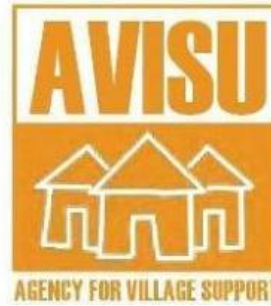




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*CIDA Project S063735*  
**GAINING GROUND IN GAMBIA & SENEGAL**  
**END OF PROJECT REPORT**

# GAINING GROUND IN GAMBIA AND SENEGAL (GGIGS) PROJECT

*CIDA Project S063736*

**End of Project Report – August 2008 – September 2011**

*Presented to*

**Voluntary Sector Projects and Education Directorate  
Canadian Partnership Branch  
Canadian International Development Agency**

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## *Acronyms*

ACA – Animal Care Auxileries  
AEV – Agro-Ecological Village  
APROFES – Association Pour la Promotion de la Femme Sénégalaise  
AVISU – Agency Village Support  
CAP – Community Action Plans  
CBO- Community Based Organizations  
CO – Community Organizer  
CIDA – Canadian International Development Agency  
CRD – Central River Division  
FA – Farmer Associations  
FT – Farmer Trainer  
FTF – Farmer to Farmer  
GGIGS – Gaining Ground in Gambia and Senegal  
GHG – Green House Gas  
IITA – International Institute for Tropical Agricultural  
ISRA – Institut Sénégalais de Recherches Agricoles  
IYIP – International Youth Internship Program  
MDG – Millennium Development Goals  
MTS – Mayon Turbo Stove  
NARI – Gambian National Agricultural Research Institute  
NATC – Njawara Agricultural Training Centre  
NBD – North Bank Division  
NERICA – NEw RICE for Africa  
NSAC – Nova Scotia Agricultural College  
OACC – Organic Agriculture Centre of Canada  
PAP – Project Action Planning  
PIT – Project Implementation Team  
PMC – Project Management Committee  
PM&E – Project Monitoring and Evaluation  
PMT – Project Management Team  
PRA – Participatory Rural Appraisal  
PTT – Project Technical Team  
REAP-Canada – Resource Efficient Agricultural Production-Canada  
USAID – United States Agency for International Development  
VDC – Village Development Committee

## Executive Summary

This document is the final project report for the Gaining Ground in Gambia and Senegal (GGIGS) project. The GGIGS project was initiated in August 2008 with funding from CIDA and was completed at the end of September, 2011. Project partners included: REAP-Canada, the Njawara Agricultural Training Centre (NATC), Agency Village Support - The Gambia (AVISU), The Gambia National Agricultural Research Institute (NARI), and the *Association pour la Promotion de la Femme Sénégalaise* (APROFES). The main goal of the GGIGS project was to accelerate the adoption of ecological agriculture and soil conservation practices by impoverished peoples in rural communities of the Gambia and Senegal in order to counter the trend of land degradation and desertification in the Gambia and Senegal.

Over the 38-month project, partners implemented the Agro-Ecological Village (AEV) approach in 10 communities across Gambia and Senegal. The project encouraged the adoption of ecological agriculture and livestock management to increase soil conservation and agricultural productivity and included farmer-to-farmer training of 40 farmer trainers and 500 local farmers, as well as the development of learning farms and community based organizations (CBOs) in each community.

Through the GGIGS project, the AEV approach has proven to be a logical evolution for rural development programming in Gambia and Senegal that provides a more holistic and comprehensive approach for nurturing sustainable community development. The project goal and objectives were achieved through five core activities including:

1. Gender Analysis, Community Planning & Organization
2. Farmer-to-Farmer (FTF) Training Program
3. Participatory Research and Implementation of Ecological Agriculture and Soil Conservation Practices on Learning Farms
4. Local Organic Fertilizer Production Program
5. Research & Development of Improved Household Stoves

Through the implementation of this comprehensive bottom-up project, GGIGS was extremely successful in achieving its goals as is substantiated through the project implementation and progress indicators. Key progress was achieved overall in economic, environmental, agricultural, social and gender domains. Notable achievements of this project include:

- Increased social infrastructure and community organization through the establishment and strengthening of CBOs skills for strategic marketing, income generation, community action planning and evaluation practices for activities at the village-level.
- Significant gender development through training, capacity-building, and equity in decision-making into all project activities have encouraged and institutionalized the important role of women in the home, the farm and the community; There has been an increased presence of women in key positions within VDC (i.e. secretary/ treasurer/community organization roles) and increased participation of women with community affairs and organization;
- 40 farmer trainers (21F/19M) were trained on ecological methods using ecological farming training modules adapted for the region. These farmer trainers have subsequently conducted farmer training sessions for a total of 3084 farmers (2422F/665M).
- 40 learning farms established and using improved agricultural and soil conservation practices. The number of farmers using improved agricultural and soil conservation practices *tripled* over the course of the project. Almost all farmers in GGIGS communities are, at a minimum, now applying manure and producing compost for their farms, doing crop rotation with nitrogen-fixing varieties and mixed/alley cropping, seed saving, farm planning and diversification, and pest/disease management.
- To date, more than 20,000 kg of Bokashi organic fertilizer has been produced and used in the beneficiary communities.
- A diversity of new improved crops and vegetable seeds (over 5 tonnes in total) were multiplied each year, beginning in 2009, and redistributed for the following growing season. Farmers have

reported significant improvements to year-round food availability from the high-yielding and early maturing varieties of groundnut, millet, rice and cowpea.

- Farmers have experienced increased diversity and productivity on their farms since the beginning of the project. Net yield increases were seen for staple crops (+ 29%) and vegetables (+10%).
- 160% net increase in farmers reporting increased access to improved farm materials such as seeds, organic fertilizers, fencing, livestock, and compost over the GGIGS project.
- 56% increase to overall average incomes of the villages over the three-year project, and within this the average female incomes increased by 76%.
- Distribution and use of improved cookstoves surpassed its expectations of 250 with over 400 improved stoves produced and distributed to date with significant improvements to household smoke and a 33% decrease in annual fuel-wood consumption by villages.
- Furthermore, agroforestry activities established by the GGIGS project have not only increased long-term income generation and fodder availability in project villages but have increased tree biodiversity with over 1700 shelterbelt and fruit tree species distributed.

The GGIGS project's success was guided by several monitoring and evaluation mechanisms embedded within it, and throughout the process many lessons were learned and the results were incorporated to re-align the outcome. Notable lessons learned include the challenge of introducing, establishing, and scaling-up Bokashi fertilizer production; difficulties in finding appropriately-qualified personnel for several of the technical positions on-site; incorporating all of the communities' training needs into training programs due to a lack of technical feasibility (e.g. literacy training in addition to all of the agricultural training offered); and establishing a livestock breeding and management program in light of climatic and breeding obstacles. Despite these challenges, the GGIGS project has had appreciable success and has met its objectives. It has left a legacy of well developed, highly productive and sustainable communities and has worked to establish a comprehensive sustainability mechanism in order to ensure the project communities' continue to excel with agro-ecological, socio-economic, and gender development beyond the duration of the project.

## ***1. Project Proponents***

### **Resource Efficient Agricultural Production (R.E.A.P.) - Canada**

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REAP - Canada is an independent, not-for-profit research and development organization with over 20 years experience working with farmers, scientists and the private sector to develop and commercialize sustainable agricultural solutions for fuel, fibre and food needs. As one of the first organizations in Canada to develop participatory on-farm research and plant breeding programs, REAP-Canada has become one of the world's leading organizations in working with communities to develop agro-ecological farming systems, climate change and renewable energy options in a participatory manner. REAP-Canada has been involved in rural development and the AEV model in China, the Philippines and the Gambia for over 10 years with projects sponsored by CIDA, USAID, the government of China and the Shell Foundation. This has involved constructively working with at least eight in-country partner organizations, various levels of government, many Community-Based Organizations (CBO) and thousands of farmers in these countries. It has also involved managing over 1.5 million dollars of project funds from international donors. REAP-Canada also has significant technical experience around sustainable agriculture, particularly in plant material development in tropical agricultural areas and in transferring innovative techniques to new areas as well as between beneficiary groups in different countries. Materials and practices of notable importance transferred by REAP include: ECO-rice (seeds and cultivation practices), Bokashi organic fertilizer production, NERICA rice, as well as numerous high yielding, drought-tolerant vegetables, crops, and perennial grasses.



### **Njawara Agricultural Training Centre (NATC)**

*Njawara Village, North Bank Division, The Gambia*

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NATC is a non-profit community based organization established by farmers in the village of Njawara to support sustainable natural resource management as a means to limit rural-urban migration away from their village. Since 1990, NATC has focused on training farmers in sustainable agriculture and agroforestry techniques to improve local farm production and profitability. They are now one of the leaders in agricultural development in the country and region, and their relevant participatory research and training program allows them direct, on-the-ground access to beneficiaries and community members alike. Their flagship project is a Farming System Training Program (FSTP) for short-term adult training and long-term youth training where farmers spend up to nine months in training at the institute. Their 6-hectare site includes training areas and demonstrations for nursery establishment, soil fertility, live fencing, gardening, orchard and woodlot management and small animal husbandry. Based on the success they have had in their own village, NATC is now focusing on expanding their outreach and capacity in developing farmer-to-farmer training networks and advanced localized training modules, thereby extending their knowledge into other rural communities. NATC has 12 full-time and 13 part time staff members (approximately 40% women) and annual revenues of approximately \$150,000 CAD. NATC has a strong record in project management and financial reporting to external donor agencies such as Concern Universal and Oxfam-America and is able to effectively monitor and facilitate activities on the ground. Financial reporting with international donors including CIDA has previously been handled proficiently and transparently and they have a finance director and full-time bookkeeper on staff. Their 12-member board is composed of 50% women and includes village elders and members of the Village Development Committee (VDC) to ensure their accountability to the local community.

### **Agency Village Support - The Gambia (AVISU)**

*(previously known as Village Aid-The Gambia or VATG)*

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AVISU (formerly Village Aid-The Gambia) is the only Gambian NGO working in the impoverished Lower Saloum District of the Central River Division (CRD). For the past 20 years, AVISU has targeted the development of marginalized communities through integrated, self-supporting programs such as literacy circles, micro-financing and agricultural/gender development including community gardens, bringing much-needed support to the remote and habitually under-funded region of the CRD. AVISU has a strong record in project management, implementation and financial reporting to international donor agencies (including Village Aid-UK, Concern Universal and the Catholic Relief Services), and has extensive experience in community-based development, beneficiary empowerment, agricultural development and literacy training. They have an active board, a director and deputy director, and a number of specialized staff including a coordinator for their agricultural programs and a financial manager. They are also heavily involved in the surrounding region, employing four enterprise development officers, six agricultural extension agents and 30 literacy facilitators from beneficiary villages. AVISU's mandate is to support the most marginalized rural people in the Gambia, particularly women, in becoming active citizens in their communities and in creating sustainable well-being and a viable future.

### **The Gambia National Agricultural Research Institute (NARI)**

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NARI is the Gambia's principal agricultural research and development institute focusing on the advancement of livestock, horticulture, agronomy and agroforestry systems. NARI has extensive experience in project implementation, record keeping and financial reporting and their staff includes the



leading agricultural and natural resource scientists in the country. NARI is presently developing the Participatory Learning and Action Research (PLAR) approach for plant improvement in the Gambia, already introducing improved varieties of rice, corn and cassava. Through years of research and extension, NARI has developed an understanding of and resources to support plant material improvements in rural communities in the Gambia. NARI has been working closely with REAP, NATC and AVISU in improving the plant material base and building the technical capacity of farmers in ecological methods since 2003. The involvement of NARI's agricultural scientists in the partnership has provided an additional level of technical capacity building to the Farmer-to-Farmer training networks.

### **Association pour la promotion de la femme sénégalaise (APROFES)**

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For the past 20 years, APROFES has been working village by village, creating networks to increase the knowledge, information and skills of rural villagers in Senegal. Their programs involve working with village elders and any existing organizations on agriculture, forestry, fuel-efficient stove production and micro-credit programs. Beginning as a community association in 1987, APROFES was certified as an NGO in 2002 and now has 15 full-time employees, a number of part-time employees, an active board, over 40 volunteers and a training centre with accommodation and office facilities. They have annual revenues of approximately \$450,000 CAD from a multitude of international aid organizations and are audited annually. They have established financial procedures, a secretary/bookkeeper and an accountant. They offer training programs to increase the capacity of village members, women and organizations on topics such as administration and financial management, project management, agriculture/ gardening, composting, agroforestry, marketing, participatory planning and evaluations, and fuel efficient stoves. They also work to establish/strengthen credit unions to revolve funds in communities. APROFES has organized, trained, and built capacity in over 60 rural communities in their region, the sub-prefecture of Ndiédié in Senegal. Their current project villages are organised into 5 networks of 10-15 villages sharing information, trainings, micro-financing support and income generation.

## ***2. Poverty and Environmental Degradation in the Gambia and Senegal***

The majority of the Gambia and Senegal is located in the “Sudan savanna” agro-ecological zone of West Africa, generally receiving between 550-900 mm rainfall annually. This region is subject to severe wind and water erosion and topsoil loss. Chemical deterioration of the soil is also occurring, resulting in nutrient and organic matter loss, salinization, acidification and pollution. The main causes of soil degradation in Africa are human-induced and include overgrazing (49%), agricultural mismanagement (24%), deforestation (14%), and over-exploitation of natural resources (13%)<sup>1</sup>. Extensive mono-cropping of peanuts and mismanagement of peanut straw (sold off the farm as hay) contributes to this decline in soil fertility. Forests are being heavily denuded by the growing need for fuelwood, dry-season livestock forage harvesting, farmland development and the burning of agricultural fields. Free-range livestock has also significantly degraded local soils. With few materials available to fence-in roaming animals, small trees and shrubs are subject to continual browsing and rarely gain maturity. In the region, this has led to extreme soil erosion and a reduction in agricultural productivity as well as carbon returned to soil.

In the project target area, this rapid decline in soil fertility has had a serious effect on the local population. Nearly 75% of the rural population is comprised of subsistence farmers, and food security has become a major issue. The time before harvest when stockpiles of food have dwindled is now known as the “hungry season.” Combined with increasing population growth, this has led to many young people leaving their villages in search of livelihood opportunities in urban areas. Many communities are also near the river Gambia and low in elevation. With a changing climate and the possibility of intensifying droughts and floods, these communities are facing the serious risk of losing their most fertile farmland.

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<sup>1</sup> Oldeman, L. R., Hakkeling, R. T. A., and Sombroek, W. G. 2001. World map of the status of human-induced soil degradation: an explanatory Note (revised edition) UNEP and ISRIC: Wageningen.

Recommended management practices to build up soil fertility include those promoted by ecological farming. Ecological agriculture focuses on maximizing soil health as a means of sustaining and enhancing agricultural productivity using organic, localized inputs and knowledge of the local ecology. Improving soil promotes greater biodiversity, higher plant nutrient content, higher resistance to disease and pests, reduced soil erosion, increased soil water-holding capacity and less vulnerability to drought. Ecological agriculture is a low-cost, environmentally sustainable option for small-scale, impoverished farmers. Unfortunately, national government plans or regional policies do not promote such practices at this time.

### ***3. Project Background***

CIDA funded REAP-Canada's initial exploratory project to establish a partnership with NATC in 2003. In 2004, REAP-Canada initiated two pilot Agro-Ecological Village (AEV) projects in five communities in the Gambia in cooperation with local partners NATC, AVISU and NARI. These one-year projects were supported through CIDA's Agriculture and Environment and Sustainable Development (ESDP) programs. These projects successfully pioneered the initial phases of AEV development, including training local farmer trainers, co-developing training modules, establishing learning farms, and initiating plant material improvement programs. Although these pilot projects were only one year in length (compared with the full AEV cycle of three years), they convinced REAP-Canada and local partners that the AEV approach was an effective way to support rural development. The partners also had confidence because the program proved very successful in the Philippines and China (supported previously by CIDA and Shell Foundation, respectively). The strategies found to be most successful in the two pilot project evaluations have been incorporated into the GGIGS project design. They include:

- Crop material improvement program focusing on peanuts, rice, sesame, maize and millet;
- Dry season vegetable crop introduction (yam, tomato, beans, squash, watermelon);
- Ecological FTF training program and Learning Farm development on the topics of intercropping, crop rotation, manure management, composting and soil improvement, food processing, pest control, food security and marketing;
- Goat, sheep and donkey breeding program (donkeys are needed to transport manure, Bokashi and compost to fields);
- Live fencing, agroforestry and fodder for livestock control;
- Revolving community seedbank (based on materials tested on learning farms);
- Improved stoves and small farm implements including garden tools, ploughs and seeders;
- Support of farmers' associations (all pilot associations remain active today);
- Bokashi organic fertilizer production

REAP-Canada also coordinated a successful CIDA International Youth Internship Program (IYIP) in the Gambia from 2003-2006, sending eight Canadian interns to support AEV programming with NATC and AVISU. This program has been continued with REAP-Canada currently receiving funding to send an additional 24 Canadian interns to the Gambia and Senegal from 2010-2013.

### ***4. Project Goals and Objectives, Activities, and Expected Results***

#### Project Purpose

The purpose of the Gaining Ground in Gambia and Senegal (GGIGS) Project is to accelerate the adoption of ecological agriculture and soil conservation practices by impoverished peoples in rural communities.

#### Project Goal

The goal of GGIGS is to counter the trend in land degradation and desertification occurring in agrarian communities in the Gambia and Senegal.

The project's focus on short, medium, and long term soil rehabilitation has created a foundation for these communities to maintain sustainable livelihoods from agriculture into the future. By increasing soil fertility through improving soil conservation and management, agricultural productivity also improves. This is meant to help reduce poverty, enhance food-security and minimize the impacts of climate change through the adaptation of plant materials to the increasing variability in climactic conditions. To meet these objectives, there were five central activities: baseline data gathering, institutional building process, capacity building and training, field implementation, and communications & public engagement [see section 6.0.1 or project RBM in Annex 1 for more explicit detail on project activities / outcomes].

## ***5. Project Beneficiaries***

The direct beneficiaries of GGIGS project are farmers living in the North Bank Division (NBD) and the Central River Division (CRD) of the Gambia and the Ndiedieng subprefecture (Kaolack District) of Senegal. These are very impoverished areas with household incomes well below national averages. The villages and small towns in these regions 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 employment opportunities. The agricultural and environmental systems in these areas are continuously deteriorating. Rice production is hampered by recurring incidents of pest damage from hippos, monkeys, birds, and insects, which are reported to be on the rise. Increased salinization within proximity of the river contributes to the reduced rice productivity and increased environmental contamination witnessed over the past few years, rendering large tracts of land unsuitable for cultivation. Most importantly however, the local communities are lacking in the social infrastructure required to advance sustainable farming. A lack of coordination between development efforts and difficulties with transportation has proven to be a major impediment for previous agricultural development initiatives.

The project beneficiary villages from the Lower Badibu District in the NBD are Torro Tayam, Panneh Ba, Samba Musa, Suwareh Kunda, Gunjurr and Banni. The beneficiary villages from Lower Saloum in the CRD are Gunkuru Tukolor and Jahawur Tukolor. The beneficiary villages in Senegal are Tchisse Mass and El hadj Mabeye, in the rural communities of Ndiedieng and Keur Soce, respectively. From these 10 villages, the direct project beneficiaries include:

- 40 local farmers, who were enlisted as farmer trainers (50% females), and benefitted from intensive training in improved agricultural practices. This increased farm production, improved local understanding of soil conservation, and increased farmers' ability to critically evaluate the economic, social and environmental situation in their communities;
- 500 local farmers (50% females), who participated in the FTF training program. Like the trainers, these farmers have benefitted from training topics identified by the communities themselves, along with learning strategies to assist in increasing farm production and sustainability, soil conservation and fertility management. Trainings on value-added processing, marketing and food security were also provided;
- 40 local farmers (50% females), who participated in the learning farm program and benefitted from increased access to various types of agricultural inputs including improved vegetable seeds and crop and fodder materials selected for higher yield, resistance to drought and/or pests, ease of cultivation and market value. Farmers have been able to access inputs including organic fertilizers, improved varieties of livestock for breeding and draft use, and fodder/fencing materials. These inputs have increased local agricultural production and food security and decreased manual labour requirements;
- 10 CBOs/women's groups/farmers associations have been strengthened and/or formed;
- 250 local women who have accessed improved cooking stoves to reduce their labour burden and exposure to harmful pollutants;

Overall, the project has directly benefitted more than 5,100 people in the beneficiary villages (Table 1). This includes approximately 4,053 people (340 households; 55% female) from the

project villages in the Lower Badibu district, 454 people (35 families; 51% female) in the project communities in Lower Saloum, and 624 people (52 families; 52% female) in the project communities in Senegal. These people have had the opportunity to participate in CBOs, as well as gain increased access to sustainable agriculture/soil conservation trainings through word-of-mouth, observation of their neighbours/families yards and fields, and direct participation in the training program. They have also gained access to improved seeds, plant materials, livestock, and farm inputs being multiplied / produced in their villages and experienced improved food security. Over the long-term, increased farm income from improved agricultural productivity and diversification allows farmers to reinvest capital into newly identified opportunities.

*Table 1. GGIGS Project Beneficiary Villages and Populations*

| Country              | Region                 | Village                | Female Population | Total Population |
|----------------------|------------------------|------------------------|-------------------|------------------|
| The Gambia           | Lower Badibu           | Bani                   | 642               | 1,172            |
|                      |                        | Gunjurr                | 645               | 1,104            |
|                      |                        | Panneh Ba              | 80                | 146              |
|                      |                        | Samba Musa             | 46                | 94               |
|                      |                        | Suwareh Kunda          | 654               | 1,164            |
|                      |                        | Torro Tayam            | 182               | 373              |
|                      |                        | <b>Total (Baddibu)</b> | <b>2,249</b>      | <b>4,053</b>     |
|                      | Lower Saloum           | Gunkuru Tukolor        | 126               | 233              |
|                      |                        | Jahawur Tukolor        | 107               | 221              |
|                      |                        | <b>Total (Saloum)</b>  | <b>233</b>        | <b>454</b>       |
| Senegal              | Ndiedieng              | Thisse Nasse           | 174               | 316              |
|                      |                        | Keur Soce              | 150               | 308              |
|                      | <b>Total (Senegal)</b> | <b>324</b>             | <b>624</b>        |                  |
| <b>Project Total</b> |                        |                        | <b>2,806</b>      | <b>5,131</b>     |

The project will indirectly benefit over 55,000 farmers and family members in villages in the local districts where the project will be implemented. This includes 14,391 people (1,199 households, 53% women) in the Lower Badibu District, 14,179 people (1,182 households, 51% women) in the Lower Saloum District, and approximately 27,000 people (93 villages, 58% women) in the sub-prefecture of Ndiedieng in Senegal. Like the farmers from the project target villages, the indirect beneficiaries will have increased access to the improved seeds and plant materials being multiplied and preserved in the beneficiary villages and benefit from increases in popular knowledge through the wide-spread adoption of improved practices. Indirect beneficiaries will also receive regional benefits from implementation of the GGIGS project, including improved approaches to food security and nutrition, increased income generation and market opportunities in district areas, improved microclimate (from improved soil quality, water availability, biodiversity), and improved communication between regional farmers, research institutes and the national government. The wide-spread adoption of improved plant materials and agricultural practices can stabilize production, improve farm water-use efficiency, minimize erosion and assist in the overall regional adaptation to climate change. Additionally, the introduction of improved cooking stoves is anticipated to expand to the capital regions, replacing fossil fuels and greatly improving air quality.

