

The Gambia Agro-Ecological Village Development Project

Exploratory Phase Report

Submitted to

*The Environment and Sustainable Development Program
Canadian International Development Agency*

by

Resource Efficient Agricultural Production (REAP)-Canada
Box 125 Maison Glenaladale, Sainte Anne de Bellevue, Quebec, H9X 3V9
Phone: (514) 398-7743 Fax: (514) 425-6308, Email: info@reap-canada.com

In partnership with

Njawara Agricultural Training Centre (NATC)
Njawara Village, North Bank Division, The Gambia
Phone: 220-905-749 Email: Njawaranatc40@hotmail.com

and

Village AiD – The Gambia (VATG)
P.O. Box 6061, Farafenni, Kaur, Central River Division The Gambia
T: 220-748-045; F: 220-748-239; E: villageAiD@ganet.gm; W: www.villageAiD.org

December 2003

Table of Contents

- 1.0 Project Proponents, Beneficiaries and Development Context
 - 1.1 Project Partners
 - 1.2 Collaborating Agencies
 - 1.3 Rationale for the project
 - 1.4 Project Proponents
 - 1.5 Project Beneficiaries

- 2.0 Project Goals, Objectives and Components
 - 2.1. Project Goals and objectives
 - 2.2 Gender Issues
 - 2.3 Environmental Assessment

- 3.0. Project Activities, Indicators and Outcomes
 - 3.1. Exposure in the Gambia
 - 3.1.1 Agro-ecological Village development
 - 3.1.2 Plant Materials and Farming Systems Improvement
 - 3.1.3 Farmer to Farmer training
 - 3.1.4 Appropriate Technology development
 - 3.2. Exposure in Canada
 - 3.2.1 Canadian Farming Systems and Training Methods
 - 3.2.2 Public Engagement

- 4.0. Problems Encountered, Lessons Learned and Outcomes

Annexes:

- Annex 1: BUDGET SUMMARY GAAEV Project
- Annex 2: GAAEV RBM Performance Framework

Appendices:

- Appendix 1: GAAEV Introductory Rapid Rural Appraisal (RRA)
- Appendix 2: Agro-Ecological Village Framework
- Appendix 3: Food Security Workshop
- Appendix 4: Learning Farms
- Appendix 5: Mayon Turbo Stove Workshop

The Gambia Agro-Ecological Village Development Project (GAAEV)

1.0 Project Proponents, Beneficiaries and Development Context

1.1 Project Partners

Resource Efficient Agricultural Production (REAP)-Canada

Box 125 Maison Glenaladale,
Ste Anne de Bellevue, Quebec, H9X 3V9
Tel. (514) 398-7743, Fax (514) 398-7972
E-mail: www.reap-canada.com
Contact person: Claudia Ho Lem / Roger Samson

Njawara Agricultural Training Centre (NATC).

Registered charity, Local NGO # A40
Njawara Village, North Bank Division, NBD, The Gambia
Tel. 220-905-749
E-mail: Njawanatc40@hotmail.com
Contact person: Badarra Jobe, Director Njawara

1.2 Collaborating Agencies

Village AiD – The Gambia (VATG)

P.O. Box 6061, Farafenni, Kaur,
Central River Division The Gambia
T: 220-748-045; F: 220-748-239;
E: villageAiD@ganet.gm; W: www.villageAiD.org

The Gambia National Agricultural Research Institute (NARI)

Agric Eng. Unit (AEU)
Yundun PMB 526, Serekunda, The Gambia.
E-mail : nari@commit.gm,
Dr. Kunjo (Director of Research) mobile: 483-112

1.3 Rationale for the Project

The Gambia is one of the most challenged nations on the globe. In the year 2000, the Gambia ranked 160th out of 173 countries in the Human Development Index, with nearly 60% of the population below the international poverty line and the highest population growth rate in the world at 4.2%. According to a study of poverty in the Gambia in 1992 (Ahmed et al, 1992), 75% of the rural population experiences a chronic food deficit for at least 2 months of the year during the rainy season from July to August, when income sources are also scarce.

In addition to the dire social conditions, the environmental quality of Gambia is in a long-term

trend of deterioration. The major problems affecting the small farmers include deforestation, chronic fuelwood shortages, declining soil fertility, soil erosion, overgrazing by goats, deteriorating groundwater supplies, drought, lack of markets and high cost of inputs. For both ecological and economic purposes, there is a great need to develop more resource efficient farming systems in the region. Fuelwood use and the resultant deforestation is also exacting a large toll on the resources of the country, and sustainable rural household cooking systems must be developed to reduce the impact of this destructive practice.

There is a compelling need to diversify farming in the Gambia. The intensive cropping of peanuts by both small-scale and large-scale farmers has left the national economy vulnerable to international market fluctuations and resulted in serious food security and decline in soil quality. With an emphasis on cash cropping, farmers have to use input-intensive farming practices in order to sustain yields. They also lack the food crops necessary to feed themselves and are therefore more reliant on capital in order to purchase food for personal consumption. The country as a whole is also becoming more reliant on food imports to feed its rapidly growing population. Diversifying farming systems in the region would increase food security for families and offer significantly more opportunities for the incorporation and full participation of women in all aspects of food production from planting to marketing and value added processing.

A holistic and integrated approach is required to respond to these interrelated challenges of environmental degradation, diminishing natural resources, reduced agricultural productivity, rapid population growth, hunger and high poverty rates. New efforts are required to implement effective sustainable rural development models to respond to these problems.

1.4 Project Proponents

REAP-Canada is an independent, research, education and development organization based in Ste-Anne-de-Bellevue, Quebec, Canada. REAP has 17 years experience working with farmers, scientists and the private sector to working to create greater sustainability in farming systems to advance rural development, both in Canada and abroad. REAP-Canada has been working on Agro-Ecological Village development with Philippine partners since 1997 in projects sponsored by CIDA and USAID, and recently began a 3-year Agro-Ecological Village project in China funded by the Shell Foundation. The organization has a leading expertise in working with communities on sustainable farming and renewable energy systems development through participatory on-farm research and development, and capacity building through the support of farmer-to-farmer training networks. In 1999, REAP-Canada was awarded by the Canadian Environmental Network, The International Environment Award for excellence in programming under the theme of Climate Change mitigation.

The Njawara Agricultural Training Centre (NATC) was established in 1990, a community initiated and owned organization established by the Njawara village for the purpose of training youth and adult farmers in sustainable agro-forestry techniques so as to improve farm production and profitability while promoting sustainable natural resource management. Since it's beginning, NATC, in collaboration with the community and several small funding partners, has established training facilities and appropriate agro-forestry demonstration and training grounds. The 6-

hectare grounds include training demonstrations for seedling nurseries, erosion control, soil fertility and management, live fencing, gardening, orchard and woodlot management and small animal husbandry. Trainings include cultural practices for vegetable production from transplanting to marketing (pest management, pruning and other practices that would increase yield per plot). It is registered as an NGO with the Gambian Government NGO Affairs Agency and is a member of the independent umbrella group The Association of NGOs (TANGO).

Njawara Agricultural Training Centre (NATC) works to alleviate poverty this region of the Gambia by increasing agricultural production and income in a sustainable way through better use of land and labour resources. They also work towards improving the balance of participation in agricultural activities to ensure a greater degree of gender equity in farm management. The NATC, as well as an NGO itself, is central to community life. It is host to many trainings and community activities, including PRA's and other facilitation seminars, sponsored by local organizations and NGO's, to build the capacity of local community groups and aid in improving the lives of poor farming families.

The specific objectives of the NATC are:

- To promote and raise awareness of farming practices that enhance agricultural production and income in a sustainable way;
- To provide training to farmers, appropriate for the achievement of objective one;
- To strengthen the capacity of relevant local organizations;
- To assist in the development of gender equality;
- To assist in the design & implementation of an efficient and adapted produce marketing strategy.

Although NATC is extremely strong in the advancement of sustainable agricultural techniques, it was found that strengthening the organizations community development skills would increase their ability to have impact in communities. Village Aid-The Gambia (VATG) based in Kaur was identified to help engage in project activities with NATC to promote the mutual goal of developing agrarian communities in the Gambia. After mutual agreement Village AiD was approached to join the GAAEV Project Partnership with the intention to transfer their strong community-based development approach, and in return gain an improved understanding of ecological agriculture and improved food security.

Village AiD (VA) began working in the Gambia in 1991. Initially, Village AiD's work mainly focused on supporting practical initiatives and micro-projects with rural communities. These ranged from repairing and or drilling new water wells, construction of access bridges/culverts to rice fields, vegetable gardens, building community run primary schools, providing labour and time serving devices (like grinding or milling machines) etc. However, over time and through a continued partnership with several rural communities especially in Lower Saloum, Village AiD has now extended their program support to institutional and capacity skills development, food security, literacy, micro-credit, para-legal extension and human rights and advocacy.

The Gambia National Agricultural Research Institute (NARI) is the Gambia's principal

agricultural research and development institute focusing on the advancement of livestock, horticulture, agronomy and agro-forestry systems. Presently it is also supporting the Participatory Learning and Action Research (PLAR) approach for rice improvement in The Gambia. NARI recognizes the high cost of the traditional extension systems for agricultural research and development existing in the Gambia and is interested in continuing to develop its experience with participatory approaches for plant material improvement as a strategy to increase its impact in the country.

1.5 Project Beneficiaries

The main beneficiaries of the program will be impoverished small farmers living in the North Bank District (NBD) and Central River District (CRD) of the Gambia. They are amongst the most impoverished farmers in the Gambia and far from the more affluent and developed coastal areas of the west. Household income is below the national average for small farmers. The villages and small towns in this region typically have no running water or electricity, few clinics, limited schools and few working opportunities outside subsistence farming. Young people in the region often migrate to the capital in search of improved employment opportunities.

