farmer schools should be made.

Presenter

- ◆ FAO liked the idea of being involved in technology packages and the cowpea project.
- ◆ Technology packages – storage issues need to be identified; also varieties of seeds.
- ◆ FAO had put together a number of technologies that were proving to be beneficial in research stations. There was need to give a demonstration to the villagers.

Participant

In trying to institutionalize farmer field schools, the focus is more on the farmers' side when training trainers and trying to put together some cost figures. The concept behind the training of trainers is that since trained staff will train others, the costs of training will decrease.

PRESENTATION V

Topic: **INTELLECTUAL PROPERTY RIGHTS ISSUES**

Presenter: **Ms. Rose Ndegwa** (*See Annex IV for presentation*)

Intellectual property issues to be presented are general and not specific for the cowpea project.

In terms of IP issues, one of the things that need to be considered will be dealing with a host of networks and collaborators coming from different institutions with different collaboration policies. In some instances, it would involve dealing with individuals or organizations which could cause a difficult situation.

The following issues should be considered by AATF:

- ◆ The AATF should be the licensee
- ◆ It will need to have well defined basic policy guidelines
- ◆ Will provide predictability to technical holders and partners
- ◆ Will avoid trying to satisfy every partner requirement
- ◆ There is need to contend with the issue of donors
- ◆ Conditions need to be flexible
- ◆ Collaborative research agreement between the partners
- ◆ Issue of patents
- ◆ There is need for flexibility in the agreement
- ◆ Issue of licensing
- ◆ There is need to define the issue of improvements on technology
- ◆ Define what constitutes the improvement of technology transfer
- ◆ Non-exclusive licence will be required

“...Everybody agrees when there is nothing to worry about...”

DISCUSSIONS AND COMMENTS ARISING FROM PRESENTATION

Participant

- ◆ Technical task forces will address the issues of licences, and help define the direction of the project
- ◆ The issue of confidentiality should be captured in the agreement
- ◆ Boundaries for sharing confidentiality agreement between the board, reviewers and partners should be clearly outlined
- ◆ It was noted that there was nothing that could be done to prevent infringing on patents in geographic boundaries where patents did not operate
- ◆ On the issue of geographical patents of trade laws, trade legislation and conventions, how serious is the World Trade Organization (WTO)?

Presenter

It is possible to licence technology – licensing the know-how and other things which are not disclosed in the patent.

A lot of African countries are signatories to the WTO. The Trade-Related aspects of Intellectual Property (TRIPS) agreement is the minimum standard for intellectual protection and enforcement of member countries.

Trade laws – if a pharmaceutical is not protected in a specific country one can exploit the patent in the country but cannot infringe in a protected country.

Participants

- ◆ When scientists receive money from donors terminology should be developed to state that the product is free for use by the private sector
- ◆ Every product will have a set of IP issues that will be dealt with in the agreement. We should make sure that the project has a certain amount of compliance and sensitivity
- ◆ There would be some specificity with each project.

PRESENTATION VI

Topic: **TECHNOLOGIES FOR THE SHORT-, MID- AND LONG-TERM: STATE OF THE ART. WHAT COULD WE DO?**

Presenter: **Dr. Larry Murdock**

“...Discussed how cowpea technologies can be moulded into projects and emerge into technology packages.

- ◆ *Thinks that, acknowledging the complexity of the project, strong leadership will be needed; need for individuals who are ready to work at many levels to implement plans to persuade donors to involve everyone. The structure remains to be seen.*
- ◆ *We have to take into account that each of us has contacts and experience, and can leverage industries, organizations of research programmes or funding agencies or a different kind of programme we can use to influence availability of resources to the project. Always be aware of what you can do to get potential collaborators/participants for this project. Have to deal with planning and reporting issues, through concurrent notes, and reports. Meeting report to be prepared.*
- ◆ *Create a mechanism of further planning.*
- ◆ *Also have to make sure that we have a mechanism of communication, this could be obviously by email, we can also use the website that we intend to develop. Need to take advantage of those avenues to make sure that we are beginning to have a sense that we are a community of a specific project under AATF. We also need additional opportunities that can be developed.*
- ◆ *Participants will include some entities not represented here such as technology providers, industries, with which we have relevant contacts over the years.*
- ◆ *This will help future markets down the road.*
- ◆ *We would claim some contribution to help raise awareness, NGOs are very important in collaboration with IITA as far as cowpea is concerned.*
- ◆ *We have had some contacts with Dupont/Pioneer regarding transformation and marker assisted selection (MAS) in cowpea. Have received generic assurances of possible interest.*
- ◆ *We can list the pro and cons about the discussions to assist in the recommendations.*

Technology Package – Consists of various storage technologies.

The primary assumptions:

- ◆ *we are not knowledgeable enough*
- ◆ *we cannot anticipate what people want*
- ◆ *we must just give the people a variety of technologies for them to choose from, and*

- ◆ *try making various priorities available to choose from.*

Severe constraints of cowpea

- ◆ *many insect constraints*
- ◆ *pod sucking bugs*

In reviewing the constraints regarding cowpea, how do we know insects are a severe problem? We must ask the farmers.

- ◆ *People will benefit a lot if they have better storage methods.*
- ◆ *Technology (triple bagging, drum, ash, solar heater) was developed in Senegal and Cameroon by Larry Murdock, Laurie Kitch and Dogo Seck.*
- ◆ *Have a triple bagging technique, which requires plastic bags.*
- ◆ *Able to introduce a new source of cowpea resistance.*
- ◆ *Modelling studies done regarding introducing genes.*
- ◆ *Potential for genetic improvement of cowpea and the potential of using storage technology – there are good insecticides but they are expensive and not widely available.*
- ◆ *Availability of insecticides is a limiting factor, in some cases sprayers or information on how to use the insecticides.*
- ◆ *Another limiting factor is market information and the market. The lesson learnt is that technology alone is not enough. Essential part of the projects is to somehow find a mechanism to link producers and traders.*
- ◆ *Identify a mechanism of reaching consumers.*