## **6. Workplan for Project Activities**

### **6.0.1. Agro-Ecological Village Development Model**

To reverse the environmental degradation process, the GGIGS project has worked together with partners and rural communities using the Agro-Ecological Village (AEV) methodology. Used since 1999 by REAP-Canada, the AEV emphasizes participatory planning and training as well as on-farm research and evaluation to encourage the adoption of ecological agriculture and soil conservation measures. The AEV development strategy significantly improves agricultural production, well-being, and income, and is an

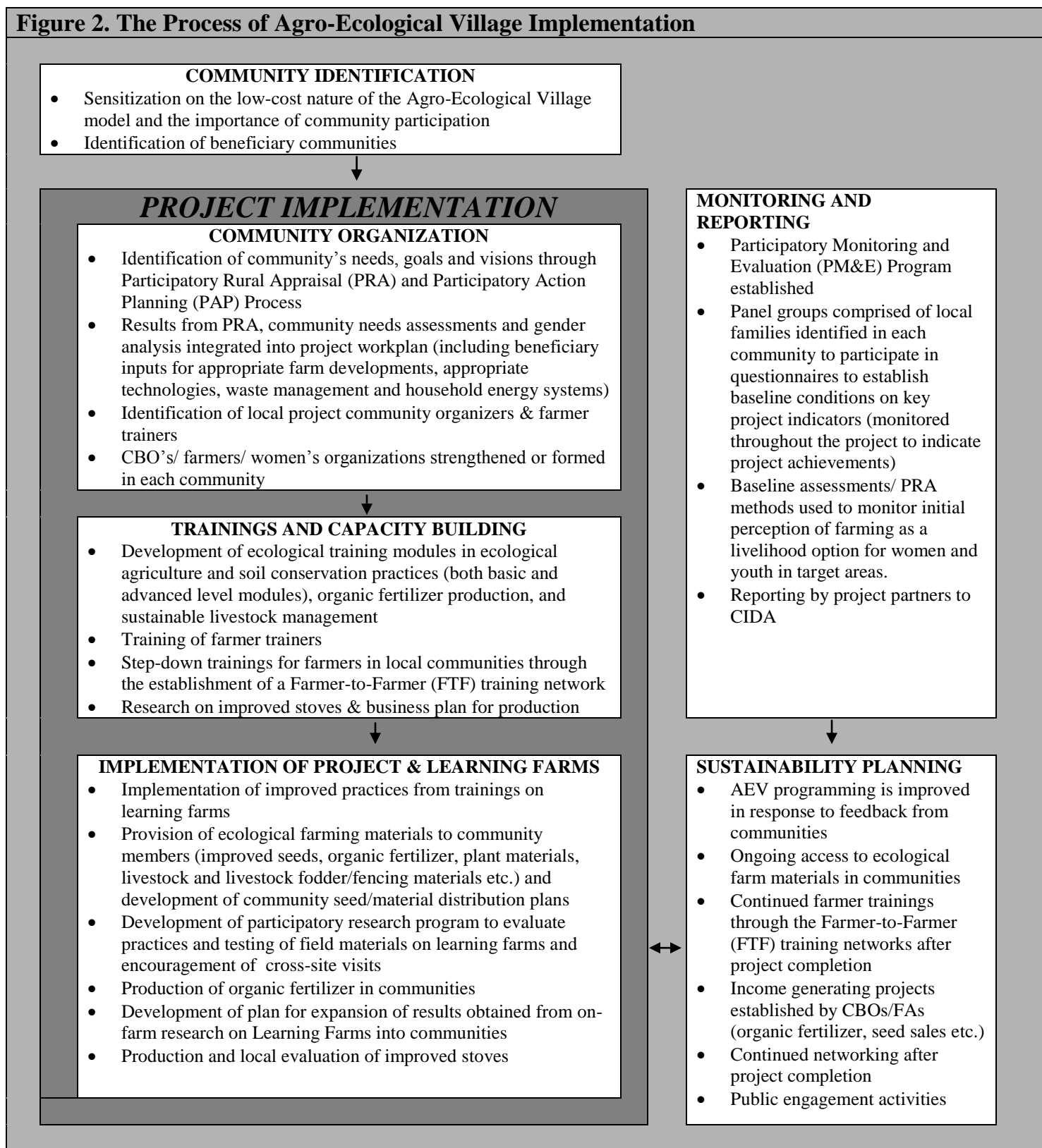
effective way of achieving results at low cost. Through five main activities, the AEV innovatively incorporates community input and planning into each step, ensuring that activities are flexible and revolve around their interests and opportunities [Figure 1]. The AEV also uses a framework that promotes long-term development of the social, ecological, economic and technical infrastructure of communities, with results extending into outlying communities, national institutions and governments.



**Figure 1: The 5 Major Activities of Agro-Ecological Village Development**

There are five basic steps in the implementation of the AEV Development Model: community identification, community organization, farm planning process, implementation of plans, and performance measurement. This is overviewed in Figure 2 on the following page.

**Figure 2. The Process of Agro-Ecological Village Implementation**



## 6.1. Activity 1 - Gender analysis, Community Planning & Organization

The implementation of the AEV model begins with establishing a foundation through an organizational development process in each project village. This process is initiated by collecting baseline information, conducting a gender analysis and undertaking a Participatory Rural Appraisal (PRA) with farmers in each beneficiary community at the beginning of the project. Following this the needs, goals, and long-term vision of community members are formalized and incorporated into the project workplan through a Participatory Action Planning (PAP) process, which directs the implementation of the AEV model, including the farmer training and learning farm program. Community Organizers (COs) are hired and Community Based Organizations (CBOs)/Farmers Associations (FAs) are enlisted to assist with implementing the project. The role of the COs and FAs is to be actively involved in coordinating the development and execution of Community Action Plans (CAPs) on trainer's trainings, farmers' training sessions and training networks, learning farm development and distribution, and recording and planning for access to ecological farm materials (seeds, plant materials, organic fertilizer, livestock and fodder/fencing etc.).

*Activity Objective:* To improve the capacity of men and women farmers in local communities to access ecological farming materials (*seeds, plant materials, livestock fodder/fencing*)

*Overall Progress:* Over 500 farmers participated in the PRA and project planning phase with direct input into the design and activities of the project. A total of 10 CBOs were established and /or strengthened through management and marketing trainings. The main income generation activities taken on by CBOs to date include: a) seed multiplication and marketing, b) animal husbandry and semi-intensive livestock management, and c) vegetable gardening. Other income-generating strategies included tree nurseries (Torro Tayam & Panneh Ba), making monthly contributions to a shared farmers fund (Suwareh Kunda and Banni), saving money from the sale of cash crops (Panneh Ba) and group farming (Samba Musu). All sub-activities are reported on in the following RBM table:

| <b>Results Based Monitoring Table August 2008 – September 2011</b>                          |   |   |
|---|---|---|
| <b>Activity 1 - Gender analysis, Community Planning &amp; Organization</b>                  |   |   |
| <b>SUB-ACTIVITY</b>   | <b>INDICATORS</b>   | <b>ACTUAL ACHIEVEMENTS AND VARIANCES</b>  |
| <b>6.1.1. Community data / information collection</b>                                       |   |   |
| Coordination, collection and analysis of baseline data collection, PRA, and gender analysis | Preliminary project sensitizations conducted in the project communities | - This sub-activity was successfully conducted, as originally reported in the 2008 semi-annual report. Community meetings about the project were conducted in each community at the commencement of the project. Conducted by the Gambian Project Coordinator and Project Manager, along with the Canadian Project Manager and Project Agronomist, these meetings officially introduced the project to the villagers, emphasized the participatory nature of the activities, explained the low-cost nature of the project and the contributions that the farmers themselves must make towards it, identified the opportunity of project to establish the social infrastructure required for sustainable livelihood creation, and invited all villagers to participate in the PRA and gender analysis as the project stepping-off point. |



|  |  |  |
|--|--|--|
| <p>Conduct PRAs/gender analysis in all 10 project villages</p>   | <p>Completion of PRA report</p> <p>PRA and data gathering results incorporated into workplan</p> <p>Participatory planning and evaluation practices institutionalized into community activities and organizations</p> <p>Increased skills and confidence in understanding the local economic, social, and agricultural issues that affect beneficiaries and ability to identify emerging opportunities</p> | <p>- This sub-activity was successfully completed. The PRAs in each of the communities were completed through two days of meetings with communities along with additional time spent on field data collection whenever possible. The PRA teams included the PMT and the GGIGS COs and staff from NATC, AVISU, APROFES and NARI. To complete the PRAs on schedule, the PRA team was divided into 2 sub-teams that worked concurrently in different villages.</p> <p>- Participation rates were very high, with almost 500 participants overall, due to the high interest of the villagers in the project. Men, women, village elders and youth, and participants from various ethnic backgrounds were actively involved [see Table 2 for participation summary]. Data collection focused on local economic, social/gender, ecological, and agricultural issues, as well as identifying causes and solutions to land degradation, and establishing consensus on problems, resources and opportunities for other community concerns. The PRA report was completed by the project team and key results were integrated into the planning process, which formed the basis of the project workplan, particularly in terms of focus topics for the farmer trainings and the learning farm, Bokashi, and stove programs (please refer to Annex 5 for a detailed summary of the PRA findings).</p> <p>- By emphasizing their participation in completing the PRA activities, villagers learned valuable skills of how to collect and analyze information that is of interest to them with materials that are locally available.</p> |
| <p>Development, administration and analysis of questionnaire</p> | <p>Panel group formation</p> <p>Development, administration, and analysis of questionnaire</p>   | <p>- In each community, a panel group comprised of 10 local farmers was selected to participate as key respondents during the administration of the annual questionnaires; participants included 50% women and 25% youth [see Table 3 for details on panel group participants]. These panel groups participated in the questionnaires annually to gather socio-economic data from 2008, 2009 and 2010.</p> <p>- The indicators that were monitored included annual farm income (household/M/F), agricultural products and yield (M/F), number of farms/farmers using ecological agricultural/soil conservation practices (M/F), year round food production and availability (M/F), number of women cooking with improved household stoves, household air quality improvements, and household fuel wood consumption.</p> <p>- At the beginning of the project, baseline questionnaires were developed, reviewed and revised to standard and used to collect 2008-2009 data from the panel groups. While collecting 2008-2009 data, many of the COs found the administration requirements of the questionnaires very challenging. It was also discovered that many of the COs had varying interpretations of the questionnaire. To resolve these issues, training was conducted in September 2009 with all COs to review the problem sections of the questionnaire and to brainstorm solutions. Questionnaires were revised to reflect an approach and language that</p>   |

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|  |  | <p>was better understood by both the COs and panel groups.</p> <p>- The second and third rounds of questionnaires have been administered throughout the dry season of 2009/2010 and 2010/2011 respectively. A detailed report on the results of the GGIGS socio-economic surveys has been created and the results are described throughout this report where appropriate [See Annex 6 for a summary, or the full report attached to this report]. Overall, the socio-economic surveys formed a key part of the monitoring structure of the project and successfully tracked changes to the key indicators disaggregated by gender where necessary. For example, the surveys indicate a 56% increase to overall average incomes of the villages over the three-year project and more specifically, average female incomes increased by 76%. This alone is a tremendous achievement and can be attributed to the increased knowledge on ecological agriculture and yields, diversified income sources, increased access to farm inputs and organizational structures encouraged by GGIGS.</p>   |
| <p>Development and ongoing assessment of project gender strategy</p> | <p>Strategies developed and assessed</p> | <p>- This was an ongoing sub-activity that ensured that the project continued to reflect its gender strategy in all steps and actions taken. Through training, capacity building, and integrating equity in decision-making into all project activities, women's important role in the home, on the farm, and in the community has slowly begun to be recognized in the project and overall progress towards bridging the economies and social gender disparities has been made. At the end of the project there was evidence that many of the projects interventions had concrete impacts on the wellbeing of women. For example, many women increased their access to seeds, organic fertilizer, revolving credit schemes (through the CBOs) and livestock throughout the project. They have also gained new knowledge about gardening, marketing their produce and adding value through food processing to vegetables and fruit like mangos, tomatoes and chilli peppers [see photo on right – women making jam]. In addition, the project monitoring and evaluation officer believes that the there were also deeper changes to gender relations throughout the project. He has reported that in many of the village's women now hold key positions within the VDCs, such as secretary and treasurer, through their active engagement with community organization and affairs in the GGIGS project [see section 8 'Gender Equality' for specific details of the project on gender-results].</p> |



| <b>6.1.2. Community Organization / Capacity Building</b>                             |   |   |
|--|---|---|
| Identification of COs in each beneficiary village                                    | Number of COs identified  | - This sub-activity was successfully completed. 10 COs were identified in consultation with the beneficiary villages. There have been several staff updates throughout this past year due to many factors [see section 9 ‘Challenges Encountered & Lessons Learned’]. For an updated summary of all project staff, including the names, genders, and villages of the COs, see Annex 7 at the end of this report.  |
| Identification of existing CBOs, FAs, and women’s groups in each beneficiary village | Number of CBOs, FAs, and women’s groups identified  | <p>- This sub-activity was successfully completed. In each village, the existence and capacity of Community Based Organizations (CBOs), Farmers Associations (FAs), or women’s groups were reviewed during the PRA. It was found that each village had one or more existing institutionalized grassroots organization that was legally recognized by the national state laws, having been registered by either the Attorney General’s Chambers or the Cooperative Registrar’s Office. All villages have also already instituted Village Development Committees (VDCs in Gambia or a <i>Committée Rural</i> in Senegal). A list of these groups, including background information, is provided in Table 4. These groups’ major activities vary from routine farming activities, dry season vegetable production, rearing sheep and poultry, to micro-financing in order to generate income.</p> <p>- The groups, along with the VDCs, were consulted to determine which would be best suited to address the project goals and had experience or interest in agriculture, livestock, and environmental issues. The groups were then directly consulted to determine if they had an interest in participating in the project and actively assisting with the farmer trainings, learning farms, and fertilizer and stove production and distribution. In the instance where more than one group existed in a village, the best suited group was used as the primary contact point for the project. Additionally, in some instances, more than one group was selected, as together the groups could more fully integrate the members of the village than could one group alone.</p> <p>- Due to the GGIGS project intervention, the villages of Tchisse Mass and El Hagie Mabaye received additional support from other development agencies, including from Spain FADOC. The two communities have been able to implement vegetable gardening despite the fact that their water table is more than 30 metres below the ground-surface, with seasonal fluctuation. They were able to acquire land fenced with chain-link wire, a sunk concrete line well, and establish both poultry and breeding programs.</p> |
| Training on community organization & management                                      | <p>10 COs identified and trained</p> <p>Number of CBO trainings held</p> <p>Local CBO’s, women’s groups</p> | <p>- This sub-activity was successfully completed: all of the 10 COs were trained for three days on group and resource management, including report writing. These trainings were important so that COs could adequately support the CBOs for sustainable institutional building. See Table 5 for a summary of all capacity building trainings conducted for COs.</p> <p>- 100 CBO leaders were identified by the communities (10 in each project village) and all of</p>   |

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|  | <p>and/or farmers associations encouraged to develop marketing strategies and revolving credit programs to support income-generation (particularly for women)</p>  | <p>them received capacity building training on resource mobilization (at a local level), record keeping, sustainable management of resources, (this includes monthly meetings, monthly contributions to the group). The support of these programs and the development of marketing strategies were ongoing activities throughout the project.</p> <p>- The main income generation activities taken on by CBOs to date include: a) seed multiplication and marketing, b) animal husbandry and semi-intensive livestock management and c) vegetable gardening. Other strategies mentioned include tree nurseries (Torro Tayam &amp; Panneh Ba), making monthly contributions to a shared farmers fund (Suwareh Kunda and Banni), saving money from the sale of cash crops (Panneh Ba) and group farming (Samba Musu). The women of Tchisse Mass mentioned that they would start doing semi-intensive management of poultry for added income.</p> <p>- Many of the CBOs have been highly successful at selling the produce from communal women's vegetable gardens and selling livestock from the sustainable livestock breeding program. The average income earned from vegetable sales amongst the women's groups in five project villages in the 2010 dry season (Panneh Ba, Torro Tayam, Samba Musu, Banni, and Suwareh Kunda) was 49,172 Dalasi, which is an increase from the average income from 2009 (46,336 Dalasi). See Table 13 for a summary of income earned in each of these communities from dry-season vegetables. These six women's groups have set up revolving credit programs to reinvest the money into supplies and seeds for next year's gardens.</p> <p>- Furthermore, micro-financing (credit facility) has been established in Toro Tayam, Tchisse Mass, El Hadji Mabeye and Panneh Ba. This has improved access to "soft credit" for the beneficiaries. Toro Tayam's revolving fund is D 3,750 and that of El Hadji Mabeye and Tchisse Mass is each 500,000 FCA. The loan period is anywhere for three to six months. Some beneficiaries engage in petty business (such as purchasing and re-selling of condiments) while others use for family needs, such as school fees or medical bills.</p> |
| <p><b>6.1.3. Community Action Planning</b></p> |  |  |
| <p>Community Based Organization (CBO)</p>      | <p>Number of Community Action Plans (CAPs) developed for trainings, learning farms, seeds and livestock materials, Bokashi, stoves</p> <p>Number of community organizing meetings held and number of Community Action Plans (CAPs) developed</p> | <p>- This sub-activity has been successfully completed. Community Action Plans (CAPs) were developed in all project villages as originally reported in the 2009 semi-annual report. On average, each community met twice a month and, such meetings became institutionalized as a way to maintain regular contact among beneficiaries and assuring sustainability in the local management. Throughout the project, CBOs developed and updated annual Community Action Plans (CAP). These CAPs formed the basis of scheduling project activities such as trainings, learning farms, and distribution of seeds and livestock materials in each community.</p> <p>- Throughout the final months of the project (August – September) each CO worked with their respective communities on the sustainability of the CAP and community organization.</p>   |

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|  |  | The benefits of community organizations that were proven throughout the project were reiterated and communities were given additional training on income generating strategies, marketing of their respective focal areas, and the importance of continuing the community action planning process. |
|--|--|--|

**Table 2. PRA Participation Report**

|    | Dates           | Village         | Women               | Men                 | TOTAL      |
|----|-----------------|-----------------|---------------------|---------------------|------------|
| 1  | Aug 18-19, 2008 | Suwareh Kunda   | 32                  | 26                  | 58         |
| 2  | Sept 8–10, 2008 | Panneh Ba       | 20                  | 5                   | 25         |
| 3  | Sept 8–10, 2008 | Toro Tayam      | 20                  | 10                  | 30         |
| 4  | Oct 5-7, 2008   | Gunjur          | 50                  | 15                  | 65         |
| 5  | Oct 5-7, 2008   | Banni           | 45                  | 20                  | 65         |
| 6  | Oct 8-9, 2008   | Samba Musu      | 26                  | 6                   | 32         |
| 7  | Oct 14-16, 2008 | Jahawur Tukulor | 35                  | 10                  | 45         |
| 8  | Oct 17-19, 2008 | Gunkuru Tukulor | 35                  | 15                  | 50         |
| 9  | Oct 23-25, 2008 | El Hagie Mabeye | 30                  | 3                   | 33         |
| 10 | Oct 23-25, 2008 | Tchisse Mass    | 57                  | 20                  | 77         |
|    | <b>TOTAL</b>    |                 | <b>350</b><br>(73%) | <b>130</b><br>(27%) | <b>480</b> |

**Table 3: Panel Groups for Socio-Economi Surveys**

| Community         | Names of individuals in panel group   | # Male | # Female | Total # |
|-------------------|---|--------|----------|---------|
| Banni             | Alfusainey Touray, Erima Susso, Almaneh Conteh, Ba-Yorro Kassama, Majula Conteh, Musukebba Cessay, Touray-Ding Conteh, Isatou Konbeh Conteh, Sawoding Conteh, Kaddy Kassama | 4      | 6        | 10      |
| El Hagie Mabaye   | Mortala Beye, Ibrahima Beye, Omar Beye, Mass Beye, Momath Beye, Sohna Jaye, hadi Kha, Amie Njie, Fatu Contah, Awa Padan   | 5      | 5        | 10      |
| Gunjur            | Seikou Jewneh, Sambujang Touray, Lamian Choo Touray, Sarjo Drammeh, Satu Hato Touray, Bintu Sudang Touray, Amie Drammeh, Kaddy Dauso, Lissanding Barrow, Lissanding Sawaneh | 4      | 6        | 10      |
| Gunkurr Tukulorr  | Manwtdu Sey, Biran Dellam Sey, Kumba Leigh, Isata Ceesay, Kumba Bah, Demba Salleh, Kumba Gaye, Dellam Ceesay, Maroma Sey, Jugeen Njie                                       | 3      | 7        | 10      |
| Jahawurr Tukulorr | Tam Loum, Mamadi Sallah, Hamat Jallow, Kumba Dadeh Kolly, Talibeh Sullah, Kumba Seesay, Fatim Kumba Loum, Marama Chune, Maimuna Jallow, Malla Kolly                         | 6      | 4        | 10      |
| Panneh Ba         | Babou Jobe, Babou Panneh, Jim Panneh, badou Saho, Fatou Jeny, Awa Panneh, Jarra Modai   | 4      | 6        | 10      |

|               |   |           |           |            |
|---------------|---|-----------|-----------|------------|
|               | Panneh, Ndey haddy Jobe, Fatou Nyang, Hojar Touray  |           |           |            |
| Suwareh Kunda | Kalifa Suwareh, Abdoulie Bajar, Ebrima Solo Bajar, Filije Drammeh, Binta Suwareh, Fatoumata Jadama, Natoma Suwareh, Adama Fatty, Nije Sano, Kaddy Tourey                              | 3         | 7         | 10         |
| Samba Musu    | Madou keta, Joko Kata, Ismaila Keita, Babou Njie, Fatoumata Keita Ismaila, Kaddy Jallow, Bintaou Trawalleh, Bintaou Trawalleh, Awa Keita Husainu, Fatoumata Keita Wuveh, Sally Camarh | 4         | 6         | 10         |
| Toro Tayam    | Ebrima Jawo, Saidou Keita, Alahasi Yunasa jallow, Ebrima Jallow, Fanta Keita Marie Fall, Marieyama Keita, Salla Bah, Mata Keita, Amie Trawelleh                                       | 4         | 6         | 10         |
| Tchisse Mass  | Madou Saho, Njoku Saho, Ali Ceesay (A), Ali Ceesay (B), Mamood Sissey, Lolly Tall, Khodia Diop Khady Cisse, Kandji Drame, Mame Fady Cisse   | 5         | 5         | 10         |
| <b>TOTAL</b>  |   | <b>42</b> | <b>58</b> | <b>100</b> |