An important objective of the GAAEV exploratory phase was to identify which villages the project will support. It was decided projects will be developed in the future so that each partner will eventually work with 2-4 surrounding communities in their region, initially limited to directly working with a total of 150 households in each district. In the future, projects with NATC will directly reach approximately 150 families in the Lower Badibu region, in the communities of Njawara and Kerr Ardo, located in lowland and upland ecosystems respectively. Other beneficiaries include approximately 500 farmers and their family members in three surrounding villages including Torro Ba, Torro Tayam, and Panneh Ba. Future projects with VATG will involve four beneficiary villages selected in the Lower Saloum District of the Central River Division including two upland communities, Gunkuru Wollof and Ale Ancah, and two lowland communities, Jahawur Mandinka and Tabaworo. The project will also reach all of the communities in which VATG extends agricultural support as the technical background and knowledge of farmer-to-farmer training methodology develops. As well, activities coordinated with surrounding villages will provide immediate economic benefit to the collaborating communities.

The communities were selected through a Rapid Rural Appraisal (RRA) process to determine which needed the most help, which were most eager to participate and which would be most likely to embrace the AEV model. Major crops were also taken into consideration with and even distribution of rice and millet farming communities selected. Please refer to Appendix 1 for objectives and guidelines of the RRA activities employed.

2.0 Project Goals, Objectives and Components

2.1 Project Goals and Objectives

This exploratory phase of the GAAEV Project aimed to create partnerships between REAP-Canada, NATC and VATG to develop project activities that increase the understanding of ecological farming systems and rural community development approaches that can be effectively utilized in the Gambia. The objectives of the partnership are to improve the economic and social well being of marginalized farming communities with a focus on women, while at the same time protecting and enhancing the natural resource base.

The Exploratory Phase of the Gambia Agro-Ecological Village Development Project (GAAEV) examined opportunities to strengthen the NATCs and VATGs current efforts in ecological farming systems and sustainable community development. Future activities will include enhancing their training modules and establishing trial farms and plant improvement programs using participatory approaches, as well as aiding in farm planning and diversification. REAP has successfully used these approaches with partners in Canada, China and the Philippines since 1997. REAP's experience in tropical agro-ecosystems in the Philippines is also helpful for assisting NATC and VATG develop ecological food production systems in the surrounding rural communities. In particular, the rainy months of July and August are the most problematic for food security and the project proponents have a strong interest in helping develop local solutions to resolving this problem.

Through this exploratory phase, REAP-Canada has gained considerable understanding of the efforts of NATC and VATG to help mitigate poverty and environmental problems in the most impoverished regions of the Gambia. As well, a clearer understanding of the problems in the Gambia have been gained by having REAP staff visit several other agencies working towards effective development in the country. In particular, REAP-Canada had two days of meetings with Agronomy and vegetable research scientists at the National Agricultural Research Institutes (NARI) to discuss opportunities for plant material improvement through participatory plant breeding and local adaptability trials in the NBD and CRD.

The exploratory phase also had the intention of furthering the understanding between groups by facilitating the visit of the Executive Director of NATC, Mr. Badarra Jobe, to Canada to observe farmer-to-farmer trainings and the research and development efforts of REAP-Canada. Unfortunately, due to the denial of Visas to travel to Canada, both Mr. Jobe and Mr. Kebbeh (Executive Director of VATG) were unable to come and complete this portion of the exploratory phase. However, links with the Canadian Embassy in Dakar, Senegal, have been made and preparations have been made for future visits.

Additionally, through the overseas visits of two REAP-Canada staff in August of 2003, and the subsequent placement of one Canadian overseas intern at each organization, the basis for a solid partnership has been established. The partners have made strong commitments both to build project activities that promote sustainable agriculture and community development in the surrounding communities and to learn and develop from each other. Each organization brings to the table unique achievements and areas of specialization that will advance the others and bring about positive advances in the international development community.

The goals and objectives of the envisioned partnership support CIDA's fundamental development priorities including:

- Basic human needs
- Women in development
- The environment
- Capacity building for southern communities and organizations
- Benefits to Canada and engagement of the Canadian public

2.2 Gender Issues

From REAP's exploratory field mission it was evident that women in the Gambia in particular have very difficult lives and are in tremendous need of support programs. The advancement of ecological agriculture is of paramount importance to improving their quality of life and restoring the natural resource base of their environment. The transition of rural communities into Agro-Ecological Villages has great potential to improve the quality of life of women, men and their families.

Through the exploratory phase, meetings and interviews were held with local men and women of all social standings including farmers to village leaders. Efforts were made to collect information about the rural communities in a gender-segregated manner to better understand any potential impacts of the project on both sexes, ages and socio-economic bracket. In the future, efforts will be made to facilitate both male and female participation in all decisions regarding project activities as a means to equalize the decision making process. Through the programming of the project, both men and women will be highly engaged in the Participatory Rural Appraisal process, contributing data through which the project can be evaluated and strengthened to improve the living conditions and gender equity in the communities. The project proponents feel it is of utmost importance to encourage the participation of both men and women in the project to ensure they gain more control over their family and individual well-being.

2.3 Environmental Assessment

The environmental risk of the intended project is limited as its main emphasis is on the introduction of improved ecological farming practices and farmer training. Instead, the project has the potential to benefit the local and global environment in several important ways:

- Decreased soil erosion due to wind and water through the implementation of sustainable agro-forestry techniques and other ecological farming practices
- Increased soil nutrient cycling and soil quality through the practice of intercropping
- Restoration of local plant and animal biodiversity

3.0 Project Activities, Indicators and Outputs

3.1 Exposure in the Gambia: July 30-August 18, 2003

Table 1: Exposure in the Gambia: July 30 – August 18, 2003	
Project Activities, Indicators and Outputs	
<i>Activities</i>	<i>Indicators/Outputs</i>
Agro-Ecological Village development	<ul style="list-style-type: none"> • The successful completion of the two-day training to be held on Agro-Ecological Village development • The number of participants from the outlying rural communities
Plant Materials and Farming Systems Improvement	<ul style="list-style-type: none"> • The involvement of the NATC staff and local farmers in a workshop on farming systems for food security in the rainy season. • The establishment of data collection systems involving the potential for the development of ecological productions systems and trial farms promoting on-farm research for vegetables, grains, legumes, rice and sugarcane.
Farmer-to-farmer training programs	<ul style="list-style-type: none"> • The exposure of the NATC staff and local farmers to a variety of participatory learning approaches for the development of a comprehensive training program for the rural communities.
Appropriate Technology Development	<ul style="list-style-type: none"> • The exploration of opportunities for the development of appropriate tools for use with sustainable agriculture practices in the Gambia including the production of the Mayon Turbo cooker.

3.1.1 Agro-Ecological Village development

Activity:

REAP will work with the NATC and local farmers associations and NGO's to examine opportunities for the development of agro-ecological villages. A two-day workshop will be held on Agro-Ecological Village development involving participants from several rural communities to generate feedback on the approach and its suitability for the local situation. Opportunities to further empower and build capacity of farmers organizations through participatory measures will also be examined. Through this workshop, REAP will gain exposure to existing development approaches used in Gambia such as the participatory rural appraisal (PRA) methods being used locally and community experiences with micro credit management.

Indicators:

- The successful completion of the two-day training to be held on Agro-Ecological Village development
- The number of participants from the outlying rural communities

Outcome:

A training course was successfully held on the Agro-Ecological Village Development Model in each community. The workshop was held on August 6th at VATG in the Central River Division and on August 12th at NATC in the North Bank Division. There were 10 participants at VATG including staff and local community extensionists. There were 18 participants at NATC including NATC staff, local community workers, NATC board members and members of the Village Development Committee (VDC). The outline of the workshop can be found in Appendix 2. The workshop was held in a participatory manner with participants commenting or contributing towards each approach and volunteering alternate methods or experiences that could be used with a similar intention.

Another outcome of this activity was that the project partners deepened their interest in exploring the potential for the implementation of the Agro-Ecological Village Model in their communities. Both NATC and VATG are currently working together with REAP-Canada staff to develop local activities to support the development of ecological farming systems using the Agro-Ecological Village Development framework. This includes the implementation of farmer-to-farmer training networks, learning farms, and bottom up community-supported agricultural, ecological, social and economic development as a means to self-sufficiency and improved environmental conditions.

Background on the Agro-Ecological Village Sustainable Community Development Model

An Agro-Ecological Village is a community that is largely self reliant through the creation of integrated and ecological food production and energy systems. Central to this approach is the conviction that ecological land management and sound community organizing forms the basis for sustainable community development. This model encourages the use of participatory approaches and ecological farming and energy systems through a four-step process of institution building, training and capacity building, farm planning and field level implementation.

The Agro-Ecological Village supports three central development goals to mitigate poverty while enhancing the environment:

- *To enhance food and energy security through the introduction of ecological farming and energy systems*
- *To reduce external expenditures on fossil fuels, synthetic pesticides, fertilizers and imported foods*
- *To promote farming systems diversification to strengthen ecological processes on farms, provide a more continuous flow of income, reduce risks and encourage biodiversity*

The general characteristics of an Agro-Ecological Village based on REAP-Canada’s experience in the Philippines are outlined in Table 2. During detailed project planning, ecological systems will also be identified in the Gambia to find similar solutions to meeting local needs.