DISCUSSIONS AND COMMENTS ARISING FROM PRESENTATION

Participant

- ◆ *Would suggest we get cowpea on international agenda in terms of biotechnology that could bring some money to the biotechnology project. UNIDO had an idea of a global forum for biotechnology-related projects that will take place in the future.*
- ◆ *Can refine the concepts, FAO could buy into an overall cowpea improvement situation with some help from this group. Statements from this group to FAO on specific aspect of cowpea improvement should be prepared.*
- ◆ *Looked at answers to the very important issues that should be posed to the task force. Need task force to look at transformation products, value-added products. This would be a legitimate assignment for the task force, which will help us find the direction of the project.*

Presenter

Would recommend we use the term value added in place of transformation products. Do we need a task force for each of the focus areas of the projects or can we combine them into a group? We need to know our objectives and make tentative assessments of targets and objectives to achieve but with a different final focus. Present the ideas generated here by email and present for discussion and refinement to the board.

Participants

- ◆ *We should try to define short term goals of the project. How to define the goals, e.g. identifying varieties, which variety better for production, documents needed for transformation.*

- ◆ We have to decide at what intermediate stage we would want to go to the board. Could be at the stage of the proposal etc. Stakeholders meeting will take place; we may have gone to the board before or after the stakeholders meeting.
- ◆ Better make faster and focused discussions. In view of the fact that we have three (3) task forces, each task force should have the responsibility of designing focused proposals for the short-, medium-, and long-term benefits of the projects.
- ◆ The issue raised about traders versus the farmers, e.g. what group should be targeted to improve storage technologies and general economic improvement?
- ◆ Farmers unable to store for a long time due to need for cash as there are limited income generation alternatives. Storage technologies important, if we have to go for trade, e.g. to export cowpea from Senegal to South Africa this means storage technology has to be applied. There should be some marketing information systems tool.
- ◆ If you have to promote trade then you need a reliable supplier; it also means you need to increase the production, therefore biotechnology can help to make sure there is enough supply.
- ◆ We are probably faced with looking at a project objective that addresses food security problems and one that at the same time may help poverty alleviation and increase incomes.
- ◆ As regards promoting storage technology one participant had a meeting with farmers and an extension agency, and what came out of it clearly was that they had been emphasizing to the farmers about the application of post-harvest technologies. The most important point is that the cowpea vendor does not only sell, but also stores cowpea. We must discourage cowpea vendors from using very dangerous chemicals to store cowpea. There is need to educate vendors on storage. Cowpea is much easier to produce than other vegetables.
- ◆ Producers should be educated on how to use insecticides as they tend to use dangerous insecticides to treat the cowpea, maybe phostoxin is a safer option.
- ◆ Should define how to link all of these with producers; who benefits? Who is our target producers, consumers etc?
- ◆ There are a number of various issues we need to think about, and which ones we need to include in this project.
- ◆ The group made provision for thematic task forces.

PRESENTATION IX

Topic: **POTENTIAL FOR MARKER-ASSISTED SELECTION (MAS) FOR COWPEA IMPROVEMENT**

Presenter: ***Dr. Eugenia Barros (See annex IV for presentation)***

DISCUSSIONS AND COMMENTS ARISING FROM PRESENTATION

- ◆ If we embark on MAS, what type of organization would we need? Will the individual scientists be able to provide their research?
- ◆ To what degree is it necessary to get involved in these projects? Are there serious gaps in our abilities to deal with certain cases? – It was noted that this was a true biotechnology issue in which there was no controversy.
- ◆ There was lack of markers for generic linkage maps.

- ◆ There was need to develop some markers for cowpea. It was noted that ILRI had successfully developed 240 markers for groundnuts. There was no doubt it was possible to do the same for cowpeas. In terms of implementing marker system, ILRI to start a programme in Tanzania on cassava. They have gained experience in working with national programmes.
- ◆ Any proposal we have to talk about should show if the methods are advantageous.
- ◆ Founders of AATF had some specific rules in mind. Once the project to be implemented is identified, it is important to consider the possibilities of duplication. It is important to get to know the targets of the project and the essential activities to be done by this group of networkers.
- ◆ There is need to seriously consider biotechnology and understand the baseline information.
- ◆ It's quite fundamental to have a common understanding on what cowpea is and its different advantages and disadvantages. As a group we could seek funding or support from FAO.
- ◆ *Striga* very important – many proposals were reviewed but most scientists took decisions as granted. There was need for documentation regarding *Striga*.

FRIDAY, JULY 11

WAY FORWARD

After the presentations and discussions a cowpea productivity and utilization matrix (see annex I) was prepared, geographical candidates identified and task forces selected (see annex II).

Annex I
Increasing cowpea productivity and utilization

Increasing cowpea productivity and utilization – constraints

CONSTRAINT	PROBLEM
1) Seed constraint (productivity)	1.1 Seed production and availability 1.2 Seed 1.3 Access/distribution/marketing 1.4 Quality
2) Field constraints (productivity)	2.1 Access to inputs (not prioritized) 2.2 Heat stress 2.3 Striga 2.4 Drought 2.5 Insect pests 2.6 Photoperiod 2.7 Viruses 2.8 Pathogens-Bacterial fungal and viruses 2.9 Soil fertility (nitrogen fixation)
3) Post-harvest constraints (utilization)	3.1 Limited availability of diversified value added products 3.2 Processing equipment 3.3 Nutritional quality 3.4 Storage pests/bruchids) 3.5 Insufficient research and promotion of VAP 3.6 Reliable access to inputs 3.7 Reliable access to output markets 3.8 Lack of market information systems
4) Marketing constraint (utilization)	4.1 Reliable access to inputs 4.2 Reliable access to output markets 4.3 Lack of market information systems