**Table 4. Community Based Organization (CBO) Profiles**

| COMMUNITY        | GROUP NAME                  | YEAR FORMED | ACTIVITIES & MANDATE  | FEMALE | %    | MEN | %    | TOTAL |
|------------------|-----------------------------|-------------|---|--------|------|-----|------|-------|
| Suwareh Kunda    | Nyodema Kaffo               | 2008        | Rice Farming, Gardening & Sheep Breeding , Income Generation    | 28     | 66.6 | 14  | 33.3 | 42    |
| Panneh Ba        | Group Juboo                 | 2008        | Gardening, Farming & Petty Trading                              | 21     | 91   | 2   | 9    | 23    |
| Toro Tayam       | Toro Tayam Youth Dev.       | 2008        | Gardening, Farming & cottage Industry, Livestock & Agroforestry | 13     | 76.4 | 4   | 23.5 | 17    |
| Gunjur           | Fandema                     | 2008        | Gardening, Rice Farming. Pottery & Petty Trading, Livestock     | 100    | 93.4 | 7   | 6.5  | 107   |
| Banni            | Nema Kaffo                  | 2008        | Rice Farming, Gardening   | 28     | 66   | 14  | 33   | 42    |
| Samba Musu       | Young Frontiers Association | 2008        | Gardening, Farming,   | 17     | 77   | 5   | 23   | 22    |
| Jahawur Tukulorr | Jokere Endam                | 2004        | Rice Farming, Gardening & Micro Financing, Livestock            | 40     | 56   | 31  | 44   | 71    |
| Gunkuru Tukulorr | Juboo                       | 1995        | Rice Farming, Gardening & Micro Financing, Livestock            | 72     | 93.5 | 5   | 6.4  | 77    |
| El Hagie Mabeye  | Suqqali Sa Deke             | 1990        | Farming, Micro Financing, Petty Trading, Poultry &              | 29     | 57   | 23  | 45   | 52    |

|              |       |      |                                |            |            |            |            |            |
|--------------|-------|------|--------------------------------|------------|------------|------------|------------|------------|
|              |       |      | Sheep Rearing, Food Processing |            |            |            |            |            |
| Tchisse Mass | Deggo | 2006 | Farming, Food Processing       | 34         | 52         | 31         | 48         | 65         |
| <b>TOTAL</b> |       |      |                                | <b>382</b> | <b>73%</b> | <b>136</b> | <b>27%</b> | <b>518</b> |

**Table 5. Capacity-Building Training for COs**

| No | Subject                                | Date  | Training Topics  | CO Participants |        |      |       |
|----|--|---|--|-----------------|--------|------|-------|
|    |  |   |  | Organization    | Female | Male | Total |
| 1  | Introduction to ecological agriculture | December 16-20, 2008<br><br>January 2 – 8, 2010 | -Ecological Agriculture<br>-Definition of key terminologies (environment, ecology, ecosystem, biosphere and biodiversity)<br>-Water and energy cycle<br>-Relationships in the eco-system<br>-Agriculture in the Gambia<br>-Factors affecting the environment<br>-Ecological farm practices<br>-Principles of eco-farming<br>-Sustainable agriculture | NATC            | 3      | 12   | 15    |
|    |  |   |  | AVISU           | 1      | 2    | 3     |
|    |  |   |  | APROFES         | 3      | 0    | 3     |
| 2  | Group & resource management            | February 20 – 22, 2009                          | - All 10 COs were trained on topics including: group management, resource management (project resources i.e. seeds, stoves etc...), report writing, CBO formation / marketing strategies   | NATC            | 3      | 6    | 9     |
|    |  |   |  | APROFES         | 2      | 0    | 2     |
| 3  | Agroforestry & soil stabilization      | April 15-18, 2009                               | - Soil properties and nutrient needs<br>- Agroforestry species and uses of different trees (soil stabilization, dual-purpose fodder/fruit)<br>- Nursery care / tree care   | NATC            | 3      | 6    | 9     |
|    |  |   |  | AVISU           | 1      | 2    | 3     |
|    |  |   |  | APROFES         | 2      | 0    | 2     |
| 4  | Nutrition/Food security                | August 26-28, 2009                              | - Basic nutrition<br>- Energy, nutrient, and caloric assessment of different foods<br>- Applications to the farm level<br>- Farm planning/ diversification   | NATC            | 4      | 10   | 14    |
|    |  |   |  | AVISU           | 1      | 2    | 3     |



|              |                                       |  |   |                          |                    |                    |              |
|--------------|---------------------------------------|--|---|--------------------------|--------------------|--------------------|--------------|
|              |                                       |  | - Food processing   |                          |                    |                    |              |
| 5            | Socio-economic survey                 | August 29, 2009<br>April 17, 2010                            | - Capacity building around survey methodology and data collection<br>- Harmonized understanding of survey purpose and data collection methods   | NATC<br>AVISU            | 4<br>1             | 10<br>2            | 14<br>3      |
| 6            | Livestock Management Training         | February 22-24, 2010<br>April 6-7, 2010<br>April 22-24, 2010 | - Animal nutrition<br>- Basic disease identification and treatment<br>- Urea Block / supplements<br>- Pasture management<br>- Animal Health Calendar (preventive diseases by season)  | NATC<br>AVISU<br>APROFES | 7<br>2<br>4        | 7<br>4<br>2        | 14<br>6<br>6 |
| 7            | Bokashi Organic Fertilizer production | April 18-20, 2010<br>May 15-18, 2011                         | - Indigenous Microorganism (IMO) solution production<br>- Fermented Plant Juice (FPJ) production<br>- Theory of Bokashi fertilizer<br>- Practical demonstration – producing Bokashi (collecting manure, millet bran, carbonizing rice hulls, collecting worm castings etc...) | NATC<br>AVISU<br>APROFES | 2<br>1<br>3        | 4<br>2<br>0        | 6<br>3<br>3  |
| 8            | Horticulture                          | March 7-9, 2011  | - Composting<br>- Integrated pest/disease management<br>- Agroforestry<br>- Marketing / value added for horticulture<br>- Translating Seedlings to beds / tree seeds in poly pots   | NATC<br>AVISU<br>APROFES | 3<br>1<br>3        | 4<br>2<br>0        | 7<br>3<br>0  |
| <b>TOTAL</b> |                                       |  |   |                          | <b>54</b><br>(41%) | <b>77</b><br>(59%) | <b>134</b>   |

## 6.2 Activity 2 – Farmer-to-Farmer (FTF) Training Program

One central tenet of the GGIGS project is to establish Farmer-to-Farmer (FTF) training networks in beneficiary villages to train local farmers in ecological agriculture and soil conservation practices. The project targeted a minimum of 500 farmers for training during its implementation. Men, women and youth were involved in the trainings (50% women; 25% youth) [see Table 7 for training targets in each village]. 40 local farmers were recruited as Farmer Trainers (FTs) to train community farmers. The FTs completed a training program on the basic modules and received further trainings on more advanced modules as they became available. Throughout 2009 and 2010, FTs from each village conducted “farmer-to-farmer”

training sessions with local farmers. FTF training networks will continue to be coordinated by local Farmer’s Associations (FAs) and Community Action Plans (CAPs) in beneficiary villages.

*Activity Objective:* Increased capacity of Farmer to Farmer (FTF) Training Network to advance education on ecological farming and soil conservation

*Overall Progress:* 40 FT were recruited and received training on basic and progressively advanced topics on ecological agriculture and soil conservation. In turn, the FT provided step-down trainings to fellow farmers in their respective communities with COs. In total, 3084 farmers benefitted from basic and advanced trainings including 665 men and 2422 women, which far exceeded the set targets. A core set of Gambian farmer training manuals for basic and advanced topics in ecological farming were developed and adapted to the local context. FTF training networks have been nurtured by COs and have been encouraged to be coordinated by the CBOs in the beneficiary villages. All sub-activities are reported on in the following RBM table:

| <b>Results Based Monitoring Table August 2008 – September 2011</b>                          |   |   |
|---|---|---|
| <b>Activity 2 – Farmer to Farmer (FTF) Training Program</b>                                 |   |   |
| <b>SUB-ACTIVITY</b>   | <b>INDICATORS</b>   | <b>ACTUAL ACHIEVEMENTS AND VARIANCES</b>  |
| <b>6.2.1. Training Module Development</b>   |   |   |
| Revision of existing basic training modules on ecological agriculture and soil conservation | Number of basic training modules developed  | <p>- This sub-activity was ongoing throughout the project as training modules were adapted and revised. At the beginning of the project, the Project Management Team (PMT), the lead technical partner NARI, and Canadian Technical Specialists met regarding the training modules. A review of the existing modules from REAP and NATC was performed and areas requiring improvements and gaps in the modules were identified. During the review of available materials, it was determined that the project has extensive resources from which to draw upon in the development of the training modules and that the modules needed for the basic trainings are already possessed by the PMT. Many of the practices have already been well tested both in Gambia and Senegal and elsewhere in the tropics in areas facing similar climactic conditions.</p> <p>- The main focus in developing the basic training modules was on revising and compiling information from the existing training guides in a comprehensive manner and ensuring that all modules were revised to include graphic illustrations to assist those farmers that are illiterate. This was successfully completed with the core-basic modules.</p> <p>- There was extensive research done to incorporate appropriate illustrations and to find existing modules that contain illustrations. Basic illustrated ecological agriculture training modules were located from IFOAM and a Senegalese Organization called GREEN-Senegal and some integrated into the project modules. The basic or core trainings for this project included the following topics:</p> <ul style="list-style-type: none"> <li>✓ Introduction to Ecological Agriculture &amp; Natural Resource Management</li> <li>✓ Soil Fertility and Organic Components of Soils</li> </ul> |
| Technical writing and research to support the development of any missing training modules   | Technical writing and research completed to assist in training module development   |   |
| Adaptation of training modules to increase cultural sensitivity and local comprehension     | Beneficiaries increase their understanding of sustainable agricultural practices by developing long-term farm plans and management skills (versus their current year to year approach) to ensure increases in agricultural productivity into the future |   |

**Results Based Monitoring Table August 2008 – September 2011**  
**Activity 2 – Farmer to Farmer (FTF) Training Program**

| SUB-ACTIVITY   | INDICATORS                                    | ACTUAL ACHIEVEMENTS AND VARIANCES  |
|--|---|--|
|  |   | <ul style="list-style-type: none"> <li>✓ Soil and Water Conservation</li> <li>✓ Cropping Systems, Green Manures, and Cover Crops</li> <li>✓ Improved Vegetable Production (including during dry-season for food security)</li> <li>✓ Integrated Plant and Pest Management</li> <li>✓ Improved Horticultural Practices, Budding, and Grafting</li> <li>✓ Seed Conservation, Plant Material Propagation, and Multiplication (<i>Seed Sustainability and Participatory Plant Improvement - SSPPI</i>)</li> <li>✓ Bokashi Organic Fertilizer Production</li> <li>✓ Basic Animal Health Management and Basic Feed Formulation Techniques</li> <li>✓ Improved Cookstove Use</li> </ul>   |
| Development of Advanced training on ecological agriculture and soil conservation | Number of advanced training modules developed | <p>After the basic modules were developed, the second phase of the training program was to begin focusing on more advanced topics in high demand from the communities. While there were few formal modules developed for the advanced topics, there was significant progress was made on the advanced trainings with the support of REAP's CIDA-funded interns beginning in the summer 2010. The advanced trainings for this project included the following topics:</p> <ul style="list-style-type: none"> <li>✓ Sustainable Fodder Production / Semi-Intensive Livestock/Pasture Management</li> <li>✓ Livestock Breeding and Improvement</li> <li>✓ Bokashi organic fertilizer production</li> <li>✓ Farm Planning, Food Footprint, and Farm Weatherproofing</li> <li>✓ Integrated Pest Management</li> <li>✓ Micro-Gardening</li> <li>✓ Agroforestry</li> <li>✓ Food Security, Nutrition and Food Processing, Preservation &amp; Marketing</li> <li>✓ Ecological Rice Production</li> <li>✓ Nursery Management</li> <li>✓ Plant Improvement and Farmer-led Breeding</li> <li>✓ CBO Management (CBOs only) Community-led Development / Participatory learning and research (COs only)</li> </ul> |
| <b>6.2.2. Farmer to Farmer Trainings</b>   |   |  |
| Identification of 40 Farmer Trainers (FTs) for the 10                            | Number of trainers identified in each village | At the beginning of the project, 40 Farmer Trainers (FTs) were successfully identified and selected by the project villages. Of those selected, 50% were women and several were youth. The position requirements and selection criteria were explained to the  |

**Results Based Monitoring Table August 2008 – September 2011**  
**Activity 2 – Farmer to Farmer (FTF) Training Program**

| SUB-ACTIVITY                                       | INDICATORS   | ACTUAL ACHIEVEMENTS AND VARIANCES   |
|--|--|---|
| villages   |  | <p>villages, both during the initial village sensitizations and during the PRA. The village members then went through a selection process with the assistance of the Community Organizers (COs). Some of the main requirements of the farmer trainers included having: the skill and the ability to respond to trainings, an interest in staying in the village over the long term, a willingness to share the acquired skills with other group members, and a strong commitment to their communities.</p> <p>- The 40 FTs chosen were distributed proportionally within the communities, based on the relative size of each community. A minimum of two trainers and a maximum of eight were selected in each community. The names, gender, and village of the FTs is detailed in the Project Management Table in Annex 7.</p> |
| Train 40 FTs on basic trainings                    | <p>Number of FTs trained (Target 40: 50% female, 25% youth)</p> <p>Number of trainings planned</p> | <p>- All 40 FT were trained on the basic training topics over the winters of 2008/2009 and 2009/2010, which is the season where the farmers have the most time available to dedicate to trainings. The main Training of Trainers (TOT) sessions were conducted in January 2009 and in February and April 2010. Please refer to Table 6 for details of these trainings. The training topics were based on an assessment completed during the PRA of the training needs of both the project beneficiaries and of the staff (in particular, the training needed to upgrade the technical competency of the COs).</p>   |
| Coordinate FTF training program at the local level | A CAP developed for farmer trainings   | <p>- The Community Action Plans (CAP) proved to be particularly effective in allowing villages to decide upon the most appreciated trainings for their community. Accordingly, each year the communities generated a CAP that identified the trainings planned for the coming season, the number of participants expected, the topics covered, and the material requirements for the trainings. These formed the basis for learning farm development in the communities. By allowing the arrangement of trainings to be controlled by the community, farmers were more likely to participate and absorb the information and now trainings are more likely to be continued after project completion. See Table 8 for an overview of all FTF trainings conducted in the project.</p>  |
| Deliver basic FTF                                  | Number of local farmers trained  | All 10 villages had the full set of basic step down trainings for their members. The FTF  |



**Results Based Monitoring Table August 2008 – September 2011**  
**Activity 2 – Farmer to Farmer (FTF) Training Program**

| <b>SUB-ACTIVITY</b>  | <b>INDICATORS</b>  | <b>ACTUAL ACHIEVEMENTS AND VARIANCES</b>   |
|--|--|--|
| trainings for 500 local farmers  | (Target 500: 50% female, 25% youth)  | training was conducted by the FT, supported by their COs. A number of diverse topics were covered based on the basic modules and the training of the farmer trainers in each village. See Table 8 for a summary of all farmer to farmer trainings conducted.<br>- In total, 1916 farmers have benefited from basic trainings, including 1529 women and 390 men respectively. These participation rates have far exceeded the overall targeted breakdown of trainees for the entire project as it was hoped that at a minimum the trainings would reach 250 men and 250 women [see Table 8]. While only 20% of the overall training participation numbers were male, the target of 250 male participants has still been met. There was a high level of interest in the trainings by women which helps to explain the high female participation rates.   |
| Train 40 FTs on advanced trainings   | Number of Farmer Trainers trained (Target 40: 50% female, 25% youth)   | After the training targets were well underway for the complete set of basic modules, the advanced trainings for the farmer trainers commenced in January 2010 with advanced livestock management training for the FTs. 40 FTs have received training on advanced topics including: micro-gardening, livestock management and breeding improvement, horticulture, pest and disease management.  |
| Deliver FTF trainings for 500 local farmers on advanced topics                     | Number of local farmers trained (Target 500: 50% female, 25% youth)  | In total, 1168 local farmers (893 women, 275 men) have benefited from advanced trainings. These training topics have included animal management and breeding improvements, micro gardening and organic pest and disease management, food processing and preserving, and agroforestry.  |
| Training assessment and identification of further training needs in each community | Increased capacity of Farmer to Farmer (FTF) Training Network to advance education on ecological farming and soil conservation<br><br>Development of plan by local community associations to continue trainings after project completion | - This was an ongoing sub-activity based on the interests of each particular community and conducted through ongoing training assessments and feedback from participants and general community members.<br>- CAPs continually assessed and updated individual community training needs. In addition, comprehensive training needs assessments were carried out by PMT at the outset of the project, in July 2009, and mid-November 2010 to ensure that the highest priorities of communities were incorporated into planned trainings. Some of the topics suggested by communities included: organic pest and disease management for both field and vegetable crops, livestock disease management, income diversification (i.e. value added), food processing for mangos and tomatoes, literacy training, and hay and fodder production. As many of these requested trainings as possible were planned and delivered over the course of the project. The only requested topic that was beyond the capacity of the project staff were literacy trainings. If done correctly, literacy training could take up to a year to implement and the project simply lacked the resources and |

**Results Based Monitoring Table August 2008 – September 2011**  
**Activity 2 – Farmer to Farmer (FTF) Training Program**

| SUB-ACTIVITY | INDICATORS | ACTUAL ACHIEVEMENTS AND VARIANCES   |
|--------------|------------|---|
|              |            | <p>technical know-how to embark on such a comprehensive program. This is something that could be considered in the future.</p> <p>- Over the final months of the project, COs worked with their respective communities to plan for the continuation of trainings after the project. This has already started happening in El Hagie Mabeye when in the Spring 2011, the CBO was approached by a neighbouring community for training on ecological vegetable gardening and seed savings. The CBO was thrilled to receive the request and immediately set up a training which was entirely outside of the project. Other communities have been encouraged to set this up as a possible income generating opportunity for CBOs into the future.</p> |

**Table 6. Training Summary for GGIGS Training of Trainers (TOT) Sessions 2009 – 2010**

| Training Facilitator                              | Institution  | Topics   | Date          |
|---|--|--|---------------|
| Joko Kutubo Sanyang                               | NARI   | Ecological Agriculture and Natural Resource Management               | Jan 2, 2009   |
| Modou Faye  | NARI   | Soil Conservation and Fertility Maintenance                          | Jan 3-4, 2009 |
| Faye Manneh                                       | NARI   | Integrated Plant and Pest Management                                 | Jan 5, 2009   |
| Landing Sanyang                                   | NARI   | Improved Horticultural Practices, Budding, and Grafting              | Jan 6, 2009   |
| Sarjo Dampha                                      | NARI   | Improved Vegetable Production, Use of Organic Manure on Vegetables   | Jan 6, 2009   |
| Abdoulie Secka                                    | Concern Universal  | Micro-Gardening / pest & disease management                          | Jan 7, 2009   |
| Cheyassin Faal<br>Derek Lynch, Shelly<br>Juurlink | NATC<br>Nova Scotia Agricultural College (NSAC)<br>Organic Agriculture Centre of Canada (OACC) | Basic Animal Health Management and Basic Feed Formulation Techniques | Jan 8, 2009   |
| Derek Lynch                                       | Nova Scotia Agricultural College (NSAC)  | Potato Production Techniques   | Jan 9, 2009   |
| Claudia Ho Lem & Gamo<br>Faal                     | REAP Canada & APROFES  | Demonstration Training of the Improved Cookstoves                    | Jan 9, 2009   |

|                                       |                    |  |                 |                      |
|---------------------------------------|--------------------|--|-----------------|----------------------|
| Kebba Sabally & Meredith Kushnir      | REAP Canada & NATC | Nutrition and Food Security  |                 | Aug 26-28, 2009      |
| Abdulai Loum                          | NATC               | Livestock Management Training  |                 | February 22-24, 2010 |
| Modou Gamou                           | APROFES            | Introduction to Bokashi  |                 | October, 2010        |
| Modou Gamou                           | NATC               | Introduction to Bokashi  |                 | April 18-20, 2010    |
| Abdulai Loum                          | AVISU              | Livestock Management Training  |                 | April 6-7, 2010      |
| Abdulai Loum                          | APROFES            | Livestock Management Training and Introduction to Bokashi                                |                 | April 22-24, 2010    |
| Mama Manneh                           | NATC               | Community Seed Management I (seed selection, field inspection, drying of seeds, storage) |                 | October 18-20, 2010  |
| Mama Manneh, Pa Panneh                | NATC               | Horticulture   |                 | January 2011         |
| Modou Ceesay & Landing Sanyang        | NARI               | Bokashi II & Community Seed Management II  |                 | May 15-18, 2011      |
|                                       | <b>Village</b>     | <b>Women</b>   | <b>Men</b>      | <b>Total</b>         |
| Farmer Trainers                       | Samba Musu         | 2  | 0               | 2                    |
|                                       | Panneh Ba          | 1  | 1               | 2                    |
|                                       | Toro Tayam         | 2  | 1               | 3                    |
|                                       | Gunjur             | 3  | 4               | 7                    |
|                                       | Banni              | 4  | 4               | 8                    |
|                                       | Suwareh Kunda      | 4  | 4               | 8                    |
|                                       | Jahawurr Tukulor   | 1  | 1               | 2                    |
|                                       | Gunkurr Tukulor    | 1  | 1               | 2                    |
|                                       | El Hagie Mabeye    | 1  | 2               | 3                    |
|                                       | Tchisse Mass       | 2  | 1               | 3                    |
| Village Animal Management Auxiliaries | All                | 11   | 9               | 20                   |
| Community Organizers                  | All                | 5  | 5               | 10                   |
| PMT Members                           | n/a                | 4  | 6               | 10                   |
| <b>Total</b>                          |                    | <b>41 (51%)</b>  | <b>39 (49%)</b> | <b>80</b>            |



| <b>Table 7. Training Targets for the GGIGS Project</b> |              |                           |  |
|--|--------------|---------------------------|--|
| Community  | Population   | Number of Farmer Trainers | Targeted number of Training participants |
| Bani   | 1,172        | 8                         | 114                                      |
| Gunjurr  | 1,104        | 7                         | 108                                      |
| Panneh Ba  | 146          | 2                         | 14                                       |
| Samba Musa   | 94           | 2                         | 9  |
| Suwareh Kunda  | 1,164        | 8                         | 113                                      |
| Torro Tayam  | 373          | 3                         | 36                                       |
| <b>Total (Baddibu)</b>                                 | <b>4,053</b> | <b>30</b>                 | <b>395</b>                               |
| Gunkuru Tukolor  | 233          | 2                         | 23                                       |
| Jahawur Tukolor  | 221          | 2                         | 22                                       |
| <b>Total (Saloum)</b>                                  | <b>454</b>   | <b>4</b>                  | <b>44</b>                                |
| Thisse Nasse   | 316          | 3                         | 31                                       |
| El Hadj Mabeye   | 308          | 3                         | 30                                       |
| <b>Total (Senegal)</b>                                 | <b>624</b>   | <b>6</b>                  | <b>61</b>                                |
| <b>Total (Project)</b>                                 | <b>5,131</b> | <b>40</b>                 | <b>500</b>                               |
|  |              | (including 20 women)      | (including 250 women)                    |

| <b>Table 8: Overview of GGIGS Farmer to Farmer (FTF) Trainings</b> |  |           |                                      |   |            |           |            |
|--|--|-----------|--------------------------------------|---|------------|-----------|------------|
| No.  | Subject of Training                    | Date      | Location / Facilitating organization | Village of Participants                   | Female     | Male      | Total      |
| <b>Basic Trainings</b>   |  |           |                                      |   |            |           |            |
| 1  | Introduction to Ecological Agriculture | Feb, 2009 | NATC                                 | Suwareh Kunda                             | 54         | 4         | 58         |
|  |  | Feb, 2009 | NATC                                 | Gunjur                                    | 57         | 3         | 60         |
|  |  | Feb, 2009 | APROFES                              | Tchisse Mass                              | 47         | 12        | 59         |
|  |  | Feb, 2009 | APROFES                              | El Hagie Mabeye                           | 39         | 11        | 50         |
|  |  | Mar, 2009 | NATC                                 | Samba Musu, Panneh Ba, Torro Tayam, Banni | 75         | 32        | 107        |
|  |  | Mar, 2009 | AVISU                                | Jahour Tukulor, Gonkuru Tukulor           | 22         | 15        | 37         |
|  |  |           | <b>SUB-TOTAL</b>                     |   | <b>294</b> | <b>77</b> | <b>371</b> |
| 2  | Soil Fertility Management              | Feb, 2009 | NATC                                 | Suwareh Kunda                             | 54         | 4         | 58         |