<i>Table 2. An agro-ecological approach to rural development in the Philippines</i>	
<i>Ecological System</i>	<i>Conventional System</i>

	<ul style="list-style-type: none"> • <i>Emphasizes self reliance & empowerment through maximizing on-farm resource utilization</i> • <i>Market development oriented towards import displacement</i> • <i>Minimizes human impact on local environment & biosphere</i> 	<ul style="list-style-type: none"> • <i>Emphasizes export markets to pay for imported goods</i> • <i>Approach leaves communities vulnerable to external forces</i> <ul style="list-style-type: none"> • <i>Degrades natural resource base locally and increase greenhouse gas emissions</i>
<i>Food Supply</i>	<i>Internal and plant based, emphasizing farm fresh production of in- season vegetables, rice, corn, root crops, fruit, fish and eggs</i>	<i>Much food imported into community including rice (through loans), canned and dry fish, meat, pop, noodles, crackers, etc, imported livestock feeds</i>
<i>Soil preparation and on-farm hauling</i>	<i>Carabaos (water buffalo) that reproduce</i>	<i>Tractors that need maintenance and replacement, and are fueled with diesel and gasoline</i>
<i>N Fertility</i>	<i>N fixation through trash farming, nitrogen fixing legumes, azolla, mudpress, soil mineralization, carabao dung</i>	<i>Purchased urea fertilizer</i>
<i>Minerals</i>	<i>Minimal erosion, recycling of rice hull ash and mudpress, carabao dung, good soil structure</i>	<i>Purchase Potassium and Phosphorus fertilizer</i>
<i>Seeds</i>	<i>Community seed banking of open pollinated seeds, new seeds assessed in trial farms, ongoing on-farm plant improvement</i>	<i>Purchased hybrid seeds, no local adaptation trials, seeds derived from corporations, transgenic seeds being developed</i>
<i>Weed Control</i>	<i>Mechanical weeding devices, crop rotation, good soil fertility management, mulch farming</i>	<i>Herbicides and tillage</i>
<i>Insect control</i>	<i>Biological control strategies, resistant cultivators, balanced fertility</i>	<i>Insecticides</i>
<i>Disease Control</i>	<i>Resistant cultivators, diverse cultural management strategies</i>	<i>Fungicides</i>
<i>Irrigation</i>	<i>Modest requirement and efficient usage, provided by alternative water supply options</i>	<i>Gasoline/diesel powered pumps</i>
<i>Crop drying</i>	<i>Uses solar or biomass energy</i>	<i>Fossil fuel powered crop dryers</i>
<i>Marketing</i>	<i>Emphasizes internal self reliance first, then import</i>	<i>Monoculture production emphasized and sold to distant</i>

	<i>displacement in local markets and value added processing</i>	<i>markets in the country or exported</i>
<i>Household cooking</i>	<i>Rice hull cookers, efficient wood stoves, biogas, all biofuels derived from the farm</i>	<i>LPG fuel stove, open fire cooking, kerosene as fire-starter, fuelwood gathered off farm or purchased</i>
<i>Electrical power</i>	<i>Low requirement , renewable sources explored if feasible</i>	<i>High requirement and from fossil fuel based mega-projects</i>
<i>Housing</i>	<i>Bamboo, farm derived wood, rammed earth</i>	<i>Cement block housing</i>

This model has been successfully implemented in the Philippines since 1997, and China since 2002. It employs a participatory development approach to empower marginalized communities living in a resource degraded environments to:

- Increase household food security through farming systems diversification and by expanding food production in the rainy season*
- Enhance community capacity to manage their resource base in a sustainable manner*
- Increase household energy self reliance through the introduction of an advanced crop residue burning fuel stove and other appropriate technologies*
- Improve livelihood opportunities through increased food production, farming systems diversification and reduced use of costly inputs*
- Reduce soil degradation and enhance the long-term capacity of the land for food production*
- Improve surface and ground water quality and quantity*
- Minimize the use of synthetic pesticides*
- Improve air quality in households and reduce health risks to food producers and consumers*
- Increase forest cover through agro-forestry*
- Help protect and restore biodiversity*
- Decrease greenhouse gas emissions through reducing fossil fuel use, minimizing field burning of crop residues, reducing the use of charcoal for household cooking and increasing forest cover*

3.1.2 Plant Materials and Farming Systems Improvement

Activity:

The exploratory phase will expose the NATC staff and local farmers to ecological farming systems development approaches used for plant improvement. A workshop will be held to discuss opportunities for increasing food security in the rainy season in the Gambia. The partners will examine opportunities for the establishment of learning farms through the North Bank District that incorporate diversified, ecological production systems for vegetables, grains and legumes into working farms. This approach may be helpful in further expanding the outreach provided by

the NATC beyond their existing systems established at the local NATC farm.

Indicators:

- The involvement of the NATC staff and local farmers in a workshop on farming systems for food security in the rainy season.
- The establishment of data collection systems involving the potential for the development of ecological production systems and trial farms promoting on-farm research for vegetables, grains, legumes, rice and sugarcane.

Outcome:

The exploratory phase mission exposed the NATC staff and local farmers to ecological farming systems development approaches used for plant improvement in other developing nations including Adaptability Trial Farms for improvement of rice, corn, vegetables and other staple crops. During the mission, NATC was exposed to REAP's development work on ECO-RICE and biological nitrogen fixing (BNF) sugar cane in the Philippines. As well, NATC staff and leading farmers were exposed to farmer-led plant breeding initiatives existing in the Philippines.

From the mission, the project partners devised some possible initial steps, subject to further investigation and validation by communities in the next stage of the project that can be taken to improve food security and the ecological integrity of local agriculture. These include the following:

- Improved varieties of millet and rice
- Increased production of vegetables during the rainy season
- Restriction of free roaming goats and establishment of productive drought tolerant perennial grasses and legume shrubs as animal fodder.

During the exploratory phase visit, REAP-Canada staff met with Mr. Mbaye Jabang, a plant scientist with NARI (National Agricultural Research Institute) in the Gambia. One of the primary focuses of NARI has been working on research supporting sustainable agricultural development in the Gambia. NARI has been working on the development of vegetable and crop production, particularly rainy season vegetables such as squash, cucumber, watermelon and pumpkin. NARI has also been working extensively with NERICA (New Rice for Africa) and possibilities were discussed to further its development by farmer breeding and testing. Developed as a hybrid between Africa and Asian rice, NERICA has some of the following characteristics:

- suitable for dry uplands (currently only lowland rice farmed in brackish areas in significant amounts in the Gambia with very low productivity)
- can survive in the difficult African environment (African rice trait)
- suppresses weeds, not requiring pesticide and herbicide applications
- has higher yields than Asian or African varieties (Asian rice trait) under dryland conditions
- less fertilizer required than irrigated or traditional upland rice
- Delicious (Asian rice trait)

NARI has developed and multiplied some varieties important for food security and improved production in the Gambia. Unfortunately, because of a lack of resources, their outreach into rural communities using conventional extension systems is inadequate. They are eager to cooperate with the GAAEV partners to gain experience in extension approaches for developing the agro-ecological potential of the communities in the remote areas of the Gambia where the effects of poverty and food security are most severe.

During the exploratory phase a workshop was held to discuss opportunities for increasing food security in the rainy season in the Gambia. There were 18 participants at NATC including NATC staff, local community workers, NATC board members and members of the Village Development Committee (VDC). The partners were exposed to the “Food Footprint” Food Security Analysis. The Food Footprint Analysis is a simple and effective tool that provides a relevant and clear representation of household food consumption. The “Food Footprint” (or area required) to grow each crop required for household consumption is determined to give the total land area that is required to feed a household *sustainably*, meaning that the same plot of land must be available for production the following year for the same crop. The Food Footprint is extremely effective when assessing household food security and can also be applied as a planning tool, encouraging farmers to reduce household Food Footprints while more efficiently managing farm land to produce higher and sustainable yields and generate higher incomes.

A Food Footprint analysis was performed in the Njawara community. Please refer to Appendix 3 for the results obtained. After the exercise REAP-Canada and the project partners and community members were very pleased at the deeper understanding gained regarding the agricultural and food production systems in their region of the Gambia.

Finally, the partners were exposed to the concept of learning farms. Although a new concept, the partners were very interested in developing the learning farm approach, which incorporates diversified, ecological production systems for vegetables, grains and legumes into working farms. They agreed that this approach may be helpful in further expanding the outreach provided by NATC and VATG beyond their existing extension systems. Please refer to Appendix 4 for a detailed description of learning farms.

3.1.3 Farmer-to-Farmer Training

Activity:

A variety of participatory learning approaches will be examined for possible inclusion in the existing training approaches used by NATC and VATG. As well, technical training materials will be examined for possible improvement. REAP has existing modules developed from its programs in China and the Philippines that may be suitable for adaptation to the Gambia. For each training topic, an interactive training module can be developed. The modules describe all of the important concepts that should be conveyed to the peasant farmers, and act as a guide for the trainers. Other training approaches that will be discussed for inclusion in the project phase include cross-site visits, on the job coaching during the growing season and household roundtables

Indicator:

- The exposure of the NATC staff and local farmers to a variety of participatory learning approaches for the development of a comprehensive training program for the rural communities.

Outcome:

During the exploratory mission, the project partners explored the possibility of implementing ‘farmer-to-farmer’ training systems in the Gambia, a well-proven peer education training method utilized by farmer alliances in Canada and the Philippines and newly in China. The project partners were enthusiastic to support farmer-to-farmer networks in their communities and immediately realized the benefits that such a system could bring.

Large numbers of farmers can have access to training through this effective and low-cost education system. Fundamental to this approach is to develop experienced farmer trainers, known as "first liners" to lead training sessions. These individuals are progressive farmers having a sound understanding and skills in farming, understanding of social and ecological issues and effective organizational and facilitation skills. Other farmers will be trained as “second-liners” to re-echo these lessons in their local areas to disseminate the information. Second liners play a support role, and learn and gain confidence through actual training experience. Young farmers who have high potential for development will also be encouraged to become trainers, and will be exposed to various subjects and trainers. Trainer's training sessions will be provided to upgrade trainers on a periodic basis. Through this participatory peer education approach, trainers are continuously being developed, and groups are kept small as farmers are exposed to a diversity of farmer trainers and issues. This training approach can be adopted for instructing individuals how to employ organic farming, diversify their production, develop their farm in a holistic manner, and every other aspect of the Agro-Ecological Village development.