Increasing cowpea productivity and utilization in time horizons

Constraints	Problems	Interventions Marketing systems	Horizon 1 (1-3 years)	Horizon 2 (4=7 years)	Horizon 3 (7+ years)	
1) Seed constraint (productivity)	1.5 Quality seed production	IPM, storage quality control	+++	→	→	
	1.2 Seed access and distribution of improved varieties	- Seed and technology fair - Marketing	+++			
2) Field constraints (productivity)	2.1 Access to inputs	Marketing	+++	→	→	
	2.2 Heat stress	Varieties (CB)		+++	→	
	2.3 Striga	Varieties (MAS)	+	++	+++	
	2.4 Drought	Varieties (MAS)		+	++	
	2.5 Insect pests - Maruca) - Pod Sucking Bugs) - Thrips) - Aphids)	- Varieties (Bt. GM) - Varieties (MAS) - Varieties (MAS) IPM	+++	→	→	+++
			+++		+	+
			+++		+	++
	2.6 Viruses - CYMV - CABMV - SBMV	Varieties (CB)	+	→	→	→
+			→	→	→	
2.7 Pathogens-Bacterial fungal and viruses	Varieties (CB)	+				
2.8 Soil fertility (nitrogen fixation)	Varieties (MAS)				++	

Constraints	Problems	Interventions Marketing systems	Horizon 1 1-3 yrs	Horizon 2 4-7 yrs	Horizon 3 7+ yrs
3) Post-harvest constraints (utilization)	3.1 Limited availability of diversified value added products	- High protein Cowpea flakes - Flour - Pre-cooked peas (canned) - Weaning food - Canned stews Dried spinach and green pods	+ + + + + +	+ + + + + +	++ ++ ++ ++ ++ ++
	3.2 Processing equipment	Design		+	++
	3.3 Nutritional quality	- Biofortification (Zn, Fe) Selection and/or supplementation - Flatulence (RFOs) (RNAi)			++
	3.4 Storage pests (bruchids)	-Amylase inhibitor (GMO) IPM	++		+++
	Insufficient research and promotion of VAP	Marketing			
4) Marketing constraint (utilization)	4.1 Insufficient research and promotion of VAP	Information dissemination	+	++	+++
	4.2 Reliable access to inputs	Market information systems	+		
	4.3 Reliable access to output markets	(MIS)	+	++	+++

Annex II
Geographic candidates

GEOGRAPHIC AREAS

	Economic zones Location	Rationale
1	Nigerian Grain Shed	Crop/Livestock Inst. Largest production of cowpea global Consumption More people Income etc
2	Senegal Grain Shed (Sahel)	Agro-Ecology Adaptability Storage/Plant Types Scope for Trade Diversification Targets
3	E/S Africa	Scope for trade Diversification Targets

PROCESS	
1	Prioritize - Geography - Feasibility - Impact Timeframe
2	Proposals for Activities
3	Who/Key Actors, Task Force
4	Activity/proposal outline

GEOGRAPHIC AREA I

LOCATION – NIGERIAN GRAIN SHED

Constraint	Activities	Impact		
		H1	H2	H3
II	Bt/ α -amylase inhibitor (genet. trans) Striga (via MAS) Intellectual Property Rights Package Access/Inputs	1-3 +	4-6 +	7+ +
II	Seed Production Distribution	+ +		
III	Storage Technical package Marketing Linkages Products - Marketing	+ + +	++ ++ ++	
IV	M/S Institutional CPST & Linkages	+ +	++	

GEOGRAPHIC AREA 2

SAHEL/SENEGAL GRAIN SHED

Constraint Area	Activities	H1	H2	H3
I	Seed Production	+		
II	Drought AMSACTA/IPM GM Aphid/IPM MAS Nitrogen Fixation MAS	+	+ + ++ ++	++ ++ ++ ++ +++
III	Processing VAP	+	+ ++	++ +++
IV	Marketing MIS Trade/Export institutional link	+ +	++ ++	

GEOGRAPHIC AREA 3

EAST/SOUTHERN AFRICA

Constraint Area	Activities	H1	H2	H3
I	Seed Access Seed production	+ +		
II	Impacts (Aphids) Viruses (foliage) Appropriate IPM Storage IPM	+ + + +	++ ++ ++ ++	
III	VAP - foliage Non foliage E/W Transfer	+	++ ++	
IV	Health/Notional support (HIV/AIDS) Marketing/prod/promote MIS Institutional linkages		++ ++	

Annex III
Task forces

TASK FORCES

ORGANIZATIONAL FIELD/WORK

1. Constraints Areas
I II III IV V
2. At least are Rep from each geographical Area (knowledgeable inputs)
IPARC/SR.../NARS
B/C CRSP/NGICA
3. Have institutional affiliation with the crop
4. Participatory Approach - Multi stakeholders - networkers/donors/investors
5. Intellectual Property Rights

TASK FORCE MEMBERSHIP

CONSTRAINT AREA I

1. Mohammad Ishiyaku - **Leader**
2. Laurie Kitch
3. Ndiaga Cisse /Wague Kisma
4. Dave Rohrbach (ICRISAT)
5. Remi Adeleke (IITA)
6. Joe De Vries
7. Catholic Relief Services

CONSTRAINT AREA II

1. Larry Murdock – **Leader**
2. Ndiaga Cisse
3. Debby Delmer
4. George Bruening
5. Dupont/Pioneer rep
6. T. J. Higgins
7. Eugenia Barros
8. Morag Ferguson (IITA/ICRISAT)

CONSTRAINT AREA III

1. Laurie Kitch– **Leader**
2. Larry Murdock
3. Esther Sakyi-Dawson
4. Ababakar Ndoge
5. Idah Sithole-Niang
6. Food Coops - Nestle
- South Africa
7. DFID – (Bartlett)
8. CIDA Canada

CONSTRAINT AREA IV

1. Ousmane Coulibaly - **Leader**
2. Jess Lowenberg - Deboer
3. Ayo Abifarin (WV)
4. Souirji
5. Giselle D’Almeida
6. IFAD/USAID

CONSTRAINT AREA V

1. Idah Sithole-Niang – **Leader**
2. Joseph Huesing – (Monsanto)
3. Rose Ndegwa
4. Lois Muragasi
5. Patricia Kameri-Mbote
6. Rob Potter
7. AATF Legal Counsel