|   |  |           |                  |  |            |           |            |
|---|--|-----------|------------------|--|------------|-----------|------------|
|   |  | Feb, 2009 | NATC             | Gunjur   | 57         | 3         | 60         |
|   |  | Feb, 2009 | APROFES          | Tchisse Mass   | 47         | 12        | 59         |
|   |  | Feb, 2009 | APROFES          | El Hagie Mabeye  | 39         | 11        | 50         |
|   |  | Mar, 2009 | NATC             | Samba Musu, Panneh Ba,<br>Torro Tayam, Banni                           | 75         | 32        | 107        |
|   |  | Mar, 2009 | AVISU            | Jahour Tukulor, Gonkuru<br>Tukulor                                     | 22         | 15        | 37         |
|   |  |           | <b>SUB-TOTAL</b> |  | <b>294</b> | <b>77</b> | <b>371</b> |
| 3 | Horticulture   | Mar-2009  | NATC             | Suwareh Kunda  | 54         | 4         | 58         |
|   |  | Mar-2009  | NATC             | Gunjur   | 57         | 3         | 60         |
|   |  | Mar-2009  | APROFES          | Tchisse Mass   | 47         | 12        | 59         |
|   |  | Mar-2009  | APROFES          | El Hagie Mabeye  | 39         | 11        | 50         |
|   |  | Apr, 2009 | NATC             | Samba Musu, Panneh Ba,<br>Torro Tayam, Banni                           | 75         | 32        | 107        |
|   |  | Apr, 2009 | AVISU            | Jahour Tukulor, Gonkuru<br>Tukulor                                     | 22         | 15        | 37         |
|   |  |           | <b>SUB-TOTAL</b> |  | <b>294</b> | <b>77</b> | <b>371</b> |
| 4 | Seed Conservation, Plant<br>Material Propagation and<br>Multiplication | May, 2010 | NATC             | Banni, Gunjur, Suwareh<br>Kunda, Torro Tayam,<br>Samba Musu, Panneh Ba | 34         | 14        | 45         |
|   |  | May, 2010 | KAOLACK          | Jahawur Tukulor &<br>Gunkuru Tukulor                                   | 15         | 10        | 25         |
|   |  | May, 2010 | APROFES          | Tchisse Mass, El Hagie<br>Mabeye                                       | 20         | 3         | 23         |
|   |  | Nov, 2010 | NATC             | Banni, Gunjur, Suwareh<br>Kunda, Torro Tayam,<br>Samba Musu, Panneh Ba | 117        | 30        | 147        |
|   |  | Nov, 2010 | KAOLACK          | Jahawur Tukulor &<br>Gunkuru Tukulor                                   | 29         | 22        | 51         |
|   |  | Nov, 2010 | APROFES          | Tchisse Mass, El Hagie<br>Mabeye                                       | 91         | 17        | 108        |

|  |   |                         |                  |   |             |            |             |
|--|---|-------------------------|------------------|---|-------------|------------|-------------|
|  |   | Jun, 2011               | NATC             | Banni, Suwareh Kunda,<br>Torro Tayam, Samba<br>Musu, Panneh Ba  | 35          | 5          | 40          |
|  |   |                         | <b>SUB-TOTAL</b> |   | <b>341</b>  | <b>101</b> | <b>439</b>  |
| 5  | Agro-forestry   | Oct, 2010               | APROFES          | Tchisse Mass  | 47          | 12         | 59          |
|  |   | Oct, 2010               | APROFES          | El hague Mabeye   | 39          | 11         | 50          |
|  |   | Oct-Dec 2010            | NATC / AVISU     | Banni, Gunjur, Suwareh<br>Kunda, Torro Tayam,<br>Samba Musu, Panneh Ba,<br>Jahawur Tukulor &<br>Gunkuru Tukulor | 220         | 35         | 255         |
|  |   |                         | <b>SUB-TOTAL</b> |   | <b>306</b>  | <b>58</b>  | <b>364</b>  |
| <b>TOTALS for Basic Training Modules</b> |   |                         |                  |   | <b>1529</b> | <b>390</b> | <b>1916</b> |
| <b>Advanced Training Modules</b>         |   |                         |                  |   |             |            |             |
| 5  | Bokashi Organic Fertilizer<br>Production                    | Dec 17-18 & 27,<br>2010 | Tchisse Mass     | Tchisse Mass  | 25          | 6          | 31          |
|  |   | Dec 20-21 & 30,<br>2010 | El Hadji Mabeye  | El Hadji Mabeye   | 23          | 2          | 25          |
|  |   | Apr, 2010               | APROFES          | Tchisse Mass, El Hage<br>Mabeye   | 50          | 30         | 80          |
|  |   | May, 2010               | Gunkuru Tukulor  | Jahawur & Gunkuru<br>Tukulor  | 20          | 10         | 30          |
|  |   | Oct, 2010               | Banni            | Gunjur  | 27          | 4          | 31          |
|  |   | Oct, 2010               | Banni            | Banni   | 15          | 11         | 26          |
|  |   | Jun, 2011               | NATC             | Banni, Suwareh Kunda,<br>Torro Tayam, Samba<br>Musu, Panneh Ba  | 35          | 5          | 40          |
|  |   | June, 2011              | APROFES          | Tchisse Mass, El Hage<br>Mabeye   | 20          | 5          | 25          |
|  | <b>SUB-TOTAL</b>  |                         | <b>215</b>       | <b>73</b>   | <b>288</b>  |            |             |
| 10                                       | Livestock Health and Nutrition,<br>Breeding and Improvement | Jul, 2009               | APROFES          | Tchisse Mass, El hague<br>Mabeye  | 30          | 11         | 41          |

|   |   |           |                  |  |             |            |             |
|---|---|-----------|------------------|--|-------------|------------|-------------|
|   |   | Jul, 2009 | NATC             | Banni, Torro Tayam,<br>Samba Musu, Panneh Ba | 7           | 7          | 14          |
|   |   | Jul, 2009 | AVISU            | Jahawur & Gunkuru<br>Tukulor                 | 2           | 6          | 8           |
|   |   | Jul, 2009 | NATC             | Suwareh Kunda                                | 54          | 4          | 58          |
|   |   | Jul, 2009 | NATC             | Gunjur                                       | 57          | 3          | 60          |
|   |   | Jul, 2009 | APROFES          | Tchisse Mass                                 | 47          | 12         | 59          |
|   |   | Jul, 2009 | APROFES          | El hague Mabeye                              | 39          | 11         | 50          |
|   |   | Dec, 2010 | Samba Musu       | Samba Musu                                   | 10          | 7          | 17          |
|   |   | Jan, 2011 | Panneh Ba        | Panneh Ba                                    | 12          | 13         | 25          |
|   |   | Jan, 2011 | Torro Tayam      | Torro Tayam                                  | 13          | 10         | 23          |
|   |   | Jan, 2011 | Suwareh Kunda    | Suwareh Kunda                                | 18          | 17         | 35          |
|   |   | Jan, 2011 | Banni            | Banni  | 26          | 10         | 36          |
|   |   | Jan, 2011 | Gunkur Tukulor   | Jahawur & Gunkuru<br>Tukulor                 | 11          | 9          | 20          |
|   |   |           | <b>SUB-TOTAL</b> |  | <b>326</b>  | <b>120</b> | <b>446</b>  |
| 11  | Disease and Pest Control /<br>Integrated Pest Management            | Jul, 2009 | NATC             | Suwareh Kunda                                | 54          | 6          | 58          |
|   |   | Dec, 2010 | El Hadji Mabeye  | El Hadji Mabeye                              | 13          | 5          | 15          |
|   |   |           | <b>SUB-TOTAL</b> |  | <b>67</b>   | <b>11</b>  | <b>78</b>   |
| 12  | Micro-Gardening   | Mar, 2010 | APROFES          | Tchisse Mass                                 | 47          | 12         | 59          |
|   |   | Mar, 2010 | APROFES          | El hague Mabeye                              | 39          | 11         | 50          |
|   |   | Apr, 2011 | APROFES          | Tchisse Mass                                 | 45          | 18         | 59          |
|   |   | Apr, 2011 | APROFES          | El hague Mabeye                              | 42          | 15         | 50          |
|   |   |           | <b>SUB-TOTAL</b> |  | <b>173</b>  | <b>56</b>  | <b>229</b>  |
|   | Food Processing &<br>Preservation (Mangos,<br>Tomatoes and Chilies) | Jul, 2011 | APROFES          | Tchisse Mass, El hague<br>Mabeye             | 77          | 10         | 87          |
| 13  |   | Aug, 2011 | NATC             | Torro Tayam, Samba<br>Musu, Panneh Ba        | 35          | 5          | 40          |
|   |   |           | <b>SUB-TOTAL</b> |  | <b>112</b>  | <b>15</b>  | <b>127</b>  |
| <b>TOTALS For Advanced Training Modules</b> |   |           |                  |  | <b>893</b>  | <b>275</b> | <b>1168</b> |
| <b>TOTALS for all training</b>              |   |           |                  |  | <b>2422</b> | <b>665</b> | <b>3084</b> |

### **6.3 Activity 3 – Participatory Research and Implementation of Ecological Agriculture and Soil Conservation Practices on Learning Farms**

Learning farms are a key component of the AEV strategy. They broaden development efforts by integrating several key ideas and farming techniques on one “regular” farm. By avoiding the concept of a static “model farm” with one external model farmer, learning farms place local farmers and their farms at the centre 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 within a community. Farmers want to put the emphasis on creating a small commercial farm that is sustainable without outside support so that the development process can be feasibly replicated by others. Beneficiaries initiated and carried out development of learning farms by volunteering demonstration areas on their own land and contributing their time and resources to evaluation trials and cross-visits during and after the project. Learning farms not only demonstrate that ecological farming methods are viable, but that these approaches can be replicated by other farmers. They also serve as valuable reserves for plant materials through the Seed Sustainability and Participatory Plant Improvement (SSPPI) program as well as the Sustainable Livestock Program, allowing beneficiaries to continue multiplying successful varieties of crops, vegetables, fodder, live fencing materials, and livestock during and after the project. The SSPPI program emphasizes both the provision of improved materials and building capacity for preserving; testing, multiplying, and disseminating improved varieties and developing seed-sharing networks between and within communities for the purpose of building up good seed resources and improving the organizational capacity and mobilization of participating farmer’s groups. Learning farms will also provide demonstration areas for the sustainable livestock program. This program involves a two-pronged strategy of sustainable fodder production (including indigenous varieties of grasses, legumes, and tree species produced on marginal lands) and sustainable fencing (with live fences, agroforestry species, and locally-woven metal fences), as well as community organizing around animal containment and breeding, so that the project will help semi-intensive livestock management become a viable option. Free-range sheep, goat, and cattle rearing are common throughout the Gambia and severely limit agricultural development by devastating crops.

*Activity Objective:* Learning farms demonstrate improved agricultural and soil conservation practices (crop rotations, cover cropping, reduced tillage, field border establishment and agroforestry, crop residue incorporation and sustainable livestock management)

*Overall Progress:* 40 learning farms were established in the 10 GGIGS project villages. In 2010, over 60% were using more than 15 ecological agriculture techniques compared with only 16% of survey respondents in 2008. The main ecological techniques now widely in use include: leaving crop residues on the field, crop rotations, reduced tillage, farm planning/ weatherproofing, organic pest and disease management, perennial crops, and agroforestry. Also, the number of respondents testing new varieties, using organic pest & disease management, farm planning, growing fodder crops, and producing Bokashi fertilizer more than doubled. During the final PM&E assessments, it was found that across the board, all villages indicated an increase in the type of crop varieties available, and in the performance/yield of those crops. Most notably, varieties of early groundnut, rice, maize and millet were reported as being the top performers, with a commensurate high increase in yield. Crops that were most appreciated by the villages were groundnut, okra, millet and rice, and in all cases the early varieties were preferred as they helped close the ‘hunger’ gap at the end of the rainy season. Other field crops that were mentioned as showing improvement include findi, cowpea, and sorghum. Vegetable varieties that were appreciated include cassava, sweet potato, onion, tomato, bitter tomato, and cucumber. Finally, agroforestry activities not only increased long-term income generation and fodder availability in project villages but have increased tree biodiversity with over 1700 shelterbelt and fruit tree species distributed. All sub-activities are reported on in the following RBM table:


**Results Based Monitoring Table August 2008 – September 2011**  
**Activity 3 –Ecological Agriculture and Soil Conservation Carried Out on Learning Farms**

| SUB-ACTIVITY  | INDICATORS   | ACTUAL ACHIEVEMENTS AND VARIANCES   |
|---|--|---|
| <b>6.3.1. Learning Farm Establishment</b>                           |  |   |
| Identify and establish 40 learning farms in the 10 project villages | <p>Number of learning farms/gardens selected and prepared for planting</p> <p>Community announcements on locations and welcoming community members to visit the farms through the season</p> | <p>All 40 learning farms were identified in each of the 10 project villages at the outset of the project. The selection of these sites was subject to a community consultation and organizing process by the PMT and COs to jointly assess with village members which farmers may be interested in having their farm as a learning farm. A detailed description of the learning farm selection process can be found in the GGIGS project workplan. In total, 20 groundnut farms, 10 rice farms and 10 - 2500 square metre community garden plots (1 in each community) were cultivated. The on-farm activities for the learning farms were based on the various training activities provided in each community. To develop their farms, farmers created long-term farm plans that integrated information from the PRA and trainings.</p>  |
| Planting of field crops on learning farms                           | <p>Number of crop varieties planted</p> <p>Learning farm productivity assessment (yield changes over time)</p>   | <p>- The planting / growing season extends from April – November. Throughout these months each year, farmers were involved in several activities on their learning farms including developing and recording new techniques and crop materials. Each year, the learning farms were harvested throughout September to November, and most of the learning farms experienced increased productivity with groundnut and rice varieties and new organic farming techniques [see Table 11 and Table 12].</p> <p>- The project has made significant progress on improving genetic materials of field crops particularly groundnut and millet, the two principle crops across all villages. For example in the two Kaur villages, they have successfully scaled up a productive early maturing millet (8402 millet) variety introduced in 2010 and almost everyone in the two villages is now growing this variety. This has made a major impact on reducing the rainy season hunger gap in these two communities as 8402 millet matures 2-3 weeks earlier than the common local variety. The results are visible. The photo [right] show the early maturing IBV 8001 millet in Samba Musa in early Sept 2011. Also, farmers in both Kaur villages are inter-cropping cowpeas (Melahk variety) with groundnuts which has</p> |



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|  |  | <p>helped to improve soil cover on these low fertility soils. This technique better protects soil from erosion and increases overall food production while reducing pest risks. Farmers in Kaur are also upscaling the early season ground-nut Philippine pink and the productive, fast growing non-spouting groundnut known locally as Claudia groundnut.</p>   |
| Planting of dry-season vegetables for rainy season harvest | Learning farm productivity (yield differences over time or change in income) | <p>This sub-activity was ongoing and sought to ensure year-round availability of green vegetables in the villages, to improve dietary diversity in the villages, and improve the nutritional status of the households and household economics. By planting at the end of the dry season, the vegetables can be harvested at the end of the rainy season when the hunger gap is the greatest.</p> <ul style="list-style-type: none"> <li>- There were two full cycles of dry-season vegetable production in the project. The garden learning farms were originally demarcated in May-June 2009, land preparation/clearing and transportation of manure occurred in in June; in the same month, plant materials were acquired and distributed. In 2009, learning farms were planted between June 5 and July 15. First weeding took place in July and second weeding took place in August along with training of SMC on field inspection techniques. The learning farm vegetables were harvested each Fall. For the second cycle, vegetables were planted in February, 2010. The first weeding took place at the beginning of April and the second weeding tool place in June. Learning farm vegetables were mainly harvested in August. Yield and income results from these trials can be seen in Table 13.</li> <li>- To date, communities have successfully completed two full cycles of dry season vegetable production with a third currently underway. Onions and tomatoes seemed to provide the most amount of income. The average income earned by the women’s groups from 2010 dry-season vegetable production was 49172 D compared to the 2009 dry-season when the groups earned 42336 D from vegetable production. Both years, the money was equitably shared and funneled back into purchasing new seeds and supplies for Bokashi fertilizer for the following vegetable season.</li> <li>- Some of the newly distributed varieties that seem to be very popular with communities and were good performers include the red creole onions, long smooth okra from the Philippines, Sudanese tomatoes, and an FAO hot pepper variety sourced from ISRA Bambe (refer to Table 10 for details on these varieties and the amount distributed).</li> </ul> |



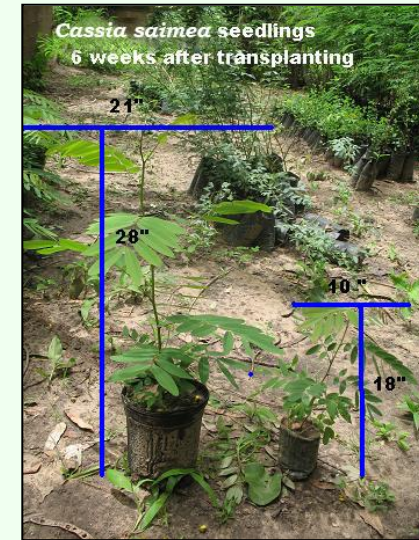
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|   |  |  | <ul style="list-style-type: none"> <li>- The photo [left] shows the women’s seedling nursery in El Hagie Mabeye propagating lettuce, okra and guava trees. The other villages have similar trial multiplication sites in their vegetable gardens and will continue to experiment with new varieties, multiply seedlings and save seeds after GGIGS.</li> <li>- Based on a project review conducted in November 2010, several villages requested some strong fencing materials to enhance production in the gardens. Accordingly, 49 rolls of barb wire and 49 rolls of chicken wire mesh were requested and purchased for supply to the gardens for Gunkuru tukalor, Jahour tukalor and Torro tayam. These fencing materials have significantly eased the production in the gardens and will enhance the ability of farmers to produce vegetables in the gardens all year round.</li> <li>- Overall, the introduction of vegetable gardens has contributed immensely to the improvement of community nutrition. Many villages have reported that there is a drastic reduction in the number of visits to health facilities by villagers, and this is attributed to the eating of fresh vegetables, which was not the case before the GGIGS project was introduced. Many have also stated that the health of their children has improved.</li> </ul> |
| <b>6.3.2. Ecological Techniques</b>   |  |  |   |
| <p>Implementation of ecological techniques on learning farms (including crop rotations, cover cropping, reduced tillage, field border establishment and agroforestry, and crop residue incorporation)</p> | <p>Learning farms demonstrate improved agricultural and soil conservation practices</p> <p>Comparison of farm trial results between farmers and between communities</p> <p>Extension of successes into community</p> |  | <ul style="list-style-type: none"> <li>- Side-by-side field trials were established during the 2009 growing season on the learning farms in order to provide assessments of ecological farming practices. These field trials were carried into the 2010 and 2011 growing seasons. Overall, farmers gave positive feedback about the success of the ecological agricultural practices tested on their learning farms. At the end of the project, ecological agriculture practices are in use by nearly all the villagers from project villages and most commonly include: manure compost, Bokashi organic fertilizer, crop rotation with nitrogen-fixing varieties and tillage across the slope. Other prevalent techniques include: reduced use of chemical fertilizers, increased crop diversity and use of intercropping, agroforestry, seed saving, fallowing, neem seed powder, windbreaks, and leaving crop residues on the field.</li> <li>- The final socio-economic survey report further substantiates this by indicating that in</li> </ul>   |

2010 over 60% of survey respondents were using more than 15 ecological agriculture techniques compared with only 16% of survey respondents in 2008. Also, the number of respondents testing new varieties, using organic pest & disease management, farm planning, growing fodder crops, and producing bokashi fertilizer more than doubled.

- Agroforestry nurseries have been established and stocked in all 10 villages and, over 1700 trees have been distributed to the project villages to date [see table 9 for a list of trees planted]. These nurseries will continue to provide the communities with valuable income generating trees with producing trees of mango, orange and cashews being especially highly appreciated. In 2010, many of the villages reported that tree survival rates were low due to stray livestock from other villages and poor soil conditions. In order to increase the survival rate of the trees for the agroforestry efforts of the project, the NATC sourced 1-gallon nursery pots to allow for more rapid and longer nursery growing time of the trees and for more rapid field establishment. Many of these trees are either still in the nursery and/ or have not

been through a full dry season after planting, so it is too early to comment on whether they have increased the survival rates of trees planted. The visible results, however, have been outstanding thus far as trees have grown faster and taller while in the nursery [photo right]. Many of the NATC tree seedlings being propagated are outstanding local selections that are ungrafted which helps improve survival in the harsh conditions of the project villages. As well the project sourced new trees not previously planted on the farms of NBD including the star apple and sapodilla. These are relatively drought tolerant, easy care and productive fruiting species. Sapodilla is an important economic fruit widely grown in India, Mexico and the Philippines. These two new species for the region can help diversify fruit production and the seasonal availability of fruit production for local communities.

- In both Senegalese villages (El Hagie Mayebe and Tchisse Mass), farmers from neighbouring communities have expressed interest in the successes of the learning farms. The FTs from these communities have conducted several informal training sessions for interested farmers about ecological agriculture techniques.



On-going assessments & documentation of tests of materials and practices through both local farmer assessments (not scientific), leading farmers, and NARI experts.

Incorporation of testing results into further seed multiplication programs



This was an ongoing project sub-activity. Side-by-side field trials were established at the outset of the 2009 rainy season. During the first season, the main testing occurred with groundnut. Farmers were particularly interested in groundnut cultivars that had a mid-season maturity, good yield, and good peanut hay production. Peanut hay production appears to be an important trait farmers are looking for when choosing a peanut cultivar. The project also has successfully upscaled a newly introduced groundnut from the Philippines (Claudia groundnut) which appears to be nearly completely resistant to rain-induced sprouting during the harvest period. Sprouting of the groundnuts at harvest has caused appreciable economic harm to communities in 2009 and 2010. The photo [above left] shows two FT comparing their new groundnut varieties.


- Many FTs encountered problems with their NERICA trials in 2009 which resulted in a low multiplication ratio. For example, in 2009 520kg was distributed to the villages. The anticipated multiplication rate was 80:1 which should have resulted in over 40,000 kg for redistribution in 2010. Instead, the yield rates were 2717.5. The root of this problem varied from farmer to farmer, and included:

planting in upland areas with sandy, well-drained soil; using millet planters which spaced the rice too far apart; and insufficient weeding. The lessons learned from these trials were discussed amongst the PM&E officer, PM, NARI and ISRA experts, and the FTs; and appropriate strategies for 2010 cultivation of NERICA were developed. The 2010 yields from the 2010 trials were 7800kg and thus this amount was available for redistribution in 2011. The photo [above right] shows a farmer in Panneh Ba in front of her NERICA rice in July 2010.