A “ladderized” training program is utilized in farmer-to-farmer development approach, which is a series of training sessions presented in an order that gradually increase the technical level of information available to the farmers. Initially, a sensitization of the communities is important to deepen the level of understanding of the social and economic situation the farmers are facing, both locally and nationally. This portion also provides a historical analysis of their situation, and examines key events that brought about their current situation. The problem-solving component of the exercise is designed to energize the farmers and encourage them into action in their communities. This is followed up by technical trainings including an introduction to ecological farming, farm planning, diversified farming, agro-forestry systems, plant improvement, and advanced ecological farming techniques. Trainings also include “field trips” to model farms employing sustainable agriculture or in the process of conversion, and mentoring through farm visits and individualized on-the-job (OJC) coaching by trainers. Please refer to Table 3 for a comprehensive listing of potential training sessions that can be included in the Agro-Ecological Village programming.

**Table 3: Farmer to Farmer Community Development:
Potential farmer trainings, seminars and activities**

Social Orientation for community leaders
PRA (Participatory Rural Assessment)
BASO (Basic Analysis of Social Orientation)
BaSEO (Basic Socio-Economic Orientation)
IEF (Introduction to Ecological Farming)
DIFS (Diversified Integrated Farming Systems)
VMGO (Vision, Mission, Goals, Objectives Formulation)
Strategic Planning Workshop
Farm Planning and Assessment
OJC (On the job coaching/mentoring)
Organic Vegetable Production
Nursery management
Plant improvement (seed conservation, adaptability, farmer-led breeding)
Medicinal plants
Advanced Ecological Farming Orientation
CMP (Cultural Mgmt Practices)
IKS (Indigenous knowledge Systems)
SWCM (Soil and Water Conservation and Management)
APM (Alternative Pest Mgmt)
Soil Fertility Management Cycle
BDU (Bio-fertilizers development and Usage)
Leadership Seminar
Marketing
Trainers Training (Organizational & Technical) (sensitizing communities)

The Gambian partners were enthusiastic to develop some of these trainings in their communities. Additionally, for each training topic, an interactive training module can be developed. The modules describe all of the important concepts that should be conveyed to the peasant farmers, and act as a guide for the trainers. The technical training materials were examined for possible adaptation to the Gambia.

In the future, the project partners would like the beneficiary communities to undergo a custom training needs analysis to determine which training sessions are most relevant to the farmers. Ongoing monitoring of the applicability of the training programs would be evaluated through expectations and feedback from participants at the outset of each seminar. Performance measurement can gauge the effectiveness of farmer trainings by measuring the long-term application of knowledge acquired in farmer trainings. Evaluations can then be routinely conducted through communication of the training coordinator with farmer trainers, who will be responsible for maintaining contact with trainees after the trainings.

3.1.4 Appropriate Technology Development

Activity:

The exploratory phase will examine existing efforts to develop appropriate tools locally for use in sustainable farming systems development. The tools should be sturdy and relatively simple to construct, allowing for low-cost local production. The tools can be effective for encouraging ecological farming systems development, and can displace tools that are used with chemical farming or devices that require fossil fuel inputs. The exploratory phase of the project will examine the types of tools used locally and the potential for introduction of promising alternatives. The production of the Mayon Turbo Stove, which has been successfully introduced in rice producing areas of the Philippines, will also be examined as an alternative to charcoal use.

Indicator:

- The exploration of opportunities for the development of appropriate tools for use with sustainable agriculture practices in the Gambia including the production of the Mayon Turbo cooker.

Outcome:

The project partners met extensively together with a focus on the development of tools in the community, which can be significant labour saving devices particularly for women. A number of hoes, including the diamond hoe and potentially the Idaho-plow were identified as tool that could notably reduce labour. However, perhaps the most important technologies identified that could aid the communities were in the form of energy provision. It was observed that many women spend a large portion of their day, week and year searching for fuel work

REAP-Canada staff also met with Mr. Alieu Senghore, the head of the Mechanical Engineering department of NARI (National Agricultural Research Institute) to discuss the potential for the introduction of sustainable cooking technologies into the Gambia. As well as some solar technologies, Mr. Senghore showed REAP a rice hull stove that had been introduced from other areas in Western Africa and replicated at NARI. Unfortunately, this stove achieved limited success because the design of the stove permits excessive oxygen during combustion, restricting its efficiency. It is also used almost twice as much material as the MTS, resulting in a price more than double that of the MTS. NARI representatives were very impressed at both the efficiency, design, simplicity and low cost of the MTS. They were eager to begin testing and demonstrations, as well as to discuss the development of a stove production program in the future. Currently, investigations are being performed on the combustion efficiency of the MTS using rice hull combined with other available bio-residues such as millet husk and peanut shells.

3.2 Exposure in Canada: October 1-19, 2003

Table 4: Canadian Exposure: October 1-19, 2003

Project Activities, Indicators and Outputs

<i>Activities</i>	<i>Indicators/Outputs</i>
-------------------	---------------------------

Canadian Farming Systems and Training Methods	<ul style="list-style-type: none"> • The exposure of the NATC to the production systems and organizational activities of the Ecological Farmers Association of Ontario (EFAO), including participation in a farmers field day and visits to individual ecological farms. • Visit by NATC staff to on-farm corn breeding program for low input farming • Visit to the Ecological Farming Library at McGill University.
Public Engagement	<ul style="list-style-type: none"> • The presentation by NATC representative at McGill University • Visit by NATC representative to the CIDA offices in Ottawa. • Exposure of NATC representative to members of REAP’s Board of Directors

To promote mutual learning and sharing, the executive director of the NATC was to visit Canada to gain an understanding of development efforts in ecological farming, both in Canada and internationally. Unfortunately, due to the denial of Visa’s to travel to Canada, both Mr. Jobe of NATC and Mr. Kebbeh (Executive Director of VATG) were unable to come and complete this portion of the exploratory phase. However, links with the Canadian Embassy in Dakar, Senegal, have been made and preparations have been made for future visits. While overseas during the exploratory mission, REAP-Canada staff also made a conscious effort to relate their experiences working with Canadian farmers organizations such as the Ecological Farmers Association of Ontario (EFAO) and their experience with ecological farms and existing training and extension approaches used in Canada.

Additionally, through the overseas visits of two REAP-Canada staff in August of 2003, and the subsequent 6-month placement of one Canadian overseas intern at each organization, the basis for a solid partnership has been established. The Canadian interns continue to build upon the partners exposure to REAP-Canada’s experience working with farmers groups in developing countries. The partners have made strong commitments both to build project activities that promote sustainable agriculture and community development in the surrounding communities and to learn and develop together. Each organization brings to the table unique achievements and areas of specialization that will advance the others and bring about positive advances in the international development community.

In the future, REAP-Canada will continue to apply for travel visas for the partners to visit Canada. REAP is part of the Canadian Environmental Network (CEN) and other associations which often host conferences and events where public engagement opportunities exist. REAP’s office location on the Macdonald campus of McGill University provides an ideal location to increase awareness of the project to the university community and to introduce students to the field of sustainable development. In the future it is hoped that representatives from the Gambia will give a seminar at McGill University to students and professionals who are interested in ecological farming and/or international development. It is also anticipated they would be able to visit the CIDA offices in Ottawa to engage in a dialog with project officers involved in development initiatives in West Africa.

4.0. Problems Encountered, Lessons Learned and Outcomes

The Executive Director of NATC, Mr. Badarra Jobe was to visit Canada to gain an exposure to the ecological farming development experience of REAP-Canada. Unfortunately, Mr. Jobe's travel visa to Canada was denied and he was unable to complete this portion of the exploratory phase. Mr. Kebbeh, Executive Director of VATG, was also subsequently denied when he applied. Project partners learned not to expect Visa arrangements will be certain. As a result, partners were challenged to establish a strong partnership through improved communication when it was available and through other means such as the deployment of Canadian interns to Gambian organizations. In the future project partners will create alternate schemes to ensure project objectives will be completed despite such limitations. However, links with the Canadian Embassy in Dakar, Senegal, have been made and preparations have been made for future visits. While overseas during the exploratory mission, REAP-Canada staff also made a conscious effort to relate their experiences working with Canadian farmers organizations such as the Ecological Farmers Association of Ontario (EFAO) and their experience with ecological farms and existing training and extension approaches used in Canada.

When REAP-Canada staff visited the offices of the partners in the Gambia, some major problems were also observed in communications, including an erratic power supply and irregular computer and e-mail access. Village Aid had no electricity and the gasoline generator providing power to the office was expensive to operate and unreliable. The availability of computers was also limited. NATC has no direct phone line and no e-mail at the training center. This lack of facilities increased the difficulty in effective communication between the partners, with the REAP interns or project staff frequently being required to spend two days of travel to Banjul to ensure communications with Canada. In the future we expect this to improve with the investments in solar panels for Village Aid and the upgrading of the telecommunications at NATC.

During the rainy season when there are frequent flash floods and downpours, road travel can also a problem. The road network in the NBD and CRD can be rapidly affected and quickly turn to mud, with the roads even becoming impassible. As well public transit is limited to mainly horse drawn vehicles for travel off the main road. Travel by REAP staff, interns or local project staff will have to be safe and well planned in advance, with emergency procedures in place as necessary.

Some of the main outcomes of the GAAEV Project Exploratory Phase are as follows:

- Development of solid partnership founded on the common goals of reducing poverty and improving agro-ecological conditions in rural areas, and a commitment to achieving this in participatory methods
- Deepened understanding for project proponents of the needs of small farmers in this region and existing development strategies used by NATC, VATG, NARI and other NGOs and government agencies and opportunities to increase the impact of the programming.

- The primary agricultural and ecological problems affecting rural communities in the Gambia
- Identification of methods to develop local partnership networks and to expand the impact of current training efforts within farming communities.
- Improved understanding of how appropriate tools may be of use in development initiatives to complement sustainable agriculture practices.
- Multi-lateral support by all proponents for project development using the Agro-Ecological Village development model as a framework
- Identification of beneficiary communities
- Possible opportunities identified to introduce the Mayon Turbo Stove as means to help reduce the overuse of charcoal in the region of West Africa through the utilization of rice hull and other bio-residues
- A better understanding gained by REAP on the role that farmer-to-farmer technology transfer can play in farming communities in the Gambia, and how to encourage the development of ecological production systems and trial farms promoting on-farm research for vegetables, grains, legumes, rice and sugarcane in a productive and participatory manner that will empower local communities.