PROJECT ORGANIZATION

1. Objectives
2. Key Players
3. Institutions
4. Activities
5. Cost Structures
6. AATF
 - Business Plan
 - Matching Funds

TERMS OF REFERENCE FOR TASK FORCES

1. Technical feasibility
2. Define proposed activities
e.g. – alpha amylase I
- upstream/downstream
3. Who does what (comparative advantage)
4. Consider access to IP
5. What are the notional costs? matching funds?
6. Outputs and time frames + Logframe
7. Resource mobilization strategy for recommendation to AATF
8. Additional parties for the project planning & Implementation Workshop
9. Outcomes of Task Force to feed into Project Planning & Implementation Workshop

Draft Proposal

1. Re-create agenda
10. Active participant Project Planning & Implementation Workshop
11. Task Force leaders - send recommendations to Meeting Project Planning & Implementation Workshop/Accra
2. Business Plan/AATF Board Approval
3. Meeting Report will be used to solicit Task Force members

Communication

1. Communication costs/resources --AATF
2. Project Planning & Implementation Workshop and Peer Review then AATF Board approval early 2004
3. Consultant to attend Project Planning & Implementation Workshop
4. Task force report (Oct 1 – 15, 2003)
5. Project Planning & Implementation Workshop (Nov/Dec, 2003)
6. Concept papers for peer-review (Jan-March, 2004)
7. Board meeting (April/May 2004)

Things to consider

- 1) Meeting in Accra (Nov 14-23, 2003)

Final report from Task Forces (Oct 1, 2003)

- 2) Draft agenda (Oct 7, 2003)
- 3) Final agenda (Oct 31, 2003)

Annex IV
Presentations



Intellectual Property Rights and Food Security in Africa

**The African Agricultural Technology
Foundation (AATF) – A New Mechanism**

Presented By: Eugene Terry
AATF Implementing Director

Presentation – Topics

The Challenge – Science and Technology
Transfer – Access and Delivery

Rationale for creating the AATF

Mission/Core Business

Boundary Principles

Status Report



Presentation - Topics

Partners and Investors
Funding Arrangements
AATF Portfolio Development
Eight (8) Problem Areas Identified
Project Development Instruments
Project Implementation Timeframes

3



AATF/NGICA Cowpea Project

July 2003 Technical Steering Committee Meeting –
Expected Outcomes:

- Define AATF –NGICA Working Relationships
- Action Plan for Cowpea Project Implementation
 - Guidance from AATF Board Approved Project Flow Sequence
- Assign Tasks –Select TF Leaders
- Resource Mobilization Plan
- Define Elements of Concept Note
- Define Scope of Next Meeting – Stakeholders Group

4



The AATF Challenge

The challenge is:

To harness the benefits of science and advanced technology for the rural poor and the environment;

To understand the contextual factors affecting access and transfer of these technologies;

- IPR; Trade Rules; The shifting boundaries between the public and private sectors;



Problems of Technology Access and Delivery for SSA

The rationale for creating the AATF :

- ◆ The need for effective mechanisms to negotiate the access and transfer of proprietary and other technology held by the public and private sectors anywhere in the world;
- ◆ The need to create appropriate long-term networks to manage the deployment of these technologies at all stages in the value chain;



The AATF –A Unique Initiative

The AATF was therefore created as:

- **An African institution ‘owned’ and led by Africans and focusing exclusively on African priorities;**
- **An innovative private/public partnership initiative designed to harness the best practices, resources and expertise of the public/private sectors;**

Mission/Core Business

To link needs of resource-poor farmers in SSA with potential technological (biological, chemical, mechanical, process) solutions:

- ◆ **Identify and facilitate royalty-free transfers of proprietary technologies through negotiation;**
- ◆ **Enter into contractual agreements with existing institutions that will manage deployment of the technologies ;**
- ◆ **Ensure that subsequent constraints after access are addressed;**



Boundary Principles

- The AATF will not be limited to any particular type or category of agricultural technologies;
- Initial focus – staple and commodity food crops; (improved through both conventional breeding and genetic modification)
- Eventually – Cash crops for local, regional, or international markets;
- Depending on stakeholder needs – Livestock technologies – (Global Partnership for Animal Health?)

9



AATF Status Report

- ◆ Board of Trustees convened;
- ◆ Incorporated as a Private Limited Company-UK and Kenya;
- ◆ 10 Year Business Plan Completed;
- ◆ Operational Host Country and Headquarters selected;
- ◆ Recruitment initiated for 5 Senior Management Positions;
- ◆ Pilot Project Selection/Implementation – Advancing;

10

Partners and Investors



Pan-African, Regional and National
Institutions/Agencies

NEPAD/ECA/FARA/SROs/NARs

International Institutions/Agencies

CGIAR/ARIs/Universities (Africa and
the World)

Local/International NGOs

11

Partners and Investors (Contd.)



Agricultural Technology Industry IP holders
(Monsanto; DowAgro; Pioneer/DuPont;
Syngenta);

African trade and agribusiness organizations;

International investors – The Rockefeller
Foundation; USAID; UK/DFID;

African National Governments;

12



Funding Arrangements

* The AATF is not a donor in the traditional sense!!

Core funding:

- **Start-up costs and Institutional support structures;**
(To-date –RF, USAID,DFID)
- **Project development costs;**

Project funding:

- Donor matching funds (on a project by project basis) based on well developed business plans for project implementation;

13

Funding Arrangements (Contd.)

AATF will provide funds to cover 75% of upstream activities and project development costs;

AATF will provide 25% of downstream costs, and all project follow-up costs;

AATF will seek matching funds from public/private sectors (cash and in-kind) from: NARIs, CG Centers, NGOs, Multilateral/Bilateral partners;

14



Five Year Funding Requirements

AATF Overheads and Project Activities

– 2003 – 2007 – US \$ 21.753 million;

Approximately 50 % of this will be devoted to project activities;

– US \$ 11.730 million;

2003 Funding requirement – US \$ 2.473 million – adjusted for late start-up;

15



AATF Project Portfolio Development

- ◆ Project selection process and portfolio characteristics:
 - **technological interventions should link solution to end-user needs;**
 - **product and project concepts must be developed through a participatory process;**
 - **projects should have the potential to enhance institutional synergies;**

16



AATF Project Portfolio (Contd.)