- Farmers also expressed interest in testing improved millet cultivars with high grain yield and early maturity or improved forage properties for livestock feeding. Accordingly, the PMT gathered and distributed the improved 8402 Millet variety, developed for both high food grain production and early maturing. The response from




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|  |  |  <p>farmers to this variety was overwhelmingly positive as 8402 millet multiplies at a 100:1 rate and matures at the crux of the hungry season. Farmers in the Kaur region in particular have had excellent results from millet 8402 variety [photo above] and in the 2011 growing season, almost the entire village had access to seeds and were growing this millet [see Table 12 and photo right]. This photo [left] shows some GGIGS staff with millet 8402 in behind on the FT learning farm in Gonkuru Tukulor, and the older variety of millet in front.</p> <p>- During the final PM&amp;E assessments, it was found that across the board, all villages indicated an increase in the type of crop varieties available, and in the performance/yield of those crops. Most notably, varieties of early groundnut, rice, maize and millet were reported as being the top performers, with a commensurate high increase in yield. Crops that were most appreciated by the villages were groundnut, okra, millet, and rice, and in all cases the early varieties were preferred. Other field crops that were mentioned as showing improvement include fonio, cowpea, sorghum. Vegetable varieties that were appreciated include cassava, sweet potato, onion, tomato, bitter tomato and cucumber.</p> <p>- Overall, all villages expressed positive feedback on the improved varieties and resulting increase in yields/performance. Early-ripening varieties were highlighted as most useful in terms of food security because such crops could be harvested and either eaten or sold for much-needed cash during the "hungry season". Rapidly growing, productive, sprout resistant groundnuts such as Claudia groundnut could also in time make a major impact on improving the economic viability of groundnut production in the Gambia and Senegal as the variety becomes more widely distributed and recognized.</p> |
| <p><b>6.3.3. Improved Plant Materials Program</b></p>  |  |  |
| <p>Collection of improved seeds and provision of improved plant materials for at least 40 farmers on learning farms in</p> | <p>Plant needs assessment conducted</p> <p>Quantity of seeds collected (kg/variety and species type)</p> | <p>- At the beginning of the GGIGS project, a plant needs assessment was conducted by the PMT and Project Agronomist in conjunction with the PRA to determine and prioritize which improved plant materials would assist the beneficiary communities. In each of the villages, current plant materials were also reviewed. Potential sources for the identified seed varieties (Nerica 4, ATM3 &amp; Philippine Pink) requested by the farmers were also identified.</p> <p>- Based on these assessments, the desired traits of potential new plant materials, crops,</p>  |

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| beneficiary communities |  | <p>and horticultural varieties were identified and seed collection and distribution by the Project Management Team (PMT) was ongoing. Due to the increasingly erratic rainy season, fast-maturing, drought resistant crop seeds were most needed to improve the food security of the communities. Farmers also requested good non-hybrid garden seeds to improve the diversity and productivity of their gardens. Based on this information, the project identified and distributed key improved cultivars or new species of interest to the local communities and were evaluated over the course of the project. Those collected to-date are detailed in Table 10.</p> <ul style="list-style-type: none"> <li>- Rice, groundnut and millet varieties were distributed to the 40 learning farms for the 2009 growing season (520 kg Nerica rice seed, 28 kg ATM water logging adaptation rice seed, 705 kg of Philippine Pink (Bruffet) groundnut seeds and 3 kg of cowpea seed). These varieties were planted by the FTs on their learning farms and multiplied. Subsequently, for the 2010 growing season, each of the distributed varieties were multiplied and redistributed according to the village seed distribution agreements.</li> <li>- In 2010 farmers expressed significant interest in obtaining more cowpea seeds and early maturing millet varieties. Accordingly, the PMT searched for high quality germplasm from <i>Bambey Cite de l'Institut Sénégalais de Recherches Agricoles</i> (ISRA-Bambey) and purchased and distributed to the 40 learning farmers: 60 kg of Cowpea Melakh (a drought resistant variety developed by ISRA-Bambey), 80 kg of millet 8400 (dual-purpose variety) and 14 kg of Nerica. The millet has had incredible success and rapid seed multiplication and redistribution efforts have seen most farmers in the project villages have access to these varieties for the 2011 season. Overall, the learning farms have been highly successful in testing these varieties and increased the amount of seeds available for redistribution tremendously. In 2011, the amount of seed available for redistribution included: NERICA (538 kg in 2009 to 7800 kg in 2011); Cowpea (60 kg in 2010 to 344 kg in 2011); Groundnut (705 kg in 2009 to 5800 kg in 2011); and Millet 8400 (80 kg in 2010 to 2483 kg in 2011) [See Table 11].</li> <li>- Farmers have shown appreciation and interest in all the seeds provided, particularly groundnut, rice, and millet. Unfortunately, the Cowpea Melakh seeds failed in several of the villages but were successfully multiplied and redistributed in the Kaur villages. In 2011, Farmers from these villages intercropped cowpea with groundnut in their fields.</li> </ul> |
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|  |   | <p>- The Gambian PM also bought and distributed new varieties of maize and sorghum seed. The maize seeds are fast-growing, early-maturing, and result in higher yields. With early planting, there is a possibility to grow them twice in a single season. In 2011, the PM bought 58 kilograms of these seeds from a farmers' group in Southern Senegal (CLCOP-Wack Ngouna) for distribution in project villages. The sweet sorghum has also been highly successful in its first year of growing. The photo [right] shows GGIGS farmer trainer, Mbye Drammeh, with CE 180-33 sudanese sweet sorghum landrace in September 2011.</p>   |  |
| <p>Establishment of seed selection and evaluation criteria &amp; preservation, multiplication, and (multi-year) distribution protocols in each community</p> | <p>Public announcement of seed distribution plans for three years of the project</p> <p>Seed breeding and exchange programs developed (both within and between communities)</p> | <p>- Five-member committees were formed in each of the 10 communities comprised of three women and two men each, thus placing a total of 50 people on seed management committees who then established seed selection and evaluation criteria. These 50 individuals were trained on simple field inspection techniques to assure quality preservation from field-level to storage. One of the seed committee's roles is to ensure that the seed loan repayments are made and that the seeds are equitably redistributed to new people. This will ensure many farmers benefit and thus contribute to a sustainable community seed management strategy.</p> <p>- Seed management strategies were developed for all communities to guide the equitable and rapid distribution of new improved cultivars. One strategy was the public announcement regarding the seed distribution plan made by the seed committees in each community. These plans which were stipulated in the CAPs state that each FT keeps 25% of the seed yield and distributes 75% to other farmers in the community. After the project, farmers continue to select and test new varieties and contribute to the community seed banks when they have excess.</p> <p>- Two full cycles of seed distribution, processing and redistribution have now taken place. See Table 11 for a summary of seed multiplication and yield results for groundnut, rice, millet, and cowpea on learning farms by village.</p> <p>- Non-hybrid vegetable seeds have proven to be very difficult to locate in the Gambia and Senegal. Consequently, at the beginning of the project, hybrid vegetable seeds were purchased and were not able to be saved. However the proceeds from the sale of the vegetables have been put into a revolving fund and are funneled back into the</p> |   |

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|   |   | community for the purchase of new seeds. This was corrected the second year when non-hybrid vegetable seeds were sourced and bought from a diverse range of sources. For instance, a high-yielding and high eating quality okra variety was brought by the CPM from the Philippines and the Canadian Agronomist sourced a highly appreciated variety of hot peppers from ISRA in Bambey and a productive, large and high quality fresh eating tomato from Sudan. These varieties were grown and multiplied at the NATC in 2009-2010 and then further distributed in 2010-2011.   |
| Technical Support for plant material improvement  |   | - NARI specialists were engaged in technical field support in plant material improvement. As well, REAP-Canada supported this with literature reviews of published studies and reports on improved plant materials that are available through scientific journals and the web.   |
| <b>6.3.4. Sustainable livestock management program</b>  |   |  |
| Coordinating research on sustainable livestock management (basic and advanced) together with the OACC | Number of livestock training modules developed  | <p>- The PRA identified that stray animals pose a significant problem in all project villages by destroying crops and vegetation, thereby increasing food losses and extending the hungry season as well as contributing to extensive soil erosion. As such, the project has worked with the communities to assess new strategies in livestock management including fodder production, animal dietary requirements, holistic animal health, and enclosure and management strategies.</p> <p>- Two Canadian Technical Specialists, Dr. Derek Lynch and Ms. Shelly Juurlink, made their exploratory mission to the project sites in the Gambia and Senegal in the winter of 2008. They have extensive experience in organic agriculture, soil fertility management, and organic livestock production, fodder, and health. Dr. Lynch and Ms. Juurlink completed an advanced training module for sustainable livestock management. In addition, Ms. Juurlink traveled to the Gambia and Senegal in September, 2010. Along with four Canadian dairy farmers (with Organic Meadows), she conducted training of all staff and farmer trainers on the livestock module (including animal identification; fodder preservation training; an animal welfare workshop). .</p> <p>- This has been followed up by additional trainings in all 10 of the project villages by the project's livestock officer throughout December 2010 and January 2011.</p> |
| Establishment of fodder production for livestock in villages  | Demonstration of sustainable fodder and holistic animal health/ nutrition as a 1 <sup>st</sup> step towards semi-intensive production | <p>- Efforts continue to be made to develop systems to enhance the quantity and quality of forage available for livestock rearing. In both 2008 and 2009, the rains extended into the dry season, caused major problems with moldy hay and appreciable losses of livestock (especially sheep and horses). The use of mid-season high fodder producing peanuts could help strengthen food and forage supplies.</p> <p>- In each of the villages, two Animal Care Auxiliaries (ACA) have been identified (20 ACA in total: 11M / 9F). These 20 ACAs have received training on animal feeding and</p>   |



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|  |   | <p>health by the livestock officer, Mr. Loum. As a result, four of the villages have established agroforestry programs as a way to supplement fodder production (Torro Tayam, Panneh Ba, Gonkuru and Jahour Tukalor). Continual efforts were made to encourage the planting of more fodder varieties in the communities. The four villages mentioned above have planted <i>Acacia Albida</i> and <i>Leucaena</i> for fodder. FTs and ACAs have also received training on producing urea blocks.</p>   |
| <p>Coordination of sustainable livestock management plan in each village</p> | <p>Semi-intensive management enclosures are planned for each village (if possible)</p> <p>Livestock breeding and exchange programs developed (within and between communities)</p> <p>- Increased access to livestock, fodder &amp; fencing materials (M/F) (PRA methodologies only)</p> | <p>- A sustainable semi-intensive livestock plan was established in all 10 villages. These plans involve villagers containing their animals and providing them with food in exchange for animal veterinary services and improved breeding stock. All these activities are carried out and monitored through regular visits by the project livestock officer. All village chiefs and VDC prepared and signed contractual agreements.</p> <p>- Each of the villages purchased their animals (sheep) around January 2010. The livestock officer tagged all project animals with an ear tag-punch. In each of the villages, two animal care auxiliaries were selected and trained along with the FTs in animal management, health and general care. The names and gender of these auxiliaries is provided in Annex 7. Several in-depth FTF trainings on animal management and health were carried out in December, 2010 and January 2011 (see Table 14 for details on the livestock purchased by each beneficiary community).</p>  <p>- The breeding program strategy involved purchasing several individual improved stock animals and allowing them to breed with local varieties of both sheep and poultry. Some of the communities such as Banni and Torro Tayam have preferred to pursue Tobaski ram rearing. In these two communities the rams were raised and fattened for sale during Tobaski. Both communities used the profits from the sale of the rams to start a sheep breeding program. These communities have received additional training from the livestock officer on breeding strategies. In the photo [above left] you can see the breeding stock and the enclosure built in Suwareh Kunda and the urea block hanging in the middle.</p> <p>- The livestock breeding program was perhaps one of the most challenging aspects of the project to be implemented mainly due to lack of training and experience of confinement</p> |

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|   |  | <p>management and problems in the selection and timing of breeding program introduction (see section 9 ‘Challenges Encountered &amp; Lessons Learned’). Cut-and-carry feeding from trees such as <i>Leucaena</i> has been promising. However, <i>Leucaena</i> forage can be toxic when it exceeds 1/3 of the diet, and the concept of building a ration from more than one source is still not fully understood. In some villages, animals have died from poor ration management and especially from mortality problems associated with poor quality groundnut hay (especially when late rains occurred in 2009 and 2010). Efforts were made by the livestock officer to increase the understanding of the need to use more diverse rations, improve animal housing, and to provide immunization at the outset of the rainy season. These efforts have been successful as substantiated by the livestock officer’s report on higher survival rates of the livestock this last season.</p> <ul style="list-style-type: none"> <li>- The socio-economic survey indicated that between 2008 and 2010 there was a 223% change in respondents reporting increased access to livestock breeds (13 people in 2008, 37 people in 2009 and 42 people in 2010). There was also an increase of 45% in respondents who reported increased access to fencing.</li> </ul>   |
| <b>6.3.5. Farm-trial assessment</b>   |  |   |
| <p>Farm trial assessment program (PM&amp;E) and identification of further farm material needs in each community</p> | <p>Development of marketing plan for farm products as a source of income generation after project completion (i.e. seeds; organic produce, etc.)</p> | <ul style="list-style-type: none"> <li>- The farm trial assessment program was an ongoing sub-activity. The PM&amp;E officer continually identified further farm material needs in each community and steps were made throughout to make those materials available. For example, Torro Tayam requested more durable fencing materials for their vegetable garden and agroforestry plots. Another example comes from Jahour Tukolor where they were experiencing severe water shortages from their only functioning well. From PM&amp;E consultations, it was discovered that the communities’ biggest material needs for success of their farm trials was the construction of a new well. So in conjunction with AVISU and with contributions from the village, the NATC ensured the successful installation of a new well.</li> <li>- The COs and PM&amp;E officer worked with farmers and CBOs to develop community-specific marketing plans for farm products. However, the development of marketing plans encountered some success and some difficulties. There is widespread recognition now by the project team that marketing of farm products is quite difficult. The main problems include: vegetable market saturation, lack of storage facilities and transportation, and the use of hybrid vegetable seeds. These problems were addressed and the communities met to strategize ways to market their farm products. One technique suggested was to encourage out of season production of perishable vegetables. Some farmers are also seeing the potential for sale of high quality seeds of improved cultivars and some villages have begun to sell these in local markets.</li> </ul> |

|  |  | <p>- All of the villages have developed agroforestry nurseries with a long-term vision of marketing new fruits such as the sapodilla, guava, and oranges. Furthermore, at the request of several of the villages, food processing / preservation training for mangos, tomatoes and chili peppers was conducted and many of these villages (Tchisse Mass for example) plan to make these preserves next season and sell them in local <i>lumos</i>.</p>  |   |             |  |  |  |            |              |  |  |          |      |      |      |       |    |    |    |      |         |    |    |    |      |                    |    |    |    |      |                  |    |    |    |      |        |   |    |    |      |         |    |    |    |     |              |           |            |            |             |
|--|--|---|---|-------------|--|--|--|------------|--------------|--|--|----------|------|------|------|-------|----|----|----|------|---------|----|----|----|------|--------------------|----|----|----|------|------------------|----|----|----|------|--------|---|----|----|------|---------|----|----|----|-----|--------------|-----------|------------|------------|-------------|
| Technical Support for learning farms   |  | <p>- NARI specialists have been engaged in technical field support in learning farm development and assessments on an ongoing basis .REAP-Canada also provided literature support to the COs for them to have training manuals on improved production techniques.</p>   |   |             |  |  |  |            |              |  |  |          |      |      |      |       |    |    |    |      |         |    |    |    |      |                    |    |    |    |      |                  |    |    |    |      |        |   |    |    |      |         |    |    |    |     |              |           |            |            |             |
| New farmer access to various types of improved agricultural inputs that were favourably assessed and scaled up on learning farms (vegetable seeds, crops and fodder) | <p>Increased access of community members to seeds, improved plant materials (M/F) (PRA methodologies only)</p> <p>Evaluative interviews and follow-up field visits to determine if farmers are able to identify strategies to minimize the risks of seed loss, and if they intend on implementing them in the future</p> | <p>- This was an ongoing sub-activity of the project. In 2010, many farmers reported increased access to improved agricultural inputs (specifically improved seeds and livestock breeds) to the PM&amp;E officer. Specifically, many farmers raved about the increased availability of early maturing crop varieties, availability of NERICA rice seed, fencing for gardens, and livestock access as being among the biggest benefits brought about by the project. In Panneh Ba, one female farmer highlighted the MTS as having helped reduce the amount of money that was spent on the purchase of cooking fuels.</p> <p>- Additionally, respondents from the socio-economic survey reported significant increases to access to farm inputs in 2009. Overall, there was a 51% increase in farmers accessing farm inputs between 2008 and 2009. See the summary table from the socio-economic report below. No farmers reported decreased access.</p> <table border="1"> <thead> <tr> <th colspan="5">Number of Respondents with Increased Access to Farm Inputs 2008- 2010</th> </tr> <tr> <th rowspan="2">Farm Input</th> <th colspan="3">Total Number</th> <th rowspan="2">% Change</th> </tr> <tr> <th>2008</th> <th>2009</th> <th>2010</th> </tr> </thead> <tbody> <tr> <td>Seeds</td> <td>30</td> <td>60</td> <td>68</td> <td>126%</td> </tr> <tr> <td>Compost</td> <td>13</td> <td>17</td> <td>42</td> <td>223%</td> </tr> <tr> <td>Organic Fertilizer</td> <td>27</td> <td>54</td> <td>60</td> <td>122%</td> </tr> <tr> <td>Livestock Breeds</td> <td>13</td> <td>37</td> <td>42</td> <td>223%</td> </tr> <tr> <td>Fodder</td> <td>0</td> <td>11</td> <td>16</td> <td>160%</td> </tr> <tr> <td>Fencing</td> <td>11</td> <td>12</td> <td>16</td> <td>45%</td> </tr> <tr> <td><b>TOTAL</b></td> <td><b>94</b></td> <td><b>191</b></td> <td><b>244</b></td> <td><b>160%</b></td> </tr> </tbody> </table> | Number of Respondents with Increased Access to Farm Inputs 2008- 2010 |             |  |  |  | Farm Input | Total Number |  |  | % Change | 2008 | 2009 | 2010 | Seeds | 30 | 60 | 68 | 126% | Compost | 13 | 17 | 42 | 223% | Organic Fertilizer | 27 | 54 | 60 | 122% | Livestock Breeds | 13 | 37 | 42 | 223% | Fodder | 0 | 11 | 16 | 160% | Fencing | 11 | 12 | 16 | 45% | <b>TOTAL</b> | <b>94</b> | <b>191</b> | <b>244</b> | <b>160%</b> |
| Number of Respondents with Increased Access to Farm Inputs 2008- 2010  |  |   |   |             |  |  |  |            |              |  |  |          |      |      |      |       |    |    |    |      |         |    |    |    |      |                    |    |    |    |      |                  |    |    |    |      |        |   |    |    |      |         |    |    |    |     |              |           |            |            |             |
| Farm Input   | Total Number   |   |   | % Change    |  |  |  |            |              |  |  |          |      |      |      |       |    |    |    |      |         |    |    |    |      |                    |    |    |    |      |                  |    |    |    |      |        |   |    |    |      |         |    |    |    |     |              |           |            |            |             |
|  | 2008   | 2009  | 2010  |             |  |  |  |            |              |  |  |          |      |      |      |       |    |    |    |      |         |    |    |    |      |                    |    |    |    |      |                  |    |    |    |      |        |   |    |    |      |         |    |    |    |     |              |           |            |            |             |
| Seeds  | 30   | 60  | 68  | 126%        |  |  |  |            |              |  |  |          |      |      |      |       |    |    |    |      |         |    |    |    |      |                    |    |    |    |      |                  |    |    |    |      |        |   |    |    |      |         |    |    |    |     |              |           |            |            |             |
| Compost  | 13   | 17  | 42  | 223%        |  |  |  |            |              |  |  |          |      |      |      |       |    |    |    |      |         |    |    |    |      |                    |    |    |    |      |                  |    |    |    |      |        |   |    |    |      |         |    |    |    |     |              |           |            |            |             |
| Organic Fertilizer   | 27   | 54  | 60  | 122%        |  |  |  |            |              |  |  |          |      |      |      |       |    |    |    |      |         |    |    |    |      |                    |    |    |    |      |                  |    |    |    |      |        |   |    |    |      |         |    |    |    |     |              |           |            |            |             |
| Livestock Breeds   | 13   | 37  | 42  | 223%        |  |  |  |            |              |  |  |          |      |      |      |       |    |    |    |      |         |    |    |    |      |                    |    |    |    |      |                  |    |    |    |      |        |   |    |    |      |         |    |    |    |     |              |           |            |            |             |
| Fodder   | 0  | 11  | 16  | 160%        |  |  |  |            |              |  |  |          |      |      |      |       |    |    |    |      |         |    |    |    |      |                    |    |    |    |      |                  |    |    |    |      |        |   |    |    |      |         |    |    |    |     |              |           |            |            |             |
| Fencing  | 11   | 12  | 16  | 45%         |  |  |  |            |              |  |  |          |      |      |      |       |    |    |    |      |         |    |    |    |      |                    |    |    |    |      |                  |    |    |    |      |        |   |    |    |      |         |    |    |    |     |              |           |            |            |             |
| <b>TOTAL</b>   | <b>94</b>  | <b>191</b>  | <b>244</b>  | <b>160%</b> |  |  |  |            |              |  |  |          |      |      |      |       |    |    |    |      |         |    |    |    |      |                    |    |    |    |      |                  |    |    |    |      |        |   |    |    |      |         |    |    |    |     |              |           |            |            |             |
| Project PM&E program   | <p>Planning sessions conducted on developing and institutionalizing PM&amp;E program both during and after completion of project</p>   | <p>- A PM&amp;E Officer was hired to manage the PM&amp;E program, assisting communities in developing their evaluation criteria and record books. The program is focusing first on plant material evaluations for the coming growing season but will also address soil issues and farm practices throughout the following year.</p> <p>- The Participatory Monitoring and Evaluation (PM&amp;E) program has been developed to monitor the following indicators: agricultural products and yield (M/F); year round food</p>  |   |             |  |  |  |            |              |  |  |          |      |      |      |       |    |    |    |      |         |    |    |    |      |                    |    |    |    |      |                  |    |    |    |      |        |   |    |    |      |         |    |    |    |     |              |           |            |            |             |