ANNEX 1: FINANCIAL REPORT GAAEV Project

Canadian NGO: Resource Efficient Agricultural Production (REAP)-Canada

Budget Period : 01/07/2003 to 31/12/2003

Project Title: The Gambia Agro-ecological Village Development Project

Fiscal Year: 2003-2004

Country: The Gambia

EXPENSES			REVENUES		
			Cash Contribution		In-kind contribution
ITEM	Budget Amount	Spent to Date	ESDP	REAP-Canada	REAP-Canada
DIRECT PROJECT COSTS TO SOUTHERN ENGO					
SOUTHERN NGO STAFF					
Project Manager (30 days@ \$25/day)	750	750	750		
Project Officer (30 days @ \$20/ day)	600	600	600		
Materials and Supplies	2600	2648	2648		
Travel and Living in Gambia	550	550	550		
Communications	2000	2000	2000		
TOTAL	6500	6548	6548		
DIRECT PROJECT COST TO NORTHERN ENGO					
<i>REAP CANADA STAFF</i>					
C. Ho Lem, 20 days@ \$200	4000	4000			4000
R. Samson, 15 days @ \$200	3000	3000			3000
Int'l flights @ \$3000	6000	5948	5948		
Travel and Living in Gambia	900	919	919		
Travel and Living in Canada	550	535	535		
Project Administration (14%)	2100	2100	1050		1050
TOTAL	16550	16502	8452		8050
GRAND TOTAL	23050	23050	15000		8050

Budget remarks:

Due to the unexpected refusal for a travel visa for Mr. Badarra Jobe to Canada on a partnership mission, the funds allocated for travel in Canada in the initial budget were requested to be reallocated in November 2003. This was done with an emphasis on supporting activities that will support the future partnership.

ANNEX 2: GAAEV Project RBM Performance Framework

CPB PROGRAM-PROJECT PLANNING SHEET

Program-Project Title: The Gambia Agro-Ecological Village Development Project (GAAEV)

Program-Project #: _____

CPB Partner: Resource Efficient Agricultural Production (REAP)-Canada

Division & Section: Environment and Sustainable Development Program **CIDA Officer:** _____

START: July 2003 END: December 2003	PRIORITIES: <ul style="list-style-type: none"> • Basic human needs • Women in development • The environment • Capacity building for southern communities and organizations • Benefits to Canada and engagement of the Canadian public 	BRANCH RESULT(S): Holistic community development, improvement of ecological agriculture systems and increased food reliance and self-sufficiency in rural villages in The Gambia.	COUNTRY: The Gambia, North Bank Division
Total Budget: \$C 23,050 CIDA Contribution: \$C 15,000		OBJECTIVES: Gambian (NATC) and Canadian (REAP) partners increase understanding of international development strategies and technologies that may aid in their efforts at community training and capacity building in ecological agriculture in The Gambia.	GOAL(S): Partners determine appropriateness of potential partnership between REAP-Canada and the NATC, or other appropriate Gambian community development organizations.
ACTIVITIES	EXPECTED OUTPUTS	EXPECTED OUTCOMES	EXPECTED IMPACT(S)
1. Two-day training on Agro-Ecological Villages. 2. Workshop/on-farm visits on Gambian farming systems improvement for food security. 3. NATC Exposure to tropical food security and self-	1. Increased understanding of Agro-Ecological Village development model in Gambian communities/NGOs. 2. Increased Canadian understanding of Gambian plant materials and farming systems improvement efforts. 3. Increased NATC understanding of Canadian/tropical systems plant materials and farming systems improvement. 4. Increased NATC understanding of Canadian participatory farmer-to-farmer training programs. 5. Increased Canadian Public Engagement in Gambian Issues.	1. Improve developmental approaches used both in the Gambia and in Canada. 2. Advance the partners understanding of ecological farming systems in The Gambia. 3. Increase information/technology transfer between The Gambia and Canada. 4. Increased public engagement both in Canada and in The Gambia.	To establish a partnership between REAP and the NATC to provide development strategies and technologies that may aid in their efforts at community training and capacity building in ecological agriculture, potentially through the development of Agro-Ecological Villages in The Gambia.
PERFORMANCE INDICATORS			

<p>sufficiency projects through visits to low-input on-farm breeding programs and ecological farms.</p> <p>4. Exposure of NATC to production systems and organizational activities of the Ecological Farmers Association of Ontario (EFAO) and participation in farmer field-day.</p> <p>5. Presentation by NATC at McGill University.</p>	<ol style="list-style-type: none"> 1. Participants at two-day training in the Gambia on Agro-Ecological Villages. 2. Number of attendees at farming systems workshop. REAP reporting on farms visited. 3. NATC visits to on-farm breeding programs and ecological farms. 4. NATC visit with Ecological Farmers Association of Ontario (EFAO) and participation in farmer field-day. 5. Successful presentation by NATC at McGill University. 	<ol style="list-style-type: none"> 1. Partners adopt improvements or new approaches to ecological farming systems development in The Gambia. 2. Increased research documentation, field-data and observations, S.A. training module and appro-tech transfer between The Gambia and Canada. 3. Number of people attending public engagement activities in Canada and in The Gambia. 	<p>Engaged discourse between REAP-Canada, the NATC and local communities to assess appropriateness of long-term partnership and applicability of Agro-Ecological Village Sustainable Community Development Model in the NRD, The Gambia.</p>
	ACTUAL OUTPUTS	ACTUAL OUTCOMES	ACTUAL IMPACT(S)
	<ol style="list-style-type: none"> 1. Increased understanding of Agro-Ecological Village development model in Gambian communities/NGOs evidenced by a total of 28 participants in the AEV training. 2. Increased Canadian understanding of Gambian plant materials and farming systems improvement efforts through field visits to local community farms and gardens and 18 attendees at food security workshop. 3. Visits did not occur due to inability to access Canadian visa. However, increased NATC understanding of Canadian/ tropical systems plant materials and farming systems improvement. 4. Visit did not occur due to inability to access Canadian visa. However, increased NATC understanding of Canadian participatory farmer-to-farmer training programs through dialogue with REAP-Canada. 5. Presentation did not occur due to inability to access Canadian visa. However, some Canadian public engagement occurring due to ongoing REAP-Canada outreach activities in Canada 	<ol style="list-style-type: none"> 1. Activities to improve developmental approaches used both in the Gambia and in Canada thought the join development of project activities to occur in the Gambia under the AEV framework. 2. The partners understanding of ecological farming systems in The Gambia has been advanced through discussions on rainy season vegetable production, ECO-rice and farm diversification, and activities to implement such developments such as farmer to farmer trainings and learning farms. 3. Increased information/technology transfer between The Gambia and Canada through the AEV and Food Security workshops held in the Gambia and the establishment of a partnership to improve information transfer between the countries in the future. 4. Public Engagement in Gambia increased as a result of community meetings and presentations to members of the Gambian Development and Government community. Unable to account for attendees in Canadian public engagement in Gambian issues. However, Canadian public engagement in Gambian issues increased through exposure to REAP materials and activities including newsletters, articles, website, speaking engagements, training sessions and others. 	<p>A partnership has been establish between REAP and the NATC to provide development strategies and technologies that may aid in their efforts at community training and capacity building in ecological agriculture through the framework of the Agro-Ecological Village Development Model in The Gambia. The partnership has also expanded to include Village Aid-The Gambia to provide a higher level of community development expertise to complement the agricultural and development experience of NATC and REAP Canada.</p> <p>The partners have made strong commitments both to build project activities that promote sustainable agriculture and community development in the surrounding communities and to learn and develop from each other. Each organization brings to the table unique achievements and areas of specialization that will advance the others and bring about positive advances in the international development community.</p>

VARIANCES

All variances were caused by an inability to access Canadian visa by Gambian partners. However effects were minimized as Canadian and Gambian partners both strove to learn about each others organizations and activities as much as possible. Increased exposure to REAP-Canada and Canadian and international farming development approaches for Gambian partners was increased by the current positioning of REAP Canadian interns at each organization for a 6 month period.

REACH

The project will benefit the rural Gambian communities in the North Bank and Central River Divisions by the establishment of activities advancing their community capacity in ecological farming and social issues. The project will also benefit the immediate project stakeholders, including REAP-Canada, the NATC, and other local community organizations and development organizations through the transfer of information, experiences and technologies and the formation of a partnership for future development cooperation in The Gambia. Finally, the project will mutually benefit the Canadian and Gambian public through public engagement activities and increased efforts at securing rural self-sufficiency on a global scale.

RISKS & ASSUMPTIONS

Assumptions:

Project proponents and local communities are willing and open-minded to establishing a long-term partnership with Canadian NGO
Project proponents have background in ecological agriculture, and interest and capacity to expand its development

Risks:

Food shortage and famine would occur, reducing participants interest in programming and focus on short-term needs of addressing hunger
Governmental programming/infrastructure could misconstrue the needs of the project beneficiaries

LESSONS LEARNED

- Project partners learned not to expect Visa arrangements will be certain. As a result, partners were challenged to establish a strong partnership through improved communication when it was available and through other means such as the deployment of Canadian interns to Gambian organizations. In the future project partners will create alternate schemes to ensure project objectives will be completed despite such limitations.

Appendix 1:

The Gambia Agro-Ecological Village Development Project GAAEV Introductory Rapid Rural Appraisal (RRA)

Prepared by Abdulai Jallow (VATG Program Officer) and Labib El-Ali (Overseas Intern)

Purpose

To prepare for the first phase of the Gambia Agro-Ecological Village (GAAEV) Development Project, a Rapid Rural Appraisal was delivered to select appropriate beneficiaries for the first phase of the project from the pool of villages within the areas where VATG and NATC operate.