- size of projects should be such as to optimise resource use;
- results should be achieved within reasonable timeframes;
- portfolio should reflect geographic balance;

17



Eight (8) Problem Areas Identified

From Regional/National Needs Assessment Surveys:

1. Nutritional quality improvement in maize and rice;***
2. Cowpea productivity improvement;***
3. Bananas/Plantain production;***
4. Striga control in Maize;***

18



Problem Areas (Contd.)

5. **Insect resistance in Maize**
6. **Drought tolerance in cereals;**
7. **Control of mycotoxins in food grains;**
8. **Sustainable Cassava production;**

19



Testing the AATF Concept - The Instruments

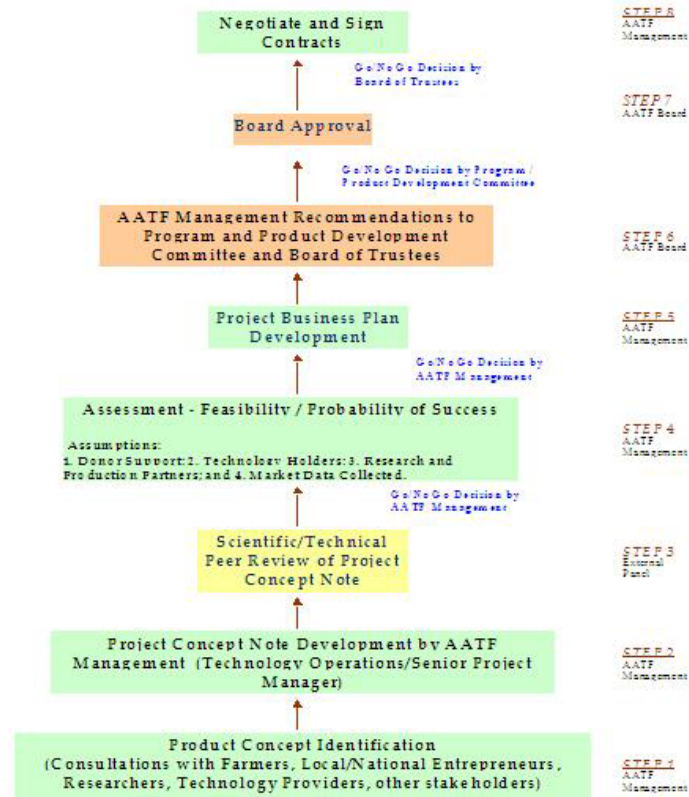
All projects are multi-stakeholder activities:

- Board approved project flow sequence;
- Project prioritisation matrix;
- Stakeholders generic issues matrix;
- Technical steering committees;
- Project Concept Development;
- Peer Reviews;

20



Project Flow Sequence



21

The African Agricultural Technology Foundation (AATF) Pilot Project Prioritisation Matrix

Assumptions (Selection Criteria) →

Problem Area	Horizon 1 1-3yrs	Horizon 2 4-6yrs	Horizon 3 7+ yrs
1. Nutritional Quality in Maize and Rice			
2. Improving Cowpea Productivity in Africa			
3. Improved production of Bananas and Plantains in Sub-Saharan Africa			

Note:

Horizons 1,2, and 3 – Indicate timeframes within which there are good prospects for success in addressing this problem area through a range of technological interventions.

22



Project Implementation Timeframes

Technical steering committees:

Cowpea Productivity – 10/11 July;

Vitamin A Maize – 28-30 July;

Bananas/Plantains – 22 August;

Projections – Optimistic scenario -1 of
the 3 above will be submitted to
AATF Board at its September 2003
Board meeting;



*The
Role of NGICA in the cowpea
biotechnology global arena*

Larry Murdock & Idah Sithole-Niang



What is NGICA?

- ✦ Network for the Genetic Improvement of Cowpea for Africa
- ✦ 48 cowpea stakeholders
- ✦ Community of people
- ✦ Community project
- ✦ Community is open



Goals

- ✦ Assess the state-of-the-art
- ✦ Devise plans & new initiatives for addressing constraints to cowpea production & availability



Emphasis

- ✦ Molecular biology tools such as marker assisted selection & molecular genetic transformation to address these constraints



NGICA membership

- ✦ Scientists
- ✦ Administrators
- ✦ Business people
- ✦ NGOs
- ✦ Individuals committed to GIC



Resolutions 2001

- ✦ Coordinated international effort to bring new and beneficial traits into cowpea using tools of molecular biology
- ✦ Marker assisted breeding, genetic mapping & molecular genetic transformation to address these constraints
- ✦ Take a comprehensive view of the constraints in the proper regulatory framework for country



Resolutions 2001 cont'd

- ✦ Integrate new genetic tools into traditional breeding programs to ensure adoption
- ✦ Ultimate beneficiaries must be the RPF in sub-Saharan Africa
- ✦ Steering committee comprised of specialists to coordinate this effort
- ✦ Leadership by an African scientist & IC



Activities to-date

- ✦ Formulated detailed plans and activities to address key constraints to GIC
- ✦ Strengthening linkages with the private sector
- ✦ Developed comprehensive NGICA document & flowchart
- ✦ Seeking funding for specific NGICA R & D, and public information initiatives



Flowchart

Identifies major activities & tasks that must be undertaken & accomplished if:

- ✦ GIC are made using molecular tools
- ✦ These biotech products are eventually brought to SSA
- ✦ Highlights links & time frame
- ✦ Various issues emerged



Issues emerging from flowchart

- ✦ Use of molecular tools is a small part of much broader long-term agenda
- ✦ Some activities must be anticipated & work initiated in a timely fashion
- ✦ IPR issues must be addressed sooner
- ✦ Must foster community effort to succeed
- ✦ Africans must be involved at all stages