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|--|--|--|
|  |  | <p>production and availability (M/F); number of farms/farmers using ecological agricultural/soil conservation practices (M/F); and soil conservation and soil quality improvements (M/F).</p> <p>- Since the monitoring and evaluation officer was changed in September 2009, the program has only made marginal progress. The reason for this is that while the M&amp;E officer is very skilled in community organizing and participatory engagement practices, he is computer illiterate and has continually struggled with fully understanding his role. This problem has been identified and he received training in computer skills and collection of the PM&amp;E indicators in September 2010. Even after computer and data collection training, he continued to struggle with his role and some of the PM&amp;E responsibilities have been filled by the Gambian Project Manager and supplementary support from COs and through support and telephone conversations with the Canadian Project Manager. The results from the final PM&amp;E assessments carried out from July-September 2011 include:</p> <p><i>-Agricultural products and yield (M/F):</i> Farmers from project villages experienced increases in both the diversity of their agricultural products and the agricultural yield since the beginning of the project. The fact that farmers are now regularly using ecological agriculture and soil conservation practices such as spreading manure on the fields represents a huge success since deep-seated mindsets and practices are amongst some of the most challenging to transform. Gardening represents another success. Many women farmers have reported increases to their income, their food availability (vegetables only) and the garden's soil quality with manure fertilization.</p> <p><i>-Year round food production and availability (M/F):</i> At the end of the project, all villages reported enhancements to their food security and to their ability to produce food year-round. Specifically mentioned were the improved availability and quality of seeds, which resulted in higher yields, as well as the new knowledge and farming practices gained from the training sessions that took place on various ecological agriculture topics. Several villages noted that food production was now enough to cover the "hungry season", and that their overall economic capacity increased. The villages of Samba Musu highlighted the scarcity of lowlands in their area, and expressed appreciation for the introduction of NERICA rice, which performed very well in more humid zones of their upland fields. In most cases, there was a noted improvement in the productivity of staple and vegetable crops.</p> <p><i>-Number of farms/farmers using ecological agricultural/soil conservation practices:</i> Ecological agriculture and soil conservation practices are in use by nearly all the villages. Other prevalent techniques include: reduced use of chemical fertilizers,</p> |
|--|--|--|

|                       |  |   |
|-----------------------|--|---|
|                       |  | <p>increased types of crops grown, agroforestry, seed saving, fallowing, need seed powder, windbreaks, and leaving crop residues on the field. PM&amp;E assessments estimate that in the majority of villages at least 75% of the farmers were using these practices at the end of the project.</p> <p><i>-Soil conservation and soil quality improvements (M/F):</i> All villages reported noticeable improvements in soil quality on their farms, with numerous mentions of Bokashi and compost use being the major cause of this. The two Senegalese villages both reported seeing improvements starting in the second year of the project, with increased agricultural yields through the improved fertility of their fields.</p>   |
| Project Questionnaire | <p>Measurable increase in agricultural productivity (yield/year round production) and farm income (M/F)</p> <p>Number of farms/farmers using ecological agricultural/soil conservation practices (M/F)</p> | <p>- The final round of socio-economic surveys has been carried out and analyzed by comparing to the baseline established from the first round. From this survey, data has been gathered about agricultural productivity, numbers of farmers using ecological agriculture and soil conservation practices, and food security.</p> <p><i>-Measurable increase in agricultural productivity (yield/year round production) and farm income (M/F):</i> [see Table 12 for a summary of survey data on agricultural yields for major crops in 2008, 2009 and 2010] Comparisons between data from the project questionnaire in the 2009 growing season and the 2010 season indicate that the yields of the six main staple crops (groundnut, millet, rice, maize, sorghum, cassava) increased and have far surpassed 2008 yields. For the vegetable crops, Figure 8 demonstrates that from 2008 - 2009, there was a large decrease in tomato, eggplant, onion and cucumber yields with an upward surge in melon and pumpkin production. The survey respondents confirmed that 2009 was a difficult harvest year due to the unusually high rainfall during the wet season. There was also trouble on a few farms with sick animals and failed crops due to pest infestations. From 2009 - 2010, the agricultural conditions improved and the majority of vegetable crop yields increased significantly except for okra and chili. The production of tomato, bitter tomato, eggplant onion, melon, lettuce, cabbage also surpassed 2008 yields. A new surge in carrot production was also observed, representing another new crop grown as a result of a greater diversification of vegetables produced since 2008.</p> <p><i>-Number of farmers using ecological agriculture/soil conservation practices:</i> The 2010 data indicates that 99% of respondents are applying manure to their fields (100% female, 98% of male) and 90% of respondents adopted seed saving and banking practices (89% female, 90% male). It also shows that a high number of respondents (more than 75%) are engaged in organic pest and disease management, reduced tillage, composting manure, crop diversification, tillage across the slope, leaving crop residues in the field, crop rotation, mixed/alley cropping, vegetable production and the use of labor-</p> |

|  |  |  |
|--|--|--|
|  |  | <p>saving/farm tools. The number of females using ecological practices is higher than the number of men for all practices.</p> <p>-<i>Food Security</i>: 72% of food consumed by households is reported to come from production on household farms. This means that a quarter of food consumed by the household is bought from shops and markets. Not surprisingly, 84% of respondents said that the food they produced on their farms is still not sufficient for household food needs throughout the year. The majority of respondents said their food need is particularly acute during the rainy season (July –September). There were no notable differences between the 2008 and 2010 responses to questions about overall food security. This contrasts with the responses the PM&amp;E officer collected where most of the villages indicated improvements to their food security and to their ability to produce food year-round. Furthermore, many noted that food production was now actually enough to cover the "hungry season", and that their overall economic capacity had increased.</p> |
|--|--|--|

**Table 9: Overview of Agroforestry in GGIGS Villages**

| Purpose     | Tree Variety          | Banni      | Samba Musu | Panneh Ba  | Suwareh Kunda | Torro Tayam | Gunjur     | Jahour Tukalor | Gonkuru Tukalor | Tchisse Mass | El Hadji Mabeye | NATC nursery | TOTAL       |
|-------------|-----------------------|------------|------------|------------|---------------|-------------|------------|----------------|-----------------|--------------|-----------------|--------------|-------------|
| Windbreak   | <i>Cashew</i>         | 100        |            |            |               | 100         |            |                |                 |              |                 |              | 200         |
|             | <i>Acacia Siamcae</i> | 100        | 100        | 100        | 100           | 100         | 100        | 100            | 100             |              |                 |              | 700         |
| Woodlot     | <i>Umbrella</i>       | 50         |            |            | 50            |             |            |                |                 |              |                 |              | 100         |
|             | <i>Acacia Albida</i>  |            |            |            |               |             |            |                |                 |              |                 | 50           | 50          |
| Fruit trees | <i>Papaya</i>         |            | 20         | 20         |               |             |            |                |                 |              |                 |              | 40          |
|             | <i>Orange</i>         |            | 100        |            | 20            |             |            | 10             | 10              | 10           | 10              |              | 160         |
|             | <i>Mango</i>          |            | 20         | 20         | 20            |             |            | 30             | 30              | 20           | 20              |              | 160         |
|             | <i>Sapodilla</i>      |            |            |            |               |             |            |                |                 |              |                 | 20           | 20          |
|             | <i>Lemon</i>          |            |            |            |               |             |            | 10             | 10              | 25           | 25              |              | 70          |
|             | <i>Guava</i>          |            |            |            |               |             |            | 10             | 10              | 10           | 10              |              | 40          |
|             | <i>Date</i>           |            |            |            |               |             |            |                |                 | 50           | 50              |              | 100         |
|             | <i>Jackfruit</i>      | 10         | 10         | 10         | 10            | 10          |            |                |                 |              |                 |              | 50          |
|             | <i>Sweetsop</i>       | 10         | 10         |            |               |             |            |                |                 |              |                 |              | 20          |
| Fodder      | <i>Leuceana</i>       |            |            |            |               | 100         |            |                |                 |              |                 |              | 100         |
|             | <b>Totals</b>         | <b>270</b> | <b>260</b> | <b>150</b> | <b>200</b>    | <b>310</b>  | <b>100</b> | <b>160</b>     | <b>160</b>      | <b>115</b>   | <b>115</b>      | <b>70</b>    | <b>1810</b> |



| <b>Table 10. GGIGS Project Improved Plant Materials List</b> |  |                                     |   |  |  |
|--|--|-------------------------------------|---|--|--|
| <b>Species of interest</b>                                   | <b>Variety distributed to communities</b>                                    | <b>Source of variety (if known)</b> | <b>Original amount distributed (weight) and Location (villages) and Date (year)</b>     | <b>Amount multiplied and redistributed (kg)</b>                                    | <b>Key characteristics &amp; improved cultivars for future introductions</b>   |
| <b>Vegetables</b>  |  |                                     |   |  |  |
| Sweet potatoes   | 94/24; 94/B; Ngala White   | NARI                                |   |  |  |
| Cassava  | Tukumbo; Sonny Ge; Abdoukali   | NARI                                |   |  |  |
| Peanut   | Fleur11; Brukulose/ Hative de Sefa   | ISRA/ Senegal                       |   |  |  |
|  | Philippine pink also known as Bruffet variety                                | NARI                                | 690 kg was distributed to the 10 villages in 2009                                       | 1461.5 kg was redistributed in 2010 growing season; 5800 kg redistributed in 2011. | High yielding, early maturity to reduce cropping risks   |
|  | Claudia groundnut  | Philippines                         | 72 kg was distributed in 2011 to Panneh ba and for multiplication at the GGIGS seedbank | No data available as of September 2011.  | High yielding, early-mid maturity, rapid canopy closure enables reduced weeding, non-sprouting if harvest at rains occur |
| Millet   | Suna - 3   | ISRA-Bambey                         | 32 kg was distributed to 5 villages in 2011   | No data available as of September 2011.  | Early maturing varieties (Suna – 90 days); Late and early, tall and short; Okashana (ICRISAT)                            |
|  | 8402 Millet variety  | ISRA-Bambey                         | 80 kg was distributed to the 6 villages for 2010 growing season                         | 2483 kg redistributed 2011   | Early maturing (90 days); 100:1 seed multiplication.   |
|  | Majo Millet variety  | Ellah Kunda – Basse,                | 138 kg was distributed to 6 villages 2011   | No data available as of September 2011.  | Early maturing (110 days)  |
|  | 8001 IBN Millet  | ISRA-Bambey                         | 32 kg was distributed to 5 villages in 2011   | No data available as of September 2011.  |  |
| Rice   | NERICA drought tolerant, upland varieties; salt resistant lowland varieties; | NARI                                | 520 kg was distributed to the 10 villages in 2009                                       | 2715.5 kg redistributed 2010; 7800 kg  | Short duration<br>Some crop failures reported due to incorrect seeding techniques and weed pressure.                     |



|                   |  |                       |   |  |  |
|-------------------|--|-----------------------|---|--|--|
|                   | early maturing varieties (70-100 day): Tunko, Major, Suntutumusoor, BoroBoro |                       |   | redistributed in 2011  | However these problems were largely overcome in yr 3 as more experience was gained |
|                   | ATM (3 varieties)  | NARI                  | 28 kg was distributed to Samba Musu and the GGIGS seed bank in 2009   | Crop failure due to bad seeding, wrong ecology (soil type not suitable, too sandy) |  |
| Sorghum           | Bassi/GB   | Guinea-Bissau         | 84 kg was distributed to 5 villages in 2011   | No results as of September 2011.   |  |
|                   | Sweet Sorghum  | Sudan Landrace        |   |  |  |
| Cowpea            | Melakh   | ISRA-Bambey (Senegal) | 2 kg was seeded and multiplied in Njawara in 2009 and then 60 kg was distributed for the 2010 growing season in 5 project villages (Tchisse Mass, El Hagie, Gunkuru, Jahawur, and Samba Musu) | 344 kg redistributed in 2011   | Early maturing (75 days); 40:1 seed multiplication ratio.                          |
| Maize             |  | Wack Ngouna, Senegal  | 66 kg was distributed for the 2011 growing season   | No results as of September 2011.   |  |
| <b>Vegetables</b> |  |                       |   |  |  |
| Sweet potatoes    | 94/24; 94/B; Ngala White   | NARI                  | 2 bundles of 2 varieties were distributed to Torro Tayam and Panneh Ba, Samba Musu 2008 and 2009  |  |  |
| Cassava           | Tukumbo; Sonny Ge; Abdoukali   | NARI                  | 2 bundles of cassava cuttings were distributed to Torro Tayam and Panneh Ba, Samba Musu 2008 and 2009   |  | Other local varieties  |
| White bean        | Jahawur Mandinka   | Jahaur Mandinka       |   |  |  |

|                  |   | Village                   |  |                                    |  |
|------------------|---|---------------------------|--|------------------------------------|--|
| Corn             | Juna  |                           |  |                                    | Jeta (white/yellow); Red, Kamara (Jeika) |
| Cucumber         | Poinsett76                                    | Condor Seeds, Philippines |  |                                    |  |
| Okra             | Gumbo Clemson                                 |                           | distributed to the 10 villages in 2008   |                                    |  |
|                  | Smooth Green Okra                             | Philippines               | Distributed in suwareh kunda 2009  | Expanded distributed in 2010/2011. |  |
| Tomato           | Stripped Roman; Red (Assn. Kukopelli); Mongal |                           | Distributed to the 10 villages in 2009   | Hybrid variety                     | AVRC; cherry varieties                   |
|                  | Monteverde                                    | Condor Seeds, Philippines |  |                                    |  |
|                  | Marglobe                                      | Rango Seeds, Philippines  |  |                                    |  |
|                  | Discovery                                     |                           |  |                                    |  |
|                  | Sudanese tomatoes                             | Sudan                     | 1 packet was multiplied at NATC garden in 2010 and distributed to 4 farmer trainers. |                                    | High yielding, superior taste            |
|                  | Bitter Tomato                                 |                           | Distributed to the 10 villages in 2009   |                                    |  |
| Onion            | Winter (Assn.Kukopelli)                       |                           | Distributed to the 10 villages in 2009   |                                    |  |
| White Chili      | No-name                                       | North Bank Indigenous     |  |                                    |  |
| Ferentango Chili | No-name                                       | North Bank Indigenous     |  |                                    |  |
| Amaranthus       | No-name                                       | North Bank Indigenous     |  |                                    |  |
| Bell Pepper      | Haifa Wonder; Yolo Wonder                     | Rango Seeds, Philippines  |  |                                    |  |
|                  | King Solomon                                  | Rushmore Seeds,           |  |                                    |  |

|                 |                                   |                           |                     |  |  |
|-----------------|-----------------------------------|---------------------------|---------------------|--|--|
|                 |                                   | Philippines               |                     |  |  |
| Hot Pepper      | Cindy Gang; Hot Lips              | Rango Seeds, Philippines  | Distributed in 2011 |  |  |
|                 | Taiwan Express                    | Kaneko Seeds, Philippines |                     |  |  |
|                 | Long Thin Cayenne                 | Condor Seeds, Philippines |                     |  |  |
|                 | FAO hot pepper (open pollination) | Bambey                    |                     |  |  |
| Sweet Pepper    | Kayen Premium                     | Rango Seeds, Philippines  |                     |  |  |
|                 | All season                        | Kaneko Seeds, Philippines |                     |  |  |
| Pepper          | Inokra; Makibell                  | Condor Seeds, Philippines |                     |  |  |
| Pole Sitao Bean | Mega Green; Dark Green Premium    | Rango Seeds, Philippines  |                     |  |  |
|                 | Scarlett Max; Mabung              | Kaneko Seeds, Philippines |                     |  |  |
| Bush Sitao Bean | Sumlang                           | Condor Seeds, Philippines |                     |  |  |
|                 | Brutus                            | Rango Seeds, Philippines  |                     |  |  |
| Pole Bean       | PS-1; PS-2                        | Philippines               |                     |  |  |
| Melon           | Gulf Stream                       | Kaneko Seeds, Philippines |                     |  |  |
| Squash          | Rosalinda                         | Condor Seeds,             |                     |  |  |

|                              |   |                          |  |  |  |
|------------------------------|---|--------------------------|--|--|--|
|                              |   | Philippines              |  |  |  |
|                              | Rizalina                                    | Rango Seeds, Philippines |  |  |  |
| Eggplant                     | Claveria Long Purple; Long Purple King      | Rango Seeds, Philippines |  |  |  |
| Melons                       | Watermelon                                  | NATC / GGIGS project     | 20 g distributed to Samba Musu in 2011                   |  |  |
| Leafy Greens                 | <i>Cleome gynandra</i> (spider plant)       | Sudan                    |  |  | Fast-growing (3 weeks) with high nutritional value in cooked leaves (iron, phosphorous, etc.)                                    |
| <b>Agroforestry / Fruits</b> |   |                          |  |  | Emphasis on those that can tolerate the rainy season including lomboy, star apple, Juice Cashew, guava, plantain, banana, Citrus |
| <i>Windbreak</i>             | Cashew Tree                                 | Guinea-Bissau            | 200 selections distributed 2010                          |  |  |
| <i>Fruit Trees</i>           | <i>Carica papaya</i> (Red Lady Papaya)      | NSA – The Gambia         | 40 selections distributed 2010                           |  |  |
|                              | <i>Citrus Sinensis</i> (Orange)             | NATC                     | 160 selections distributed 2011                          |  |  |
|                              | <i>Mangifera indica</i> (Mango tree)        | NSA – The Gambia         | 160 selections distributed 2010                          |  |  |
|                              | <i>Manilkara zapota</i> (Sapodilla)         | Botanical Garden, Gambia | 20 selections at NATC nursery as of Sept.30/2011         |  | Drought Tolerant   |
|                              | <i>Citrus limon</i> (Lemon)                 | NATC                     | 70 selections distributed in 2010                        |  |  |
|                              | <i>Artocarpus heterophyllus</i> (Jackfruit) |                          | 50 selections distributed 2011                           |  |  |
|                              | <i>Guava</i>                                | NSA – The Gambia         | 20 selections distributed in Senegalese villages in 2009 |  |  |
|                              | <i>Phoenix dactylifera</i> (Date Palm)      | ISRA-Bambey,             | 100 selections distributed in                            |  | Adapted to local soils/environment; drought tolerant   |

|                |                                      |                                |   |  |   |
|----------------|--------------------------------------|--------------------------------|---|--|---|
|                |                                      | Senegal                        | Senegalese villages   |  |   |
|                | <i>Annona squamosa</i><br>(Sweetsop) | Botanical<br>Garden,<br>Gambia | 20 trees distributed to<br>banni & samba musu<br>2011       |  |   |
| <b>Fodder</b>  |                                      |                                |   |  |   |
| Legumes        |                                      |                                |   |  | Gamma grass (Andropogon)  |
| Trees          | <i>Leucaena, Morena</i>              |                                | 100 Leucaena trees<br>distributed to Torro<br>Tayam 2010    |  | N-fixing tree, fodder, wood source and<br>windbreak for learning farm boundaries  |
| Grasses        | Sudan Sorghum Grass                  | Sudan                          |   |  | Drought resistant;<br>Other possibilities include: Andropogon sp.,<br>panicum maximum and brachiaria sp.                |
| <b>Fencing</b> |                                      |                                |   |  |   |
| Shrubs         | <i>Cassia Siamcae</i>                | NSA – The<br>Gambia            | 700 distributed to 7<br>Gambian project<br>villages in 2009 |  | Nitrogen-fixing, fast growing.<br><br>Euphorbia, Jatropha, Zuzuphus, cassia<br>siamcae, acacia meliflora, acacia leata. |
|                | <i>Acacia Albida</i>                 |                                | 50 at NATC nursery<br>as of sept. 30/2011                   |  | N-fixing.   |

| <b>Table 11: Seed Distribution and Redistribution of Field Crops 2009 – 2011</b> |                        |   |   |                        |   |   |
|--|------------------------|---|---|------------------------|---|---|
| Village  | Kg Distributed<br>2009 | Kg Available for<br>2010 redistribution | Kg Available for 2011<br>redistribution | Kg Distributed<br>2009 | Kg Available for<br>2010 redistribution | Kg Available for<br>2011 redistribution |
| <b>Groundnut (Philippine Pink)</b>   |                        |   | <b>8402 Millet</b>                      |                        |   |   |
| Banni  | 60                     | 84                                      | 420                                     | ---                    | 16                                      | 480                                     |
| Suwareh Kunda  | 60                     | 69                                      | 345                                     | ---                    | ---                                     | ---                                     |
| Panneh Ba  | 54                     | 212.50                                  | 1162                                    | ---                    | 8                                       | 240                                     |
| Samba Musu   | 122                    | 30                                      | 350                                     | ---                    | 8                                       | 183                                     |
| Torro Tayam  | 54                     | 246                                     | 1000                                    | ---                    | 16                                      | 510                                     |
| Gunjur   | 60                     | ---                                     | ---                                     | ---                    | ---                                     | ---                                     |
| Jahawur Tukolor  | 60                     | 246                                     | 1200                                    | ---                    | 16                                      | 560                                     |
| Gunkuru Tukolor  | 15                     | 30                                      | 208                                     | ---                    | 16                                      | 510                                     |
| Tchisse Mass   | 120                    | 64                                      | ---                                     | ---                    | ---                                     | ---                                     |
| El Hagie Mabeye  | 60                     | ---                                     | ---                                     | ---                    | ---                                     | ---                                     |
| GGIGS seed bank &<br>non-project villages  | 40                     | 480                                     | 1115                                    | ---                    | 0                                       | ---                                     |

|  |             |        |                      |     |      |      |
|--|-------------|--------|----------------------|-----|------|------|
| Totals                                 | 705         | 1461.5 | 5800                 |     | 80   | 2483 |
| <b>NERICA / ATM Rice</b>               |             |        | <b>Cowpea Melakh</b> |     |      |      |
| Banni                                  | 60          | 200    | 640                  | --- | ---  | ---  |
| Suwareh Kunda                          | 60          | 30     |                      | --- | ---  | ---  |
| Panneh Ba                              | 25          | ---    | ---                  | --- | ---  | ---  |
| Samba Musu                             | 23 (10 ATM) | 60     | 510                  | --- | 13   | 44   |
| Torro Tayam                            | 25          | 30     | ---                  | --- | ---  | ---  |
| Gunjur                                 | 120         | 893    | ---                  | --- | ---  | ---  |
| Jahawur Tukulor                        | 30          | 204.5  | 1150                 | --- | 14.5 | 90   |
| Gunkuru Tukulor                        | 60          | 797    | 3000                 | --- | 14.5 | 110  |
| Tchisse Mass                           | 60          | 60     | ---                  | --- | 12   | 50   |
| El Hagie Mabeye                        | 40          | 190    | ---                  | --- | 12   | 50   |
| GGIGS seed bank & non-project villages | 35 (18 ATM) | 253    | 2500                 | --- | ---  | ---  |
| Totals                                 | 538         | 2717.5 | 7800                 | 0   | 60   | 344  |

| <b>Table 12 - Average Yields Main Crops / Vegetables (2008, 2009 &amp; 2010) (data from socio-economic survey)</b> |                                |                                |                                |                                |                               |
|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------------|
| <b>Staple Crops</b>  | <b>Average yield 2008 (kg)</b> | <b>Average yield 2009 (kg)</b> | <b>Average yield 2010 (kg)</b> | <b>% Change (2009 - 2010)</b>  | <b>% Change (2008 - 2010)</b> |
| Groundnut  | 1664                           | 1671                           | 2111                           | 26%                            | 27%                           |
| Millet   | 980                            | 1045                           | 1842                           | 76%                            | 88%                           |
| Rice   | 699                            | 453                            | 862                            | 90%                            | 23%                           |
| Maize  | 699                            | 360                            | 651                            | 81%                            | -7%                           |
| Sorghum  | 679                            | 271                            | 466                            | 72%                            | -31%                          |
| Cassava  | 162                            | 229                            | 275                            | 20%                            | 70%                           |
| S. Potato  | 67                             | 205                            | 163                            | -20%                           | 143%                          |
| <b>TOTAL</b>   | <b>4 950</b>                   | <b>4 234</b>                   | <b>6 370</b>                   | <b>50%</b>                     | <b>29%</b>                    |
| <b>Vegetable Crops</b>   | <b>Average yield 2008 (kg)</b> | <b>Average yield 2009 (kg)</b> | <b>Average yield 2010 (kg)</b> | <b>% Change (2009 to 2010)</b> | <b>% Change (2008 - 2010)</b> |
| Tomato   | 235                            | 113                            | 261                            | 131%                           | 11%                           |
| B. Tomato  | 110                            | 122                            | 186                            | 52%                            | 69%                           |
| Okra   | 47                             | 45                             | 38                             | -16%                           | -19%                          |
| Eggplant   | 147                            | 70                             | 166                            | 137%                           | 13%                           |
| Onion  | 180                            | 102                            | 192                            | 88%                            | 7%                            |
| Cucumber   | 391                            | 73                             | 382                            | 423%                           | -2%                           |

|              |              |            |             |             |            |
|--------------|--------------|------------|-------------|-------------|------------|
| Chili        | 22           | 23         | 20          | -13%        | -9%        |
| <b>TOTAL</b> | <b>1 132</b> | <b>548</b> | <b>1245</b> | <b>127%</b> | <b>10%</b> |