The RRA as such serves several functions:

1. Information will be provided that will allow NATC, VATG and REAP-Canada to select the communities most appropriate for the first phase of GAAEV programming.
2. The overseas interns representing REAP-Canada will officially meet the potential beneficiaries and observe the village area(s)/landscape(s).
3. REAP-Canada and the project will be briefly introduced to key individuals among the beneficiary villages within the three clusters.

Guiding Principles

1. Efficient use of staff and village coordinator's time, especially while in direct contact with the community.
2. To be gender inclusive, avoid provoking serious gender discussions at this stage of the project, and to ensure communities are aware that the AEV will support both female and male farmers.
3. Efficient use of recent information already on hand at Village Aid.
4. Inclusion of individuals (male and female) from the relevant sectors of community life for the Focus Group Discussion (FGD) (e.g. farmers, gardeners, village heads, organizational leaders, as well common village residents).
5. Clear guidelines for village coordinators to complete the attached tables.
6. Research and FGD components to be completed before the end of November, 2003.

Structure

Due to the difficulty in organizing villagers during the fasting month and the brief period following, the deteriorating road conditions and unreliable transport, the time spent interacting with villagers under a Focus Group Discussion (FGD) becomes very limited and thus extremely valuable. After identifying the required information and ranking those areas of interest in terms of relevance to the project, a distinction was immediately made between that information which is available on record at VATG and that which can only adequately be accessed from the villages themselves through FGDs. The first part of the RRA will be conducted through research in collaboration with village coordinators. These individuals have been closely involved with the selected villages for at least the past two years and are in regular contact with their respective communities. They will tabulate the required data (see the attached tables for format) and it will be reviewed with them by either the Program Officer or the overseas intern. Becoming familiar with villagers themselves and gauging their response from questions aimed at assessing their suitability for implementing AEV activities was the guiding theme while composing the second part, being the FGD component of the RRA. The FGD is structured to generate lively discussion and story sharing in an agricultural context, in order to develop an understanding of the communities and specific villagers attitudes towards farming and food security.

Tabular Component Guidelines

Tables were constructed to assist village coordinators in organizing the required information efficiently. The following guidelines will assist all personnel involved in the RRA in completing the tables as well as interpreting the contents when after compilation.

1. Crop Production Table

<i>Purpose</i>	To generate brief profiles for the crops currently under production
Notes	Remember the group different varieties under one crop name to avoid extensive repetition of profiles, adding brief notes wherever possible to identify data specific to the variety.
Heading	<i>Data Description</i>
Crop	General crop name, possibly covering several varieties
Season	Dry, rainy, harvest, or any other specific annual period
Yields	Relative yield (in any measure) per area of land
Inputs	Fertilizers, manure, etc.
Processing	Any process by which raw harvest is processed for storage
Storage	Storage time and conditions
Seeds	Seed generation, purchase, storage, etc.
Varieties	Most common varieties
Weeds/Pests	Vulnerability to weeds/pests, which type, management, etc.

2. Informal Organizations Table

<i>Purpose</i>	To identify those key informal organizations and institutions Which facilitate activities and communication within the community.
Notes	Formal institutions (e.g. government extensions, development agencies, etc.) are exempt from this section. The focus is solely on those intra-community groups that operate around the key sectors at the community level.
Heading	<i>Data Description</i>
Organization	Organization title, affiliation to any other organizations
How Old	Time of operation
Function	Aspect of community which are targeted and how the organization functions to facilitate those activities
Membership	Exclusivity, membership requirements, target beneficiaries, etc.
Leadership	Organizational heads, management and supervision structure(s)
Meetings	Regular meetings, when, where, why
Effectiveness	Community perception of the organizations capacity to fulfill its mandate and its impact in the community so far

3. Income Generating Activities Table

Purpose	To identify the income generating sectors and their contribution to family income.
Notes	To expedite the RRA process, the profile of livestock production will fall under this section only.
Heading	Data Description
Activity	Title and organizational/institutional affiliation
Origin	Local/extraneous source, history of development, trainings, etc.
Membership	Participants and beneficiaries
Inputs	Monetary, resources, etc.
Time Commitment	Time required on a relevant scale (daily, weekly, etc.) and frequency of activity, as well as seasonality
Profitability	A measure of the income generated from the activity in relation to the time and effort involved, a comparison as with activities, including agricultural related and time.
Marketability	A brief description of the market for product locally and outside the region.

Focus Group Discussion

REAP's Story

- Where we're from
- Who are our ancestors
- What we do and where we do it

Village Story

- How old is this village?
- Who were the first settlers, the original ancestors?
- How did they start this place?
- What are some of the major events in village history until today?

Farm Management

- How did this year's harvest compare to last year's?
- Why the difference?
- How has the landscape changed in the last twenty to thirty years?
- Why the change?
- Can you identify some cultural/traditional farming practices?
- What are the advantages/disadvantages of those traditional practices?
- What recent innovations/technologies have been developed/adopted?
- What are the advantages/disadvantages of these recent technologies?
- How are your farms:
 - a) irrigated
 - b) fertilized
 - c) fallowed
 - d) managed for weeds/pests
 - e) fertilized

Food Security

- How well were family/compound nutritional needs met this year?
- Was there a change from previous years? If so, why?
- What steps are taken to ensure that food requirements will be met year round?
- What are the obstacles to ensuring year round food security?

Innovative Individuals

- Whose farms do well/better on a consistent basis?
- Why is that the case?
- Who are the individuals in the village employing or developing new methods to manage their farms, aside from input, chemicals, etc.?
- What kind of training did they receive if any?
- How are these farmers recognized by the community?
- Are they willing to share ideas with other farmers?
- What kinds of avenues are available for farmers to share knowledge locally?

Village Suitability

- Class system within community, interactions with other villages
- Participation in community gardening/other community activities

Appendix 2: Agro-Ecological Village Framework

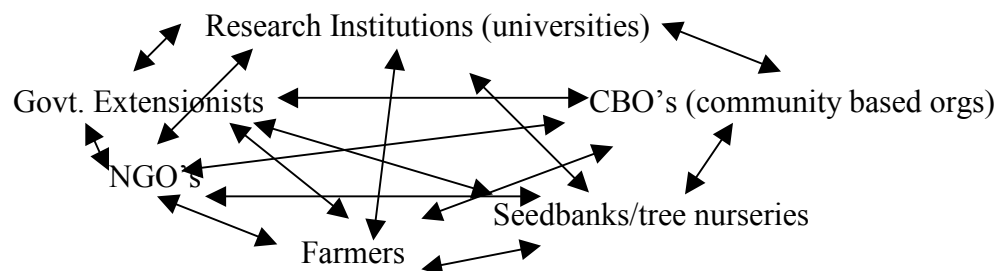
Objective: Increased economic and social well-being of marginalized farmers, with a focus on women, while protecting and enhancing the natural resource base using participatory methods.

1.) Baseline Data Gathering

- Socio-economic /agro-ecological survey (indicators developed by local communities, results shared back to communities)
- PRA
- Government, census information.
- Internet research
- Networking with other NGO's, associations, etc.

2.) Institutional Building Process

- Participatory Action Planning (PAP) (stemming from the PRA process) for project activities etc.
- Strengthening farmers organizations (community organizations in the Philippines)
- Community organizations (venn diagrams can be an excellent tool, fostering/supporting linkages as below etc.)



3.) Capacity Building and Training

a) Training

- First liners
- Farmer technical groups/kitchen table discussions
- Format: location, situationers, timing, schedule etc.

b) Training of Farmer trainers

- Selection of farmer trainers
- Guidelines for effective farmer trainers

c) Training Modules

- Assess local situation
- Introduction to principals of Ecological Farming
- Ladderized Training, customized to local needs

d) Farm Planning

- Resource mapping
- Basic planning (such as crop rotations) followed by more in-depth 5-10 yr planning (including holistic farm management)
- On the Job Coaching (OJC)

e) Gender planning

- Omnipresent and universal in planning and implementing activities
- Engagement of women: men in project activities (trainings etc) 40:60

4.) Field Level Implementation

Learning farms: *working farm “in progress” (ie: not perfect) that is realistic and replicable by real local farmers*

- Adaptability trials (new varieties/crops, drought/water/salt resistant)
- Demonstration of (EFS) Ecological Farming Systems (contouring, composting, intercropping, multiple cropping, green manures, soil fertility management etc.)
- Soil and water conservation (windbreaks, checkdams, drip irrigation)
- Seed bank (living gene bank) and plant material multiplication (tree nursery)
- Breeding
- Appro-tech (farm equipment, on-farm energy management)
- Livestock (new varieties, sustainable fodder production)
- Weatherproofing farms (reducing vulnerability to vagaries of the weather)

5.) Communication and Public Awareness/Engagement

International:

- Articles
- Presentations/conferences
- Website
- Exchanges
- Video

National:

- Public outreach, education and networking

Appendix 3: Food Security Workshop

Food Footprint

The Food Footprint Analysis is a simple and effective tool that provides a relevant and clear representation of household food consumption. It is a simplified adaptation of the Ecological Footprint Analysis developed by Wackernagel and Reese and introduced in *Our Ecological Footprint: Reducing Human Impact On the Earth*. The Food Footprint quantifies the amount of land required to grow the main agricultural components of household food requirements. Land production rations (e.g. tonnes/ha) are defined for each crop and multiplied by annual consumption amounts (kg) to give the land requirements for each food component. The Food Footprint for each crop is then summed to give the total land area that is required to feed a household or an individual *sustainably*, meaning that the same plot of land must be available for production the following year for the same crop.

The Food Footprint is therefore extremely effective when assessing household food security. In order to secure basic dietary requirements, households must first assess existing land usage, looking at the planted area and the associated agriculture returns. The Food Footprint is also applied as a planning tool, encouraging farmers to reduce household Food Footprints while more efficiently managing farm land to produce higher and sustainable yields. When food energy content is also considered, Food Footprints can be transformed into energy efficiencies, encouraging farmers to seek out methods of increasing energy returns while reducing their household Food Footprints.