Issues emerging from flowchart con't

- ✦ Implementation and deployment of transgenic cowpea will first occur in a single African country...that country should be identified early
- ✦ Must ensure sustainable deployment of transgenic cowpea
- ✦ GIC must not be pursued in isolation but must be viewed as part of the whole package



Activities to-date

- ✦ Produced 2 newsletters in 2002
- ✦ Funded French translation of Chrispeels article on *GMOs*
- ✦ Lobbied donors in WDC Nov 2001
- ✦ Held Cowpea Transformation meeting in Italy Nov 2002
- ✦ Cowpea concept note to AATF 2003



Activities to-date cont'd

- ✦ IPR audit on Bt (Erbisch)
- ✦ Discuss with the owners of the IP
- ✦ Training for co-coordinator in issues of IPR @ MSU & FAO/CIES
- ✦ Various NGICA documents



Proposed activities for late 2003

- ✦ Meeting in Accra in 2003/2004
- ✦ Funding for various themes
- ✦ Funding for NGICA Central
- ✦ White paper on cowpea culminating in state-of-the art book



Management constraints

- ✦ No funds for Management activities
- ✦ Seeking funding to facilitate web-management and administration



Way forward

- ✦ Meeting in Pretoria 2005
- ✦ WA Bean/cowpea CRSP regional meeting 2005



Acknowledgments

- ✦ The Rockefeller Foundation
- ✦ The Bean Cowpea CRSP
- ✦ AATF

Intellectual property and related issues

- IP should be viewed as a tool that facilitates achieving the project goals
- Will be most important in addressing the field constraints especially those that require technology intervention
(Therefore a tool that facilitates making the intervention).

ISSUE:

Access to relevant (pertinent) technology

- Licensing – favourable terms and freedom to operate

Variation in Policy and Legal environment on:

- Institutional level
- National and regional level

Solutions have to be addressed on case by case basis

Other issues

Donor related issues

- Funding Conditions

Post licensing issues

- Compliance with licensing terms
- Enforcement

Licensing and intellectual property

Technology holder: licensor

AATF: licensee

AATF partners: Sub-licensees

NB: THESE ISSUES ARE GENERIC. THEY MAY APPLY TO ALL OTHER PROJECTS OTHER THAN THE COWPEA PROJECT

IP issues:

1. Dealing with a host of partners/collaborators in different institutions- which may have different IP policies, research collaboration policy.
 - AAFT will need to have well defined basic policy guidelines
 - Will provide predictability to tech holders and partners
 - Will avoid trying to satisfy every partners requirement
2. Funding/donor agency conditions:
 - Conditions that require, e.g. grant of a non-exclusive license to the donor and with rights to sub-licensee. Tech holder would effectively 'lose' control of IP.
 - Even stickier if the funding is granted mid project
 - When does one say no to money???
3. Enforcement of IP Challenge: different legal/policy environment.
4. Licensing:
 - Terms of licensing:
 - Non-exclusive

- Royalties?
- Limitation on the field of use
- If improvements are made, require licensee to grant a non exclusive license?
- Product Liability Issues
 - the possibility that the victim of a defective product sold abroad by one's licensee may bring suit in the United States or elsewhere against owner of licensed IPR.
 - defect in question may well be the sole fault of the licensee, (or sublicensee)
 - Tech holder will insist that licensees accept responsibility for all legal fees, settlements and judgments arising from such suits.
 - Some arguments central arguments
 - First, because Tech holder has no control over the development, testing and manufacturing of products that arise from a license, it shouldn't bear any liability.
 - Second, little or no share of profits to justify any liability risks.
 - the license agreement may have provision whereby AATF will indemnify the tech holders against any such action. Some Tech holders may require that licensee (AATF) take out appropriate insurance to ensure that it can meet its obligations under such a provision.
 - question is how does AATF distribute this 'risk' to the sub-licensees? Where AATF partners are individuals working in other institutions, can those individual accept responsibility?

NB: Sublicensing has its own woes!

- Policing issue: Particularly when one is granting a license for a number of different countries, there is a risk that the sublicensee may end up by just being too remote from the licensor (i.e. Tech holder & AATF) for any effective control to be maintained.

5. Improvements on any tech transfer

- A licensee who is granted a license to practice the invention embodied in a patent *is not automatically* given a right to practice improvements to the invention of the licensed patent,
- It is desirable (from the licensee's standpoint) to have a provision in the agreement permitting the licensee to practice any improvements on the primary patent/technology developed by the licensor
- Similarly, the licensor (tech holder) may request that, as part of the consideration paid for the license, the agreement include a provision requiring that the licensee grant a license to the licensor for any improvements related to the primary patent.
- The meaning of "Improvement" as it applies to the license should be specified since the licensor's and licensee's view of what is considered an improvement can easily diverge as the importance of the improvement relative to the marketability of the invention increases. The definition of the improvements covered by the license can be broadly stated as any modification which improves or is useful in the operation of the licensed invention, or more narrowly may reference modifications to the invention described in the claims of a licensed patent or patent application

The potential for marker assisted selection (mas) for cowpea improvement – brief review of the technology

Successful plant breeding requires selecting many traits with complex inheritance. Desirable quantitative traits usually have both genetic and environmental components and separation of these components to achieve maximum efficiency in breeding programmes is necessary. Breeders originally depended on markers that had a morphological effect on the plant because these were the only markers available.

The development of molecular markers associated with various major cowpea pest and disease resistance genes, genes conferring drought tolerance will assist in the rapid development of cowpea varieties with phenotypes optimized for maximum productivity under biotic and abiotic constraints in various regions of Africa.

The quality of a marker used for MAS depends on its predictive and / or diagnostic value. The predictive value of the marker is determined by the inheritance of the marker and the linkage between marker and trait. The diagnostic value can be measured as the frequency of the desired linkage phase between marker and trait.

Marker-assisted selection is a potential aid to the selection process, especially for traits that are difficult to evaluate or even too expensive to do like for example in the case of some of the bioassays.