**Table 13: Overview of Project Dry-Season Vegetable Production Yields and Income Generation**

| VILLAGE        | Yields (kg)<br>Income (Dalasi) | Tomato | Onion | Okra  | Bitter<br>Tomato | Eggplant | Cabbage | Pepper (hot<br>and sweet) | Other<br>(squash,<br>carrots, lettuce,<br>melon) | TOTAL<br>Income<br>2009-2010<br>(GMD) |        |
|----------------|--------------------------------|--------|-------|-------|------------------|----------|---------|---------------------------|--|---------------------------------------|--------|
| BANNAI         | <b>Yields 2009 – 2010</b>      | 678    | 180   | 100   | -                | 265      | 120     | 145                       | -  | 24 632                                |        |
|                | <b>Yields 2010-2011</b>        | 1 900  | 1 250 | 1 160 | 2 350            | 1 160    | 1 032   | -                         | 690  |                                       |        |
|                | <b>% Change</b>                | 180%   | 594%  | 1060% | -                | 338%     | 760%    | 180%                      | 594%   |                                       |        |
|                | <b>Income 2009-2010</b>        | 10 197 | 2 800 | 950   | -                | 3 445    | 1 440   | 5 800                     | -  |                                       |        |
|                | <b>Income 2010-2011</b>        | 15 000 | 4 910 | 613   | 10 370           | 11 550   | 2 300   | -                         | 2 450  |                                       | 47 193 |
|                | <b>% Change</b>                | 47%    | 75%   | -35%  | -                | 235%     | 60%     | -                         | -  |                                       | + 92%  |
| SUWARREH KUNDA | <b>Yields 2009 – 2010</b>      | 480    | 100   | 200   | 1 070            | 320      | -       | 1 230                     | -  | 29 720                                |        |
|                | <b>Yields 2010-2011</b>        | 1 280  | 2 025 | 275   | 1 720            | 1 405    | 900     | 323                       | 2 000  |                                       |        |
|                | <b>% Change</b>                | 167%   | 1925% | 38%   | 61%              | 339%     | -       | -74%                      | 167%   |                                       |        |
|                | <b>Income 2009-2010</b>        | 4 650  | 1 300 | 2 100 | 13 000           | 5 230    | -       | 3 440                     | -  |                                       | 79 450 |
|                | <b>Income 2010-2011</b>        | 17 480 | 3 070 | 2 200 | 20 800           | 12 225   | 12 775  | 3 900                     | 7 000  |                                       | 79 450 |
|                | <b>% Change</b>                | 276%   | 136%  | 5%    | 60%              | 134%     | -       | 13%                       | -  |                                       | + 167% |
| PANNENHEBAH    | <b>Yields 2009 – 2010</b>      | 300    | 620   | 78    | -                | 50       | -       | -                         | 450  | 12 270                                |        |
|                | <b>Yields 2010-2011</b>        | 85     | 70    | 200   | -                | -        | -       | 50                        | 450  |                                       |        |
|                | <b>% Change</b>                | -71%   | -88%  | 156%  | -                | -        | -       | -                         | 0%   |                                       |        |
|                | <b>Income 2009-2010</b>        | 2 000  | 4 520 | 750   | -                | 500      | -       | -                         | 4 500  |                                       | 9825   |
|                | <b>Income 2010-2011</b>        | 1000   | 1275  | 2350  | -                | -        | -       | 700                       | 4500   |                                       | 9825   |
|                | <b>% Change</b>                | -50%   | -71%  | 213%  | -                | -        | -       | -                         | 0%   |                                       | - 19%  |
| SAMB           | <b>Yields 2009 – 2010</b>      | 772    | 3 750 | 54    | -                | -        | 100     | -                         | -  | 1 000                                 |        |
|                | <b>Yields 2010-2011</b>        | 300    | 3 200 | 140   | -                | -        | -       | 70                        | 1 000  |                                       |        |
|                | <b>% Change</b>                | -61%   | -     | 159%  | -                | -        | -       | -                         | -  |                                       |        |

|  |                           |       |        |       |      |   |       |       |        |        |
|--|---------------------------|-------|--------|-------|------|---|-------|-------|--------|--------|
| A<br>M<br>U<br>S<br>U                          | <b>Income 2009-2010</b>   | 7 725 | 37 500 | 1 350 | -    | - | 1 100 | -     | -      | 47 675 |
|  | <b>Income 2010-2011</b>   | 3 000 | 32 000 | 3 400 | -    | - | -     | 1 050 | 10 000 | 49 450 |
|  | <b>% Change</b>           | -61%  | -      | 152%  | -    | - | -     | -     | -      | + 5%   |
| T<br>O<br>R<br>R<br>O<br>T<br>A<br>Y<br>A<br>M | <b>Yields 2009 – 2010</b> | 300   | 4110   | 400   | -    | - | 171   | -     | -      |        |
|  | <b>Yields 2010-2011</b>   | 45    | 3500   | 25    | 90   | - | -     | 14    | 1250   |        |
|  | <b>% Change</b>           | -85%  | -14%   | -94%  | -    | - | -     | -     | -      |        |
|  | <b>Income 2009-2010</b>   | 2000  | 60330  | 8000  | -    | - | 6000  | -     | -      | 76330  |
|  | <b>Income 2010-2011</b>   | 675   | 51375  | 825   | 1730 | - | -     | 690   | 4650   | 59945  |
|  | <b>% Change</b>           | -66%  | -15%   | -90%  | -    | - | -     | -     | -      | -21%   |

| <b>Table 14. Animals Distributed for Semi-Intensive Animal Husbandry Program</b> |                                  |               |  |                    |
|--|----------------------------------|---------------|--|--------------------|
| Village  | Animals Bought                   | Date          | Notes  | # Tagged July 2010 |
| Banni  | 10 Tobaski rams <sup>1</sup>     | Nov 2009      | - All sold. Income from rams shared amongst CBO and used to purchase more rams.                | 2                  |
| Panneh Ba  | 8 breeding stock                 | May 2009      |  | 8                  |
| Torro Tayam  | 10 Tobaski rams                  | November 2008 | -All Tobaski rams sold.  | 0                  |
|  | 8 breeding stock                 | ?             | -7 surviving lambs<br>-1 ram-lamb dead from tetanus<br>-1300D profit from the sale of lambs    | 7                  |
| Samba Musu   | 7 breeding stock                 | May 2009      | - one lamb dead  | 6                  |
| Suwareh Kunda  | 1 Balebale ram <sup>2</sup>      | Feb 2009      | -3 surviving lambs<br>-High incidence of Dystocia (difficult births)                           | 1                  |
|  | 10 breeding stock                | May 2009      | with the Balebale crosses  | 3                  |
| Tchisse Mass   | Poultry (not from project funds) | Feb 2009      | -Trouble with intensive management strategies, the village had confined chickens that all died | 0                  |
| Gunkuru Tukulor  | 5 breeding stock                 | Dec 2008      |  | 2                  |
| Jahawur Tukulor  | 5 breeding stock                 | Dec 2008      | -1 surviving lamb<br>-1 ewe sold   | 3                  |
| <b>Totals</b>  | <b>64</b>                        |               | <b>Total Remaining:</b>  | <b>32</b>          |

<sup>1</sup>Tabaski rams are bought for fattening and sale. All-in, all-out system, in a 4-6 month period.

<sup>2</sup>Balebale is a large breed of sheep from Senegal



## 6.4 Activity 4 – Local organic fertilizer production program development

Bokashi organic fertilizer increases soil fertility and is an excellent alternative to costly chemical fertilizers. It is approximately one-seventh the cost of chemical fertilizers with the same nutrient content and much higher soil fertility benefits. Bokashi can be prepared in only 2-4 weeks from low-cost local ingredients, including crop residues, manure, and indigenous micro-organisms. Farmers can either use it or sell it, making it an important value-added income generating opportunity. Bokashi is an innovative technology originating in Southeast Asia, first scaled up in the Philippines by REAP-Canada and local partners.

*Activity Objective:* Increased availability and adoption of organic fertilizers (e.g. Bokashi) in target communities

*Overall Progress:* At the end of the project, soil conservation practices are in use in almost all villages, including manure compost, Bokashi organic fertilizer, crop rotation with nitrogen-fixing varieties, and tillage across the slope. To date, more than 20,000 kg of Bokashi have been produced and used in the beneficiary communities. The most active communities have been El Hagie Mabeye, Suwareh Kunda, Toro Tayam, Tchisse Mass, and Banni. Bokashi has not yet been scaled up beyond personal use on learning farms and vegetable gardens but the PM&E Officer has reported that its benefits are increasingly recognized and appreciated by farmers. Awareness and acceptance of this new technology will grow as farmers continue to see the benefits individually and as an income generating strategy for CBOS in the future. All sub-activities are reported on in the following RBM table:

| Results Based Monitoring Table August 2008 – September 2011                                 |   |  |
|---|---|--|
| Activity 4 – Local organic fertilizer production program                                    |   |  |
| SUB-ACTIVITY  | INDICATORS  | ACTUAL ACHIEVEMENTS AND VARIANCES  |
| Encourage and develop organic fertilizer/manure production programs in all project villages | <p>Amount of organic fertilizer produced and used in beneficiary communities (kg)</p> <p>Development of business plan for continued fertilizer production as a source of income generation after project completion (possibly in coordination with CBOs/partners)</p> | <p>- To initiate Bokashi organic fertilizer production, the FTs were introduced to this new concept at the beginning of the project. The actual training took longer to implement because many of the COs and FT said they simply weren't ready to learn about Bokashi until they had a really solid foundation of the other training modules. Consequently, Bokashi was made a part of the 'advanced trainings' and was delayed in getting off the ground. 40 FTs were trained in TOT sessions in April 2010. The photo [right] shows Modou Gamou carbonizing rice hulls. The FTF trainings were conducted in October &amp; December 2010</p> |



|  |  |   |
|--|--|---|
|  |  | <p>and follow-up sessions in June 2011.</p> <ul style="list-style-type: none"> <li>- To date, more than 20,000 kg of Bokashi have been produced and used in the beneficiary communities. The most active communities have been El Hagie Mabeye (7500 kg), Suwareh Kunda (500 kg), Toro Tayam (3000 kg), Tchisse Mass (3000 kg), and Banni (5000 kg)</li> <li>- Although the Bokashi technique was very well accepted in the communities, there were also some significant constraints identified by the farmers. For example, the availability of plant materials during dry season and the cost of sugar were both of concern. Yet as one CO pointed out, sugar is incredibly cheap at 50D / kg compared to 700D per bag of NPK fertilizer than only lasts for ¼ ha. Also, other products such as plant by-products as millet husks, groundnut shells and other products are readily available in the villages during the dry season.</li> <li>- In light of these identified constraints, the COs and the CIDA interns worked with the farmers to troubleshoot solutions to these issues. One possible solution that was identified is to use rotting mangos or sweet sorghum (introduced by the project in 2011) as a simple sugar to replace the processed sugar to make the fermented plant juice (FPJ) and the indigenous microorganism (IMO) solution required for Bokashi. This option will be investigated in the future by communities.</li> <li>- Overall, Bokashi production is still in its infancy and no villages have yet begun to produce it as a source of income. However, at the end of the GGIGS project, the Bokashi technology has been embraced by the local farmers, but only for their own use. In year 2, they learned about the technique, and in the final year of GGIGS, they really started to see the potential large-scale benefits. In the future, awareness and acceptance of this new technology will grow as farmers continue to see the benefits individually and group-wise. This will help enable a future income-generating strategies related to Bokashi (see section 9 ‘Challenges Encountered &amp; Lessons Learned’).</li> </ul> |
| <p>Project Survey and PM&amp;E program on soil conservation impacts on 40 learning farms</p> | <p>Degree of increase of soil fertility on local farms (M/F) (PM&amp;E only)</p> <p>Measurable increase in agricultural productivity (yield/year round production) (M/F)</p> | <p><u>Project Socio-economic Survey</u> established base-line conditions for the following indicators: agricultural yield, year-round agricultural production, farm income (Household/M/F). The project questionnaire showed that average farm income increased by 56% between 2008 and 2010! Average female income increased by 79% and average male income increased by 68%.</p>  |

|  |   |  |
|--|---|--|
|  | <p>Farm income (Household/M/F)<br/>(Questionnaire only)</p> <p>Availability and adoption of organic fertilizers (e.g. Bokashi) in target communities (M/F) (PRA methods only)</p> | <p><i>-Agricultural productivity:</i> The survey indicated increases to agricultural productivity and showed a 29% increase in average yields for staple crops and 10% increase in average yields for vegetable.</p> <p><i>-Availability of organic fertilizer:</i> The socio-economic survey found that the availability of organic fertilizer to respondents increased by 122% from 2008 to 2010, with 27 respondents reporting increased access in 2008 and 42 reporting increased access in 2010.</p> <p><u>Project PM&amp;E program</u> established base-line conditions for the following indicators: soil fertility on local farms, agricultural productivity (yield and year-round production), and availability of organic fertilizers (e.g. Bokashi) in target communities (M/F).</p> <ul style="list-style-type: none"> <li>- All villages reported noticeable improvements in soil quality on their farms due to increased access to and use of Bokashi and compost. The two Senegalese villages both reported seeing improvements starting in the second year of the project, with increased agricultural yields resulting from improved fertility of their fields.</li> <li>- All project villages have reported enhancements to their food security and to their ability to produce food year-round. Specifically mentioned were the improved availability and quality of seeds, which resulted in higher yields, as well as the new knowledge and farming practices gained from the training sessions that took place on various ecological agriculture topics. Several villages noted that food production was now enough to cover the "hungry season", and that their overall economic capacity had increased. The villages of Samba Musu highlighted the scarcity of lowlands in their area, and expressed appreciation for the introduction of NERICA rice seed, which performed very well in their upland fields. In many cases, an improvement in the productivity of both cereal crops and vegetable crops was noted.</li> <li>- At the end of the project, soil conservation practices are in use in almost all villages such as manure compost, Bokashi organic fertilizer, crop rotation with nitrogen-fixing varieties, and tillage across the slope. Other techniques include: reduced use of chemical fertilizers, increased types of crops grown, agroforestry, seed saving, fallowing, need seed powder, windbreaks, and leaving crop residues on the field.</li> </ul> |
|--|---|--|

### 6.5 Activity 5 – Research and development of improved household stoves

Deforestation is severe in the Senegambia region, leading to further droughts, unstable weather patterns and decreased soil fertility. A major cause of deforestation is collecting fuel wood for cooking. Indoor air pollution from cooking is also a major source of respiratory illness and disease and shortens the lives of women who must perform this daily task and their young children. To alleviate dependency on fuelwood, villagers were exposed to alternative fuel stoves. The GGIGS project researched and introduced improved stoves such as the Mayon Turbo Stove (MTS), the “Rocket Stove,” and the APROFES “Skakanal” one-stick wood-burning stove to 250 Gambian households. These stoves reduce particulate matter, GHG emissions, and fuel use compared to traditional 3-stone wood fires. The Mayon Turbo Stove (fuelled with agricultural residues) can reduce particulate matter emissions by 67%, while the Rocket Stove can reduce cooking fuel consumption by 35%, compared with traditional 3-stone fires. Stove use, air quality, and household fuel consumption in project communities were monitored through standardized questionnaires.

*Activity Objective:* Local distribution of 250 improved stoves


*Overall Progress:* Over 400 improved stoves have been produced to date, and as such, the project well exceeded its targeted production of 250 stoves. The stoves were distributed to local villages and training sessions on their use were conducted. Because of the high degree of interest from the communities, and of the revolving fund created by the sale of the stoves, the projects continued to produce stoves after the target had been met and to continually assess the stoves and strive to improve the design. In the last quarter of the project, REAP-Canada intern Kyrke Gaudreau successfully designed a larger scale version of the MTS 7000. The MTS 7500 is burning well and will undergo testing in the communities in the future. All sub-activities are reported on in the following RBM table

| Results Based Monitoring Table August 2008 – September 2011             |   |   |
|---|---|---|
| Activity 5 – Research and development of improved household stoves      |   |   |
| SUB-ACTIVITY  | INDICATORS  | ACTUAL ACHIEVEMENTS AND VARIANCES   |
| Stove workshop and project stove team meeting                           |   | <ul style="list-style-type: none"> <li>- During the first few months of the project, a Stove Development Officer and Assistant Officer were hired and an APROFES stove technician was also solicited to supervise the technical components of stove production for the project. APROFES’s workshop employs 6 full time staff to produce approximately 2000 high-quality stoves annually.</li> <li>- This Stove Team had several meetings together with the Project Management Team (PMT) to determine the project strategy for stove evaluation and introduction. The team agreed that 50 stoves would be produced for initial pilot testing in communities before large-scale production was initiated. The stoves selected included the Mayon Turbo Stove (MTS) and the Rocket Stove. No charcoal-burning stoves were pursued as this fuel is viewed as very unsustainable and contributing directly to deforestation.</li> </ul> |
| Market research and Design research on production of improved household | Development of a business plan for project stove production | <ul style="list-style-type: none"> <li>- Data collection for the marketing research components of this activity was conducted. The following key data items were collected: current market prices for stove supplies, skills required for stove production, infrastructure required for production (including power supplies and secure workshop space), location/cost/availability of fuels and in</li> </ul>  |

|                                    |                          |   |
|------------------------------------|--------------------------|---|
| stoves                             |                          | <p>particular rice mills, and prices of competing stoves.</p> <ul style="list-style-type: none"> <li>- Research on consumer interest in stoves was conducted in some of the larger urban centers across the country, including Kerewan, Kaur, Farafenni, and the Serekunda region of the capital city. These efforts resulted in the pre-sale of 8 stoves.</li> <li>- Through word-of-mouth, news of the improved stoves has reached other parts of the Gambia including Wassu. There has been tremendous interest in both stoves from this area, and as a consequence, AVISU has sold 40 Rocket Stoves and 6 MTS to a women's cooperative in Wassu. This women's cooperative has taken in upon themselves to promote and distribute the stoves to the surrounding villages. In a feedback trip in April 2010, these women communicated their happiness with the stoves and reported that in the Rocket stove, they have been able to use a combination of millet stalks and wood which is reducing their fuel-wood consumption appreciably. The money from this venture is being put into a revolving fund for the continuation of stove production.</li> <li>- REAP-Canada has sent 5 CIDA-funded renewable energy interns overseas who have conducted research and development on the production of the improved household stoves and worked towards optimizing the design and manufacture of the stoves. These interns have also focused with the NATC on advancing a more concrete business plan for the stove production and on mobilizing the marketing of the stoves in project communities and throughout Senegal and Gambia.</li> </ul> |
| Production of initial pilot stoves | 50 pilot stoves produced | <ul style="list-style-type: none"> <li>- A basic pilot strategy was determined where 1-2 models of each stove was produced at the APROFES workshop. These were then introduced into each village and rotated around the community so that 10-15 households could try each model. Five MTS stoves were provided to each village for assessment. Community feedback relating to the design was then incorporated into the production of future stoves.</li> <li>- The targeted indicator of 50 pilot stoves produced was met and appreciably exceeded.</li> <li>- Transportation of the stoves was a costly activity. So, after the initial pilot stoves were a proven success, stove production was slowly moved into Gambia to help reduce some of these costs. In addition to Kaolack, stoves are now produced in a workshop in Serrekunda and are assembled in a shop in Kerewan.</li> <li>- Community feedback about the stoves has been</li> </ul>  |





|  |                                    |   |
|--|------------------------------------|---|
|  |                                    | <p>generally very positive. Women have reported significant improvements to their livelihoods due to decreased smoke and decreased labor load to collect and / or buy firewood [see photo above of women in Panneh Ba cooking on MTS]. For the MTS, some issues that have been mentioned to the Stove Development officer include: necessity to 'babysit' stove since it continually must be stoked, small pot holder size, and the scarcity of residues at certain times of the year to burn in the stove. This feedback was taken seriously and led to training efforts by the Stove Officer around appropriate storage of residues for year-round availability and a new enlarged stove design by REAP interns (version MTS 7500).</p> <p>- For the Rocket Stove, some identified issues included: insufficient pot holder size (in Senegal, pots are generally much larger), and the corrosion of interior metal lining from high temperatures. This latter issue was dealt with immediately as it was discovered that the Kaolack workshop was using used metal for the interior lining which was not of adequate quality.</p> |
| <p>Testing of pilot stoves in each of the project villages</p>                         |                                    | <p>- Cooking demonstrations on the improved stoves were carried out in all 10 villages, with 560 participants in total (408 female, 152 male). Cooking times for the various stoves and models ranged from 31 minutes to 2 hours, depending on the various meals being cooked (40 minutes to 2 hours for the MTS, while 25 minutes to 2 hours for the Rocket Stove). Materials used for fuel included groundnut shell, rice husk, millet stalks and some shrub branches. Positive responses were received from all of the project villages as well as non-project villages on the efficiency and quality of combustion. Requests came in from non-project villages as rural people have their relatives in the urban settlements. In the photo [left] the stove coordinator, Hady Nying is performing a cooking demonstration in Torro Tayam village.</p>    |
| <p>Production of the remainder of the improved stoves<br/><br/>Distribution of the</p> | <p>200 further stoves produced</p> | <p>- This sub-activity was completed successfully. Since the last report (December 2010) a total of 50 MTS were produced and distributed to partner communities and non-project communities. This brings the total number produced since the beginning of the project to 400; 296 MTS and 104 Rockets respectively. These numbers are highly encouraging and the response has been incredible from the women.</p>   |