Objectives:

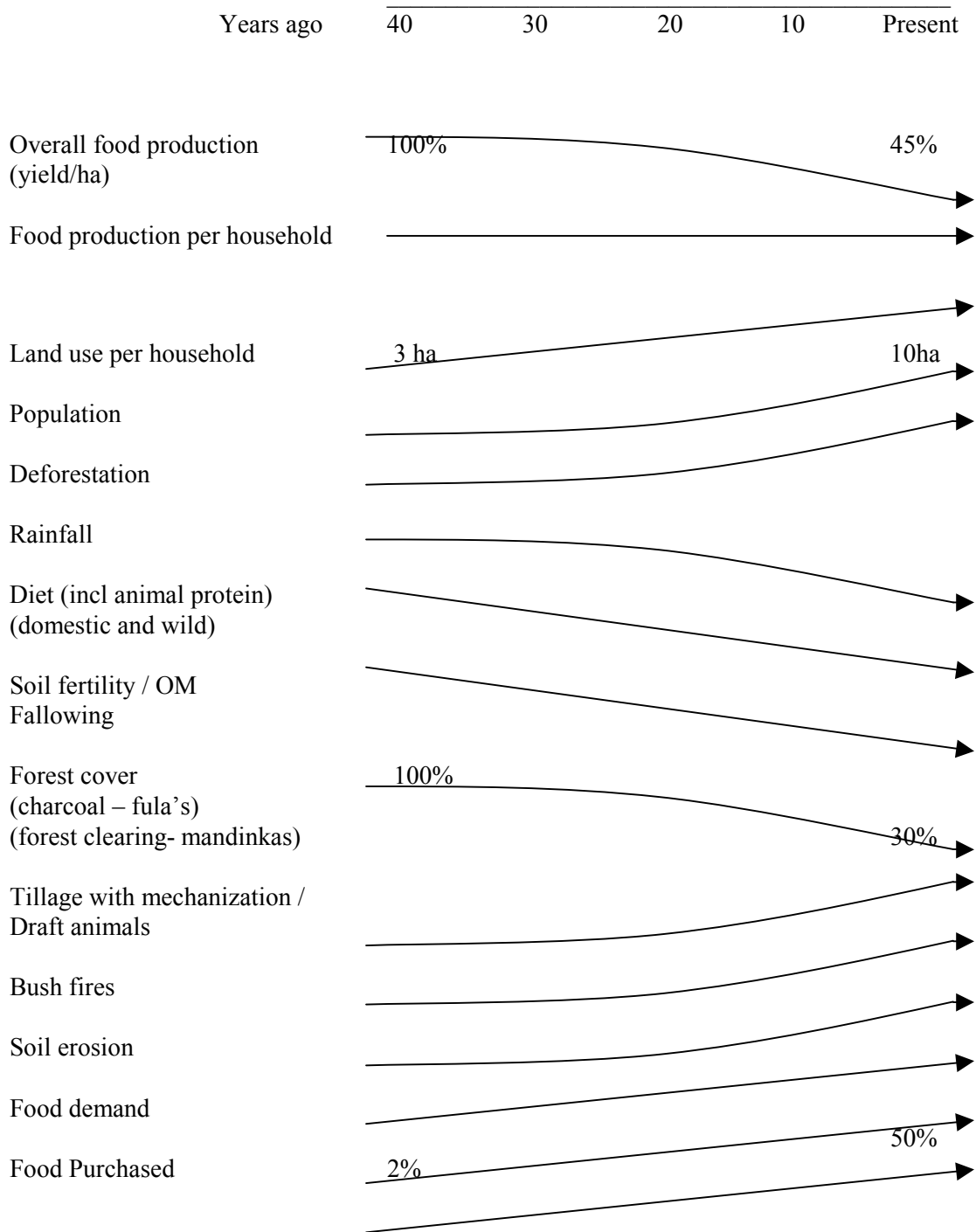
1. Improve understanding of local food production and eating
2. Identify strategies for improving food security and quality of diet

Activities:

1. Historical timeline; hunger history
2. Food security and gaps
 - food preferences / what foods they commonly eat
 - What foods are they purchasing?
3. What makes a good diet?
 - food expenditures
 - healthiest foods
4. Seasonal food production calendars
5. Food footprint
 - quantities of foods produced and consumed
 - land areas required
6. Strategies for food security and quality of diet

1. Historical timeline; hunger history

Over the last 40 years what has been the observed trend for:

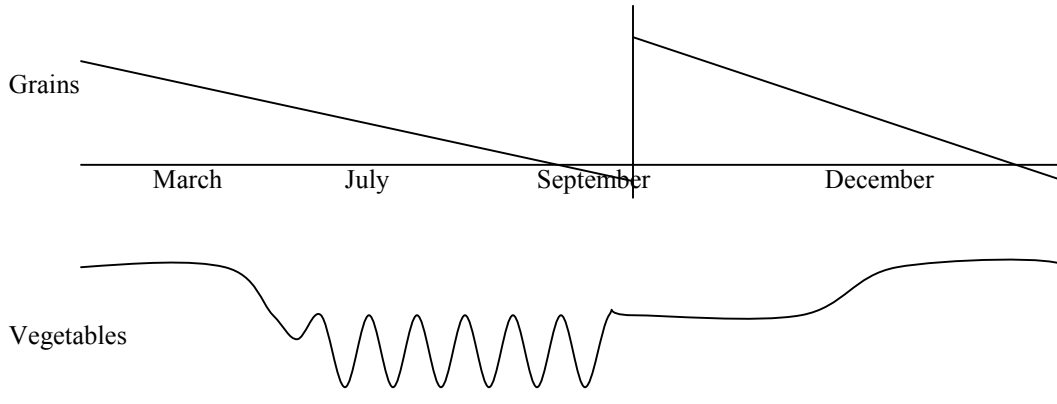


Imports

- 50 years ago the family farm produced 50 bundles of cous and now only 35. 50 years ago there were 25 family members in the household, now there are only 10.
- Now all the land has been cultivated/arable except salty areas with about 3% non- used. In 1980 about 90% of the land was cultivated.
- Before many foods were produced such as eggplant, millet, beans, oil. Now produce mainly millet and buy the others.
- Now improved taste. Perhaps due to increased availability of seasonings.
- Amount of food consumed/person is about the same at 10kg.day,
- A lack of trees causes most of the problems including drought, which causes many problems including a lack of trees.
- Rains come from July to September. In the olden days they used to come in June.

- Jan-September buy rice
- Millet harvested in September

Harvest



- *Nov- March increase in vegetables*
- *Least available March-Nov*
- *March-Aug vegetables very small amounts available 0-50%*

- During the wet season people eat other things, focused labor on productive crops. They eat cous, maize, groundnut, millet, rice, cereals, cash crops. (**reduce labour so that people have more energy to focus on gardening)
- during the dry season there is high heat and pests
- during the rainy season they don't know how to choose the right varieties for gardens, don't want to take the risk rather than focus on the cash crops.
- There is a seasonal gap in vegetable production that is worse than 40 years ago. This is because people would rather focus on the cash crops.
- Women are focused on wetland rice production during the rainy season (**dry season rice so there is increased time during the day for vegetables *** men assisting with vegetables)

2. Food security and gaps

What foods do you prefer?

Preference	Crops/staple foods	Proteins
<i>Really like</i>	Millet Rice	Meat, oil, fish
<i>Good</i>	Maize	
<i>Ok</i> <i>(subsidize, additives)</i>	Cassava Sweet potato, squash	

Notes:

- Eat cassava and maize together
- Like to have a balanced diet
- Eat rice during the day, cous at night
- Children like rice more than millet
- Now people want more meat and oil, preferred but recognized that there are health implications.

What foods do you purchase?

1. Meat is the number one purchase (~1kg/month, 75% purchased)
 2. Grains:
 - Cous 25% purchased
 - Peanuts 5%
 - Cowpeas 90%
 - Rice 75%
 - Maize 30%
 3. Vegetables, purchase 60%
 4. Fish purchase 95%
- Meat and livestock are kept as a status symbol. They are an indicator of wealth. People sell an animal only when they rare sick have a visitor etc. People can be protein starved but will still keep 5-10 goats/sheep. If you kill a goat, it's a feast all at once, they sell it so that they can buy it back in intervals. Goats are also used for traditional rituals and important occasions like naming ceremonies, weddings, etc.

What foods do you sell?

1. Groundnuts, but do keep some for seeds and home consumption as an “additive”
2. Cous, small amounts in exchange for oil, etc.
3. Maize

3. What makes a good diet?

A) Cous and Mboom (Sauce with beans, peanuts, morenga leaves [miracle tree] because:

- Filling, makes you strong delicious
- Proteins and carbohydrates, some fat
- Fibre, no constipation

- Affordable
- Eat in the evening, milk for the baby
- Body building
- Vitamins and minerals

B) Porridge with groundnut powder, a common food that people eat which is balanced but not as healthy.

Diet Problems:

- Vitamins, minerals are lost in the cooking process
- Lack of proteins
- Overcook foods, reduce value

*include more fresh greens in the diet and raw foods (could increase health risk b/c of increased exposure to tropical parasites) -> trade off between nutrition vs. sickness. Diet already includes fresh greens such as leaves, etc. but should include more that are just slightly cooked.

healthy soil → healthy food → healthy people

Seasonal food production calendars

<u>Food Crops</u>	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Peanuts						O	O	O	O	O	O	
Millet					O	O	O	O	O			
Maize							O	O	O	O		
Rice						O	O	O	O	O		
Beans						O	O	O	O	O		
Cassava	O							O	O	O	O	O
Sweet Potato								O	O	O	O	
Hunger rice*					O	O	O	O	O	O		
Squash								O	O	O		
Watermelon									O	O	O	O
<u>Vegetables</u>												
Okra		O	O	O	O	O	O	O	O	O		
Tomatoes	0	O	O	0	o	o	o	o	o	o	0	0
Eggplant	0	O	O	0	o	o	o	o	o	O	O	0
Bitter tomato	0	O	O	0	o	o	o	o	o	O	O	0
Hot pepper	0	O	O	O	O	O	0	o	o	O	O	0
Onions	0	0	O	O	O	O	o	o	o	0	0	o
Cabbage	O	O	O	O	0							0
Lettuce	O	O	O	O	0	o	o				o	0

O = Most production (*note: some crops have not made this categorical distinction)

0 = Some production

o = Little production

*Hunger rice is a wild grain

4. Food footprint

How much land to grow your food?