To facilitate marker development the construction of a genetic linkage map for a given segregating population will be included in the project. Linkage maps have become essential tools for crop improvement.

Current status

In order to determine, both the relevance of any existing cowpea markers for the African cowpea breeding programme and what new markers need to be developed, one needs to first establish the following: i) what markers are available in the institutes that have been previously funded to do cowpea research; ii) what markers are necessary and which ones must be developed first; iii) what is the available capacity for this type of development work and what is the capacity to implement MAS; iv) how can this work.

1-What markers are available:

The different institutes must communicate what are the markers that they have and for what population was it developed. Whenever possible it must also be indicated whether these markers are still being used or if they can be used in the future.

2-What markers are necessary:

Priority must be given for the development of markers for which traits are more difficult to identify and hence select for, and for which the correct population is available. These markers must also be of general application to most, if not all cowpea breeding programmes covered by AATF/NGICA.

3-What capacity is there to develop these markers:

Will these markers be developed on a contract basis by different institutes in close collaboration with the breeders who will supply the institutes with the correct cowpea populations.

4- Who will be doing what and who will be coordinating the work to ensure that time is not wasted taking in consideration the time it takes to produce new crosses and to supply segregating populations in the case of mapping.

Efforts to utilize MAS for the improvement of quantitative traits have been limited, but may improve as better quantitative data is generated and denser linkage maps become available from map co-integration across laboratories.

DNA-based marker maps can be developed with comparative ease and rapidity. Linkage between molecular markers and traits of interest often can be detected in a single cross. The ability to hybridize probe after probe to the DNA of the same individuals of a segregating population allows one to pursue the analysis until linkage becomes evident.

Recombinant inbred lines and other means to immortalize segregating lines derived from a cross like backcross derived lines, bulked segregant analysis, coupled with appropriate software programs facilitate the building of linkage maps. Maps including cDNAs and other cloned genes will provide additional dimensions for determining expressed gene relationships.

Criteria for choosing a mapping population

A population to be selected for mapping must preferably have general vigour, fertile, high germination rate, lack of visibly segregating lethal genes, and abundance of RFLP or RAPD or AFLP loci.

Annex V
Program, Background Information and List of Participants

Agenda

**AATF/NGICA
COWPEA PRODUCTIVITY PILOT PROJECT MEETING
NAIROBI, JULY 10-11, 2003**

TIME (Hrs)	PRESENTATION
JULY 10, 2003 – MORNING SESSION	
09:30	<p>PRESENTER: <i>Dr Eugene Terry, Director, AATF, Chair</i></p> <p>Introductions. Procedures. Designation of secretary (ies). Why are we here?</p> <p>AATF, its general purpose, general strategy, organizational structure, Board (membership, composition, and roles), donors, resources available or anticipated, approaches, pilot projects, timelines, leadership roles, industry and other organizational partners. What AATF can do and cannot do. What industry can and cannot do. Tasks and outputs needed from the current meeting. Meeting report? The Technical Standing Committee (TSC) – discussion and development of concept. Additional representatives needed? Responsibilities of TSC participants. Handouts of informational materials. Need for short-, medium-, and long-term impacts. Draft project implementation plan – what should be included. The AATF-NGICA working relationship – discussion. Anticipated meeting in Accra in late fall – planning needs. Expected outputs.</p>
10:00	<p>PRESENTER: <i>Dr Idah Sithole-Niang, Co-Chair, NGICA</i></p> <p>Inception of NGICA, its purpose, composition, activities to date (mobilization of resources for cowpea transformation, biosafety work, organization of meetings, fostering communication and a sense of community), engagement with AATF. Future activities intended.</p>
11:00	<p>PRESENTER: <i>Dr Ousmane Coulibaly, IITA, Co-Director of the PEDUNE Project</i></p> <p>Overview of cowpea and cowpea economics. PEDUNE, CRSP activities and other extension-type activities. Possible value-added projects. Cowpea marketing and trade. Constraints (input supply, information, market channels, transportation, etc.). Does IITA have a cowpea production-utilization package?</p>
10:30	C O F F E E B R E A K
11:30	<p>PRESENTER: <i>Dr. Laurie Kitch, FAO Harare Office</i></p> <p>FAO's interest and activities in biotech as well as in traditional plant production and protection. Farmer Field Schools as a vehicle for training. Potential involvement of FAO. Thoughts on technology packages.</p>
12:00	<p>PRESENTER: <i>Ms. Rose Ndegwa – IP Specialist – ILRI</i></p> <p>Intellectual Property Rights Issues - What do TSC members need to know about this aspect of the project at the outset.</p>

TIME (Hrs)	PRESENTATION
12:30	LUNCH BREAK
AFTERNOON SESSION – <i>Dr. Idah Sithole-Niang, Chair</i>	
14:00	<p>PRESENTER: <i>Dr. Larry Murdock, Co-Chair, NGICA.</i></p> <p>Technologies for the short-term, mid-term, and long-term. State of the art. What we <i>could</i> do? How do we structure a successful project? How the biotech industry does it. Need for strong leadership. Need for leverage with participants. Planning and reporting. A possible project organizational structure. Potential contributors and participants – NGO's, IARC's, NARS, private sector companies, FAO, others. Discussion. Geographic focus? Needs and avenues for funding.</p>
15:00	<p>Horizon 1 and 2 (1-3 and 4-6 year timeframes) target projects. What is possible? Available technologies: (i) Genetically-improved seed. What types and where available? What types should be promoted? What constrains seed availability. What are the limitations of such seed? Can it be produced and disseminated in a sustainable manner? How? (ii) Insecticides, sprayers, and training in their use. Tariff reductions? Donations? Distribution channels. Role of entrepreneurs versus subsidized projects. What are the next steps and who will take them? (iii) Market information. How will increased cowpea production move smoothly into the market? Does the project need to help link growers and producers more efficiently? How do this? (iv) Post-harvest storage technologies. Steel drum storage (Senegal), solar heaters, triple bagging, improved ash storage, seed-and-pod wall-resistant types. Should this be promoted as a project activity. What might the project do? Obtain discounts or donations from industry partners? Provide training? (v) Value-added products promotion. Should we do this? If so, how? Resource persons: Ousmane Coulibaly and Larry Murdock</p>
19:30	<p>Horizon 3 projects. GMO cowpea. Possibilities: (i) Bt resistance for Maruca; (ii) alpha-amylase inhibitor gene for cowpea weevil; (iii) low oligosaccharide cowpea through RNAi technology. Other constraints considered. Intellectual property access. Ownership of the technology. Ongoing work on transformation -- state of the art. Food and Environmental safety. Resource persons: Idah Sithole-Niang, Larry Murdock, Muffy Koch, George Bruening, T.J. Higgins</p>
JULY 11, 2003 – MORNING SESSION – <i>Dr. Laurie Kitch -Chair</i>	
08:30- 12:30	<p>In-depth consideration of issues Issue: Pathways for Technology Assembly and Development. Options. Tentative decisions about recommended specific goals. Alternatives for project organization. Separate projects? Who will be responsible? Resources. General timelines. Next stages in planning. Resource persons: Participants.</p> <p>Issue: Geographic focus. Factors to consider in deciding geographic focus. One or more countries? Which one(s)? Different geographical foci for short-, mid-, and long-term activities? Resource persons: Participants.</p>