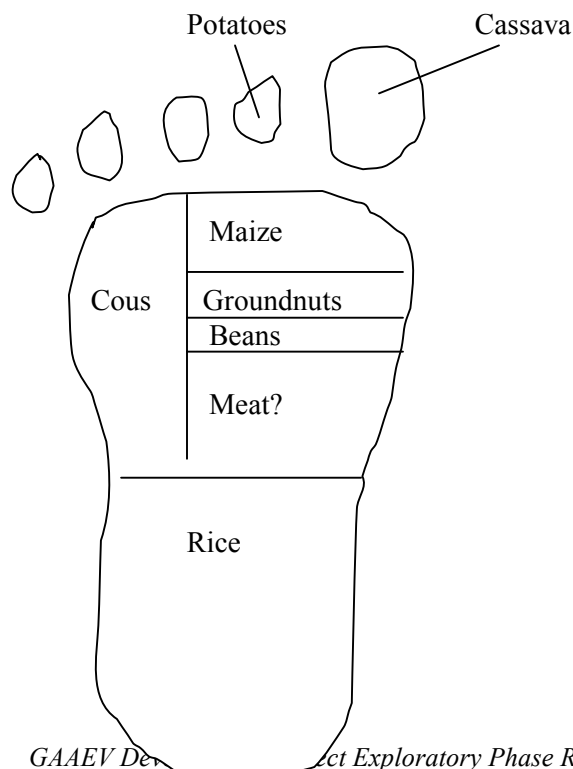
Some people use more area to grow the food they eat. Other people produce the same amount of food (food energy, protein etc.) from a smaller amount of land. This all depends on the type of crops you are growing for foods. To make more room available for other (cash producing?) crops, it is best to reduce the total amount of land used for food production by strategically using efficient cropping systems and crops → Farm planning!

1st: determine current consumption and healthy meal plan

2nd: determine needed amounts of land

How much food for an average household? (*Note: there are an average of 8 people per household)

Crop	A Amount eaten per year (kg)	B Yield (kg /ha)	C = A x B Amount of land needed (ha)
Cous	700 (2kg/day)	1000	0.7
Rice	500 (1kg/day)	1250	2.5
Maize	200	1500	0.15
Peanuts	120	2000	0.05
Beans (cowpeas)	50	800-1000	0.07
Meat	50	?	?
Cassava	25	4000	0.01
Potatoes	36	3000	0.01
Other	50-100	-	-
Total			3.5



Recommendations:

1. Focus on improvement of rice production and varieties
2. Focus on improvement of millet
3. vegetables, focus on wet season
4. Increase vegetables in the wet season, decrease dependency on rice

Advantages from following recommendations:

- Decreased rice need,
- Reduced footprint -> less land used
- Savings on purchases
- Improved diet
- Decreased importation

5. Key factors driving Food Production

- 1. Improving Good genetics**
- 2. Farm planning and management (trainings)**
- 3. Improving Soil quality**
- 4. Good weather**

Divide farmers into two groups: one focus on grain crops, the other focus on vegetables.

Grains

- Rice
- Cous
- Groundnut
- Maize
- Beans
- Hungry rice (findy)

1. Rice:

- Growing mostly short season varieties, some NERICA, IRRI and Rock 5
- Now multiplying with open pollinated seeds
- Pekin –more salt tolerant
- Rock 5 – nearby the dyke, can grow for a longer time – 4 months
- Upland rice grown usually the pekin variety
- Were varieties that could ratoon for 3 years, but that was about 20 years ago and now they have lost those varieties. The water levels have lowered since then and they are no

longer able to grow. The ratooning varieties need more water and the farmers get discouraged.

- They have also realized they can grow rice without water in upland areas

Problems:

- Birds
- Lack of salt tolerance
- Genetics: Varieties available:

Commonly used rice varieties and their benefits/drawbacks

	Pecking	IR22	Sesebong	Suntutong Muso	Barra Fita	Kebba Cessay
Salt tolerance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Early maturing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do well w/o chemical fertilizers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tillering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does not lodge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ratooning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pest resistant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yield	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Taste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drought tolerance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use in field production (%)	5 (seed is scarce)	-	50	30	-	-

2. Vegetables

Ways to improve vegetable production:

- Educate farmers on vegetable production
- Sensitize farmers to diversity
- Preservation techniques
- Soil management
- Crop rotation techniques
- Increase awareness
- Infrastructure
- Harvest unexploited plants (weeds)
- Good roads and better market stalls
- Increase soil fertility
- Prevent pests and disease using appro-tech tools
- Identify wet and dry season crops and genetic improvement for adaptability

- Change traditions and customary beliefs towards primitive farming techniques
- Protection from stray animals buy using live-fence
- Topology (low and high land) agriculture
- Systematic marketing strategies
- Farmer to farmer visits to exchange ideas
- Introduce and help farmer to adopt high farming techniques on vegetable production
- Organic

APPENDIX 4: Learning Farms

Learning farms combine several approaches to introducing sustainable farming to communities:

- Adaptability trials (new varieties/crops, drought/water/salt resistant)
- Demonstration of (EFS) Ecological Farming Systems (contouring, composting, intercropping, multiple cropping, green manures, soil fertility management etc.)
- Soil and water conservation (windbreaks, checkdams, drip irrigation)
- Seed bank (living gene bank) and plant material multiplication (tree nursery)
- Breeding
- Appro-tech (farm equipment, on-farm energy management)
- Livestock (new varieties, sustainable fodder production)
- Weatherproofing farms (reducing vulnerability to vagaries of the weather)

The farms are coordinated by farmer trainers or other interested farmers that are willing to share their experiences and ideas with others. In this way, the farmer trainers can spend time working on maintaining and improving their own individual farms while strongly supporting community initiatives and the sharing of information and plant materials in the community. This also establishes a stronger connection between the test trials and the ecological trainings, and is ideal for farm visits and “out of class” field trips.

Learning farms can broaden development efforts by integrating several key ideas as techniques on one “regular” farm. They also avoid the concept of a terminal “Model Farm” with one model farmer, by placing the farmer and the farm at the center of learning in the community. Farmers feel the terminology “Learning Farm” is progressive as it does not create an image that a farm is “fully developed or perfect” or encourage arrogance in farmers. Farmers want to put the emphasis on farmer trainers creating a small commercial farm that is sustainable without outside support so that the development process can be feasibly replicated by other farmers.

The learning approach encourages the exchange and progression of ideas and the constant observation and assessment by the farmer trainer and others in the community. This process is greatly stimulates brainstorming sessions which can occur when the community gets together at the farm or during cross site visits that occur when from farmer trainers and farmers come from other communities. Overall this concept is important for the development of farmer-led ecological farming systems research and extension as it enables scarce resources for rural development to be used as effectively as possible.

Appendix 5: Mayon Turbo Stove Workshop REAP-Canada

REAP-Canada was pleased to host a workshop last August 14th, 2003, Facilitated by the Social Development Fund (SDF) at the accommodating TANGO venue. In attendance were key members of the development community in the Gambia including Government staff, NGO members, CBO members, research institutes and farmer representatives. The purpose of the workshop was to introduce these individuals to the efforts of REAP-Canada in other developing countries including the Agro-ecological Village and in particular the Mayon Turbo Stove, and to identify and gain a deeper understanding of development efforts and opportunities in the Gambia. Also an outcome was to further the connections between these organizations and individuals and strengthen the ties in the NGO community.

Below is a listing of all the attendees from the August 14th meeting, their organization and contact information:

REAP-CANADA WORKSHOP LIST OF PARTICIPANTS		
Name	Agency	Address
Maurice Phillips	GAMSPIRIT Ltd.	495887 geri@gamspirit.com
Dr. Ebrima Kunjo	NARI	483112 ekunjo@qanet.gm
Tabora Touray	ISRA	370418 TTouray R.com Hmil
Famara P. Canuteh	NAWFA	202504/943945 Famara@hotmail.com
Elina Cole	VSO	495409 Elina.Cole@vsint.org
Zainab Cham	WISDOM	390536
Baboucarr Mbye	Stay-Green Foundation	Staygreenfoundation@hotmail.com 946991
Alfusainey Dampha	AFET	957213/484611
Ebrima Y. Sanneh	GAFNA	496741/496745
Alpha O. Jallow	WARD	372949/392781 gamward@hotmail.com
Yusupha Kujabi	Social Enterprise Gambia	985328 sengambia Ltd@yahoo.com
Badara Jobe	NATC	905749 njawara nate@hotmail.com
Alieu Senghore	NARI (AEU)	472137 nari@qanet.gm
Musa Suso	NARI	Musasuso@yahoo.com 923949
Kebba AK Sise	ADWAC	720106 keesise@yahoo.com
Mam Ngoneh Jallow	Gam-Solar	460189
Neneh Susoho	Gam-Solar	460189/923536
Isatou Jallow	Forut-Gambia	497746/720169
Alhagi S. Cham	TANGO (Association of all NGO's in the Gambia)	936835/390525 alhagikadi@hotmail.com
Kebba N. Sima	SDF	Kngumbo@hotmail.com 916973/494329
Sheriff T.J Sanyang	National Farmers Platform (umbrella group for farmers)	906740/485013 Ssanyang@hotmail.com
Hubert Morris	Village Aid, The Gambia	748045 villageaid@qanet.gm
Abdou St Saho	TARUD, Gunjur	486313/12