TIME (Hrs)	PRESENTATION
	<p>Issue: Current production constraints. Resource persons: Ndiaga Cisse and Mohammed Ishiyaku.</p> <p>Issue: Seed production and dissemination. Is there a model? Public sector? Private sector. Resource persons: Ndiaga Cisse, Mohammed Ishiyaku, Laurie Kitch.</p> <p>Issue: Cowpea marketing and trade. What can the Cowpea Productivity Project realistically do to foster trade and market information flow? What are the current constraints? Capital? Information? Ideas for reducing constraints. Resource person: Ousmane Coulibaly.</p> <p>Establishment of Task Forces and selection of TF Leaders to further elaborate details of proposed activities within the framework of the Issues outlined above.</p>
12:30	L U N C H B R E A K
JULY 11, 2003 – AFTERNOON SESSION – <i>Dr. Larry Murdock, Chair</i>	
14:00	Sustainability, how can a project foster it?
15:00	Tentative Project Organization and Funding
16:00-18:00	Review and integration of discussions. Assignments of responsibility for developing the preliminary project plan. Modes of communication among TSC. Eugene Terry, discussion leader.
19:30	Evening session (as necessary)

BACKGROUND INFORMATION OF PARTICIPANTS

NAME	BACKGROUND
Dr. Eugenia Barros	Molecular Biologist and Research fellow of the Division at Bio/Chemtek, Molecular marker development and marker assisted selection in agricultural crops and forest trees.
Dr. Ousmane Coulibaly	Senior Agricultural economist based at IITA Benin. Works on economics of Integrated Pest Management (IPM) and is involved in capacity building of NARES in impact assessment of agricultural technologies on food security, poverty reduction and environment protection. He coordinates also PRONAF the cowpea project for Africa based at IITA and in collaboration with NARES and IFAD-funded projects in Nigeria, Niger, Mali, Burkina-Faso and Benin
Dr. Morag Ferguson	Employed by ICRISAT and IITA based at the Plant Biodiversity and Genomics Facility, ILRI, Nairobi. Areas of expertise include biodiversity assessments, genetic linkage mapping, marker-assisted breeding and molecular marker development. In cowpeas, have worked on the impact of seed relief strategies on cowpea diversity in Mozambique and genetic linkage mapping of thrips resistance.
Dr. Mohammad Faguji Ishiyaku	Worked with the Bauchi State Ministry of Agriculture as Forest Officer, with the International Institute of Tropical Agriculture (IITA) as Research Associate – Cowpea Breeding and then currently as National Cowpea Breeder at the Institute for Agricultural Research (IAR) of the Ahmadu Bello University in Zaria, Nigeria. Our major thrust is to use both conventional breeding and biotechnological approaches to develop cowpea varieties with high yield and adapted to the cereal – cowpea system in particular
Dr. Laurie Kitch	Holds a Ph.D in Plant Genetics and Breeding. Plant Breeder and Geneticist. Has worked in Africa for 20 years. Also worked with Purdue University in USA. Currently a Regional Plant Production and Protection officer with major emphasis of plant biotechnology, sub-Regional office for Southern and Eastern Africa (SAFR), Harare, Zimbabwe

NAME	BACKGROUND
Dr. Larry L. Murdock	<p>Professor of Entomology, PURDUE University,</p> <p>Co-Chair of Network for the Genetic Improvement of Cowpea for Africa (NGICA)</p> <p>Worked on Cowpea biosafety genes for insect resistance cowpea, and technologies for post harvest storage of cowpea. Organized meetings of Cowpea researchers in Dakar, Senegal 2001, in Capri, Italy, 2002. Principal investigator of the Bean/cowpea CRSP (Collaborative Research Support Program) West Africa Regional Project (2002.....)</p>
Ms. Rose Ndegwa	<p>Worked for the Kenya Industrial Property Office (KIPO) as a patent examiner in the natural sciences for 7 years.</p> <p>Currently with ILRI. Joined ILRI 3 years ago to set up the IP Management Unit. Field of training: Botany & Zoology, and Intellectual property. Field of practice: Intellectual property management.</p>
Dr. Idah Sithole-Niang	<p>She is a Molecular Biologist with a keen interest in biosafety, intellectual property rights issues and public awareness of biotechnology. She spent the last 10 years working on cowpea biotechnology and is co-chair of the Network for the Genetic Improvement of Cowpea for Africa (NGICA). She is on the faculty at the University of Zimbabwe.</p>
Dr. Eugene Terry	<p>He is currently the Implementing Director of African Agricultural Technology Foundation (AATF). Spent 23 years working with the CG. Was Director General of WARDA. Worked with World Bank until 2002. 1987 – 1996 worked as Crops Adviser, Rural Director.</p>

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