| <p>remainder of stoves to women in all 10 project villages</p>            |  | <p>- As of September 2011, the Stove Officer's records indicated that amongst the GGIGS project villages, there were 173 improved stoves (110 MTS, 63 Rockets). See the table below for a summary by project village of the distribution of MTS and Rocket Stoves. The remaining 227 of the total stoves produced have gone to villages other than those involved in the project including Saba, India, Brikama, and other villages in the Kaur region and were distributed by AVISU. This reflects the overwhelming success in dissemination of the improved stoves and also reflects the need for such technology.</p> <table border="1" data-bbox="1052 428 1751 919"> <thead> <tr> <th colspan="4">Improved stove distribution by village</th> </tr> <tr> <th></th> <th colspan="3">Stoves</th> </tr> <tr> <th>Village</th> <th>MTS</th> <th>Rocket</th> <th>TOTAL</th> </tr> </thead> <tbody> <tr> <td>Banni</td> <td>2</td> <td>7</td> <td>7</td> </tr> <tr> <td>Gunjur</td> <td>75</td> <td>32</td> <td>107</td> </tr> <tr> <td>Panneh Ba</td> <td>5</td> <td>---</td> <td>5</td> </tr> <tr> <td>Torro Tayam</td> <td>2</td> <td>3</td> <td>5</td> </tr> <tr> <td>Samba Musu</td> <td>4</td> <td>---</td> <td>4</td> </tr> <tr> <td>Suwareh Kunda</td> <td>14</td> <td>8</td> <td>22</td> </tr> <tr> <td>Tchisse Masse</td> <td>1</td> <td>5</td> <td>5</td> </tr> <tr> <td>El Hagie Mabeye</td> <td>1</td> <td>8</td> <td>8</td> </tr> <tr> <td>Gunkuru Tukulor</td> <td>2</td> <td>---</td> <td>12</td> </tr> <tr> <td>Jahawur Tukulor</td> <td>4</td> <td>---</td> <td>5</td> </tr> <tr> <td><b>Total</b></td> <td><b>110</b></td> <td><b>63</b></td> <td><b>173</b></td> </tr> </tbody> </table> | Improved stove distribution by village |  |  |  |  | Stoves |  |  | Village | MTS | Rocket | TOTAL | Banni | 2 | 7 | 7 | Gunjur | 75 | 32 | 107 | Panneh Ba | 5 | --- | 5 | Torro Tayam | 2 | 3 | 5 | Samba Musu | 4 | --- | 4 | Suwareh Kunda | 14 | 8 | 22 | Tchisse Masse | 1 | 5 | 5 | El Hagie Mabeye | 1 | 8 | 8 | Gunkuru Tukulor | 2 | --- | 12 | Jahawur Tukulor | 4 | --- | 5 | <b>Total</b> | <b>110</b> | <b>63</b> | <b>173</b> |
|---|--|---|--|--|--|--|--|--------|--|--|---------|-----|--------|-------|-------|---|---|---|--------|----|----|-----|-----------|---|-----|---|-------------|---|---|---|------------|---|-----|---|---------------|----|---|----|---------------|---|---|---|-----------------|---|---|---|-----------------|---|-----|----|-----------------|---|-----|---|--------------|------------|-----------|------------|
| Improved stove distribution by village                                    |  |   |  |  |  |  |  |        |  |  |         |     |        |       |       |   |   |   |        |    |    |     |           |   |     |   |             |   |   |   |            |   |     |   |               |    |   |    |               |   |   |   |                 |   |   |   |                 |   |     |    |                 |   |     |   |              |            |           |            |
|   | Stoves   |   |  |  |  |  |  |        |  |  |         |     |        |       |       |   |   |   |        |    |    |     |           |   |     |   |             |   |   |   |            |   |     |   |               |    |   |    |               |   |   |   |                 |   |   |   |                 |   |     |    |                 |   |     |   |              |            |           |            |
| Village   | MTS  | Rocket  | TOTAL                                  |  |  |  |  |        |  |  |         |     |        |       |       |   |   |   |        |    |    |     |           |   |     |   |             |   |   |   |            |   |     |   |               |    |   |    |               |   |   |   |                 |   |   |   |                 |   |     |    |                 |   |     |   |              |            |           |            |
| Banni   | 2  | 7   | 7                                      |  |  |  |  |        |  |  |         |     |        |       |       |   |   |   |        |    |    |     |           |   |     |   |             |   |   |   |            |   |     |   |               |    |   |    |               |   |   |   |                 |   |   |   |                 |   |     |    |                 |   |     |   |              |            |           |            |
| Gunjur  | 75   | 32  | 107                                    |  |  |  |  |        |  |  |         |     |        |       |       |   |   |   |        |    |    |     |           |   |     |   |             |   |   |   |            |   |     |   |               |    |   |    |               |   |   |   |                 |   |   |   |                 |   |     |    |                 |   |     |   |              |            |           |            |
| Panneh Ba   | 5  | ---   | 5                                      |  |  |  |  |        |  |  |         |     |        |       |       |   |   |   |        |    |    |     |           |   |     |   |             |   |   |   |            |   |     |   |               |    |   |    |               |   |   |   |                 |   |   |   |                 |   |     |    |                 |   |     |   |              |            |           |            |
| Torro Tayam   | 2  | 3   | 5                                      |  |  |  |  |        |  |  |         |     |        |       |       |   |   |   |        |    |    |     |           |   |     |   |             |   |   |   |            |   |     |   |               |    |   |    |               |   |   |   |                 |   |   |   |                 |   |     |    |                 |   |     |   |              |            |           |            |
| Samba Musu  | 4  | ---   | 4                                      |  |  |  |  |        |  |  |         |     |        |       |       |   |   |   |        |    |    |     |           |   |     |   |             |   |   |   |            |   |     |   |               |    |   |    |               |   |   |   |                 |   |   |   |                 |   |     |    |                 |   |     |   |              |            |           |            |
| Suwareh Kunda   | 14   | 8   | 22                                     |  |  |  |  |        |  |  |         |     |        |       |       |   |   |   |        |    |    |     |           |   |     |   |             |   |   |   |            |   |     |   |               |    |   |    |               |   |   |   |                 |   |   |   |                 |   |     |    |                 |   |     |   |              |            |           |            |
| Tchisse Masse   | 1  | 5   | 5                                      |  |  |  |  |        |  |  |         |     |        |       |       |   |   |   |        |    |    |     |           |   |     |   |             |   |   |   |            |   |     |   |               |    |   |    |               |   |   |   |                 |   |   |   |                 |   |     |    |                 |   |     |   |              |            |           |            |
| El Hagie Mabeye   | 1  | 8   | 8                                      |  |  |  |  |        |  |  |         |     |        |       |       |   |   |   |        |    |    |     |           |   |     |   |             |   |   |   |            |   |     |   |               |    |   |    |               |   |   |   |                 |   |   |   |                 |   |     |    |                 |   |     |   |              |            |           |            |
| Gunkuru Tukulor   | 2  | ---   | 12                                     |  |  |  |  |        |  |  |         |     |        |       |       |   |   |   |        |    |    |     |           |   |     |   |             |   |   |   |            |   |     |   |               |    |   |    |               |   |   |   |                 |   |   |   |                 |   |     |    |                 |   |     |   |              |            |           |            |
| Jahawur Tukulor   | 4  | ---   | 5                                      |  |  |  |  |        |  |  |         |     |        |       |       |   |   |   |        |    |    |     |           |   |     |   |             |   |   |   |            |   |     |   |               |    |   |    |               |   |   |   |                 |   |   |   |                 |   |     |    |                 |   |     |   |              |            |           |            |
| <b>Total</b>  | <b>110</b>   | <b>63</b>   | <b>173</b>                             |  |  |  |  |        |  |  |         |     |        |       |       |   |   |   |        |    |    |     |           |   |     |   |             |   |   |   |            |   |     |   |               |    |   |    |               |   |   |   |                 |   |   |   |                 |   |     |    |                 |   |     |   |              |            |           |            |
| <p>Continued evaluation of the stoves in each of the project villages</p> | <p>Development of business plan for continued stove production as a source of income generation after project completion (possibly in coordination with CBOs/partners)</p> | <p>The stove development officer, PM&amp;E officer and the PM have regularly evaluated the stoves in each village during every village visit. Some women have complained about the scarcity of groundnut husks and the inconvenience of having to 'babysit' the MTS. With the traditional three-stone stove, women can leave a pot to boil for hours while with the MTS, although the food cooks faster, it must constantly be stoked. The Stove Development Officer has worked on sensitizing communities on the overwhelming benefits of the stove and has worked with communities to devise strategies and approaches to address some of these concerns.</p>   |  |  |  |  |  |        |  |  |         |     |        |       |       |   |   |   |        |    |    |     |           |   |     |   |             |   |   |   |            |   |     |   |               |    |   |    |               |   |   |   |                 |   |   |   |                 |   |     |    |                 |   |     |   |              |            |           |            |
| <p>Project Questionnaire</p>  | <p>Number of women cooking with improved stoves</p> <p>Household air quality improvements</p> <p>Household fuel wood</p>   | <p><i>-Number of women cooking with improved stoves:</i> According to the project questionnaire, 71 respondents surveyed are using improved stoves (25 MTS; 13 Rocket; 33 other types of improved stoves, i.e. charcoal ceramic, gas stove, and locally-improved fuel-wood stoves). This represents a major increase from 24 in 2008 and is an overall increase of 196% of respondents using improved stoves. The following table provides a breakdown of these survey results.</p>   |  |  |  |  |  |        |  |  |         |     |        |       |       |   |   |   |        |    |    |     |           |   |     |   |             |   |   |   |            |   |     |   |               |    |   |    |               |   |   |   |                 |   |   |   |                 |   |     |    |                 |   |     |   |              |            |           |            |

consumption  
Reduction in local deforestation  
(PRA methodologies only)

| Number of respondents using improved stoves |           |           |           |                       |
|---|-----------|-----------|-----------|-----------------------|
| Stove Type                                  | 2008      | 2009      | 2010      | % change over 3 years |
| MTS   | 0         | 23        | 25        | + 250%                |
| Rocket Stove                                | 6         | 18        | 13        | + 116%                |
| Other improved                              | 18        | 12        | 33        | - 183%                |
| <b>TOTAL</b>                                | <b>24</b> | <b>53</b> | <b>71</b> | <b>+ 196%</b>         |

- *Household air quality improvements:* Two thirds of all respondents indicated improvements to their household air quality since they adopted an improved cook-stove. Two thirds (66%) of respondents who use the Mayon Turbon stove (MTS) indicated an improvement in their air quality compared to 50% for other improved cook-stoves (Rocket, improved local woodstove, and ceramic). These results are very encouraging for future expansion of improved stoves throughout the project villages.

- *Household fuel wood consumption:* The questionnaire showed that the average annual household consumption of fuel wood is 1192 kg, which is a 358 kg (33%) decrease from the 2008 average annual household consumption of 1550 kg. The highest estimated consumption was in Banni and El Hagie Mabeye while the lowest consumption came from Gunjur and Suwareh Kunda. The net decrease of annual fuel-wood consumption between 2008 and 2009 was 6%. The table below details the results from the survey.

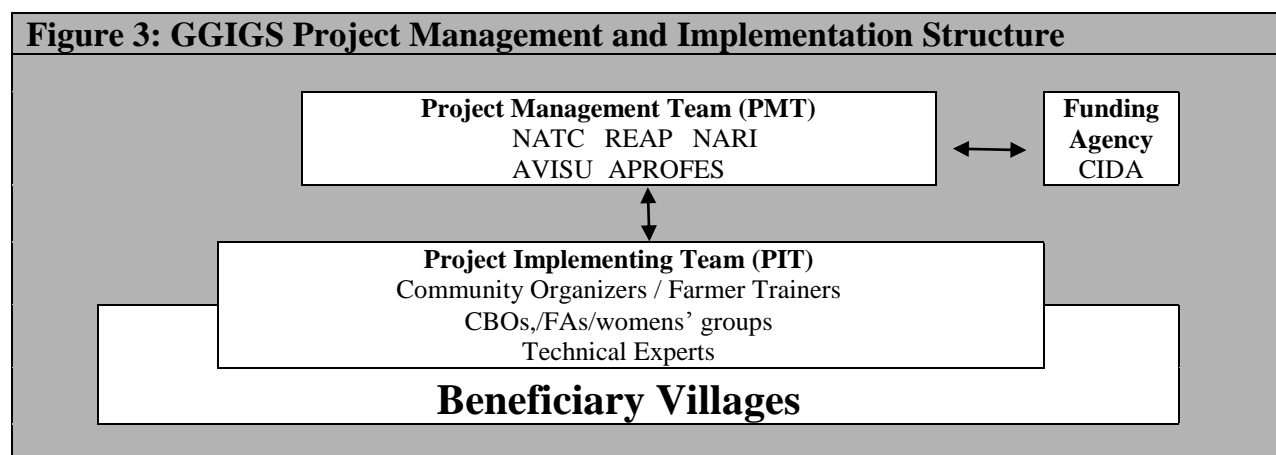
| Average annual fuel-wood use (kg) by village |              |              |             |             |
|--|--------------|--------------|-------------|-------------|
| Village                                      | 2008 (kg)    | 2009 (kg)    | 2010 (kg)   | % change    |
| Banni  | 2160         | 2220         | 2221        | 3%          |
| El Hagie Mabeye                              | 3187         | 3517         | ---         | 10%         |
| Gunkuru Tukulor                              | 705          | 1250         | 858         | 22%         |
| Gunjur                                       | 922          | 1125         | ---         | 22%         |
| Jahawur Tukulor                              | 1312         | 1265         | 879         | <b>-33%</b> |
| Panneh Ba                                    | 1140         | 1392         | 1148        | 1%          |
| Samba Musu                                   | 3310         | 1500         | 1101        | <b>-67%</b> |
| Suwareh Kunda                                | 540          | 990          | 1277        | 137%        |
| Tchisse Mass                                 | 2185         | 1275         | ---         | <b>-71%</b> |
| Torro Tayam                                  | 1574         | 1470         | 861         | <b>-45%</b> |
| <b>TOTAL kg</b>                              | <b>17035</b> | <b>16004</b> | <b>8345</b> | <b>-48%</b> |



## 7. Project Management & Accountability

To ensure an effective management base for the project, key staff from the project partner organizations: REAP-Canada, NATC, AVISU, NARI, and APROFES were selected to form the Project Management Team (PMT). The PMT then formed the Project Implementation Team (PIT) and hired other key staff members. When hiring staff, all partners considered gender equitable staff representation. These teams then worked directly with local beneficiaries to undertake the PRAs and develop the project workplan document, which forms the basis for the strategy of the project. The Roles and Responsibilities for the Project Management Team (PMT) members and for each job description were developed and are outlined in the GGIGS Project Workplan Document, as are the reporting responsibilities and scheduling. In general, the key project management and implementation staff are organized into three teams (detailed in Figure 3 and Annex 7):

- **Project Management Team (PMT)** - The PMT was responsible for the overall direction and management of project responsibilities, research and field activities at the local and national level. The PMT was headed by the local project implementing partners from NATC, AVISU, NARI, APROFES, REAP, and supported by the PIT.
- **Project Implementing Team (PIT)** - The PIT was composed primarily of local Community Organizers (COs), Farmer Trainers (FTs) and other local farmers, village group leaders, local government extension personnel, and other technical persons from NARI and elsewhere. It also included the project Financial Officer. The PIT was responsible for facilitating project organization and implementation, coordinating and conducting technical trainings and was involved in the field implementation and on-farm research. They also provided a link between the community and the PMT, and as such were involved in recording the technical trainings (topics, locations, participation) and other community activities such as the development of field-level implementation. They also provided feedback and reports during the project assessment and planning sessions on the status of their work to the PMT.
- **Farmers Associations (FA)** - Local Community Based Organizations (CBOs), Farmers Associations (FAs) and women's organizations were responsible for training coordination, community resource mobilization and managing the distribution of inputs/implements from the project to farmer trainers and other local farmers.



The project partners were in regular contact to monitor the project's overall progress and conduct strategic planning. The REAP-Canada GGIGS project manager undertook two recurrent visits to the project sites in the Gambia and Senegal. The first visit was made by Claudia Ho Lem together with the Project Agronomist Roger Samson to initiate project activities, hire key staff members, perform the PRAs and identify key strategy areas for interventions on the learning farms and seed collection programs so that project activities could begin. A second visit was undertaken by Claudia Ho Lem in December, 2008, to monitor project progress and the training of the Farmer Trainers, as well as to support training module development with the

assistance of the Canadian Technical Specialists Dr. Derek Lynch and Ms. Shelly Juurlink. The Project Agronomist Roger Samson visited the project sites in the spring of 2009. Additionally, a project technical specialist, Dr. Kebba Sabally, and a Canadian technical specialist, Ms. Meredith Kushnir, visited the project sites in April 2010 to assist with field activities, trainings and project management and implementation. The Project Agronomist also visited in fall 2010 to perform the mid-term project assessment. Finally, REAP has sent ten CIDA-funded interns to the Gambia and Senegal who have provided additional project support in 2010 / 2011.

The project partners have fulfilled their responsibilities as originally outlined in the work-plan document. Therefore, REAP-Canada accepts full shared responsibility and accountability of results on the part of our overseas partners. Please refer to Annex 4 for the full breakdown of the GGIGS Project Partners Responsibilities

## **8. Gender Equality:**

While both women and men play important roles in Senegambian households, there are fundamental differences in the nature of their work, the way it is valued, the allocation of financial and social power and the access to and control over resources. All of these tend to disadvantage women. Consequently, the GGIGS project adopted REAP's gender strategy to promote gender equality throughout the project. At the beginning of the project, a gender analysis was conducted and some of the practical needs of women were found to be access to income, land, fuel, agricultural inputs, balanced diets, and health care. Strategically, it was determined that many women would benefit from capacity building. This project contributed to CIDA's three objectives for gender equity in the following ways:

- Enhancing women's opportunities to participate in different aspects of food production (planting, marketing, value-added processing)
- Reducing gender inequalities in accessing/controlling agricultural inputs and trainings
- Decreasing exposure to household smoke & reducing the time spent collecting fuel to help free time for other priorities and income generation
- Encouraging cross-gender exchange of knowledge through equal participation of men and women in CBOs as farmer trainers and training participants
- Involving women as key contributors in project design and implementation (staff/farmers) to increase their capacity and confidence to engage in policy and planning
- Gender analysis and sensitivity training for staff

Overall, women have benefitted from the project through increased access to various agricultural inputs and trainings according to the local economic, environmental, and social conditions found in each village. Women's important role in the home, on the farm, and in the community has slowly begun to be recognized in the project. Overall progress towards bridging the economic and social gender disparities has been made throughout. At the end of the project it was evident that many of the interventions had concrete impacts on the wellbeing of women including:

- ✓ 2422 women beneficiaries trained through the FTF program. FTF networks have also increased women's access to technical assistance including "on-the-job-coaching" to support with adoption of new practices and management of inputs. Training topics were selected to engage women and assist them in marketing and developing value-added products on their farms (i.e. vegetable gardening, food processing, and pest management were all topics specifically requested by women);
- ✓ 50% of COs, FTs, and training participants were women;
- ✓ Overall, women farmer beneficiaries have drastically increased their access to inputs by such as seeds (180% increase), organic fertilizer (133% increase), compost (383% increase), livestock (257% increase) and fencing (71% increase);
- ✓ Draft animals supported through the project can provide breeding stock for communities and services for labour-intensive activities such as the transfer of manure to fields. Rental/access to the animals have been managed by women's groups or CBOs;

- ✓ Over 400 improved cooking stoves have been produced and distributed to rural women that were introduced and tested with GGIGS farmer women. Improved stoves have decreased exposure to household smoke, and reduced income and time spent collecting fuel;
- ✓ Local CBOs have developed strategies and revolving credit programs to support income-generation;
- ✓ Training, capacity-building, and equity in decision-making into all project activities have encouraged and institutionalized the important role of women in the home, the farm and the community;
- ✓ Average female income increased by 79% since the beginning of the project;
- ✓ There was an increased presence of women in key positions within the VDCs (i.e. secretary / treasurer) through their active engagement with community affairs and organization in GGIGS;

Overall, the advancement of sustainable agriculture is of great importance to improving women's quality of life. Female farmer beneficiaries have increased their access to better seeds, agricultural inputs, education, equipment and credit, and crop yields, which has helped to increase short and long-term soil fertility. With better soil, the project has brought about improvements to food provisions, nutrition levels, income generation and livelihood security while also decreasing inputs required for farming, which are often obtained from men. Diversified farming systems encouraged by GGIGS have also opened up new opportunities for women to participate in different aspects of food production including planting, marketing, and value-added processing.

### ***9. Challenges Encountered & Lessons Learned:***

The GGIGS project has been filled with successes, challenges and lessons learned. Throughout the project, the Canadian and Southern partner staff continually reflected on the challenges and came up with adaptive solutions to improve implementation and to push over any road blocks that arose. The following is a summary of the main lessons and challenges encountered throughout the project.

**Staffing:** In several of the project villages, the required level of professional competence for the community organizer (CO) position did not exist within the village population and personnel had to be recruited from outside the village. Wherever possible, local villagers were selected for these positions through active participation of the village members. In general, one CO worked in each community, with two exceptions where composite male-female teams with two part-time COs were developed. The composite teams were developed to integrate active local farmers who were illiterate and could not keep up with the reporting portion of the CO position. One issue that repeatedly came up was the need to strengthen community organization and provide increased mentorship for the COs. Several tensions surfaced over the need for better communication and solidarity between project staff. In one community in particular (Gunjur), the effectiveness of the CO was called into question as there were reports of divisions and rivalries along political lines within the community as a result of the COs activity. As a result of these issues, remedial action was taken and a consequent restructuring of staff was necessary to ensure that the project operated as efficiently as possible for the remaining year. Unfortunately, the divisions in Gunjur were too deep to 'fix' with new staffing arrangements and the community decided to pull themselves out of the project. In addition, there were ongoing personality tensions between the former PM&E Officer, Mr. Ablie Loum; the former Stove Coordinator, Mr. Demba Gitteh; and the Project Manager, Mr. Mama Manneh. Consequently, restructuring of staff was necessary for the cohesive and effective implementation of these activities. Mr. Balla Drammeh (the former CO of Samba Musu) is a dynamic and well-liked individual and was selected as the new M&E Officer. Mr. Ablie Loum was given the new position of livestock coordinator as there was an unanticipated need for support in livestock management for the semi-intensive livestock development strategy of the project (see below for more discussion on this). Furthermore, Mr. Demba Gitteh was replaced by Ms. Hady Nying (see 'stoves' for more discussion). Project Staff in Gambia, Senegal and Canada alike felt that these new positions better suited the skill sets and expertise of each individual and subsequently no more major tensions between staff were encountered.

**Bokashi** - Another lesson learned throughout the project has centred on Bokashi production. From the beginning of the project, Bokashi activities lagged behind schedule. The PMT emphasized that communities weren't ready for Bokashi at the beginning of the project and consequently, the activity was delayed until the adequate training of farmer trainers and community organizing had occurred. This training was carried out near the end of April, 2010 and most of the farmer-to-farmer trainings have now occurred. Even after training, however, it still took time to be accepted by the communities because of its complexity: the inability of many farmers to record or read instructions and notes about its preparation, as well as the expensive cost of key ingredients (i.e. sugar) clearly emerged as obstacles. Despite these constraints, continued sensitization and training by COs and farmer Bokashi advocates have convinced many farmers of the importance of soil nutrition and many of the communities are producing locally acceptable forms of compost. In hindsight, the adaptation to this new technique within three years to full-scale commercialization was perhaps unrealistic. Bokashi was a brand new technology for staff and farmers alike and accordingly, the learning curve was high and it took time to teach staff and farmers to adopt and embrace the new technique. It was only by the final year of GGIGS when Bokashi had been produced and applied to the vegetable gardens and some learning farms that farmers really started to see the potential large-scale benefits. In the future, awareness and acceptance of this new technology will grow as farmers continue to see the benefits individually and for CBOs. This will help enable a future income-generating strategies related to Bokashi

**Stoves:** The tremendous demand for the improved stoves has been another surprise throughout the project. The improved stoves have been highly appreciated at the local level and we realized that there was a consequent need to strengthen the drive towards their promotion and distribution. The original stove coordinator was believed to have inadequate motivation and energy levels needed to sustain such an important part of the project, and as such, Ms. Haddy Nying was appointed as the new Stove Coordinator in the fall of 2009. Ms. Nying has dynamic leadership qualities and was already highly effective in interfacing with women in project communities on improved stoves. As women are the main users and buyers of the stove, the project management team saw this as a strategic decision for two reasons: first, as a way to more fully develop the stove strategy of the project; and second, to have a woman promoting the stoves is more suitable for the gender empowerment goals of the project. Another challenge was that the transportation costs for the stoves to come from Kaolack to the NATC for redistribution to the villages were higher than anticipated. This was not only because of the high costs for fuel and the distance, but also because the stoves were bulky and we could only transport 50 at one time. To deal with this, the idea of transporting them while only partially assembled from Kaolack (therefore being able to fit more into the truck) and assembling them in Kerewan was suggested. Once the workers in Kerewan were trained on stove assembly, this proved to be an adequate solution.

**Livestock Program** - The livestock breeding program encountered some major challenges throughout the project. One of the most central challenges was that the need for animal veterinary care was not anticipated as part of the livestock strategy of the project a, and animal health issues have become quite critical. It became clear that Senegalese strains of sheep may grow more quickly than Gambian types but are much more prone to illness and loss. Therefore, the project strategy was to use more crossbred Senegalese Gambian sheep in breeding programs (as opposed to keeping 100% Senegalese sheep) and more closely follow a preventative animal health program in communities through addition of a project livestock officer. To address the demand on this project activity, the position of Livestock Coordinator was created and Mr. Ablie Loum, who has an extensive background in livestock management and veterinary medicine, was appointed. Mr. Loum has excelled in his new position and he visited the Gambian project villages regularly to deliver talks, training, and veterinary support to the animals. Despite the support of Mr. Loum and the livestock training, it is apparent that there is still a lack of capacity for livestock management as many of the animals continue to die. Cut-and-carry feeding from trees such as *Leucaena* has been promising. However, *Leucaena* forage can be toxic when it exceeds 1/3 of the diet, and the concept of building a ration from more than one source is still not fully understood. In some villages, animals have died from poor ration management for example by feeding the animals an

excessive or exclusive diet of *Leucaena* or urea blocks. Efforts were made by the livestock officer to increase the understanding of a combined ration feeding where *Leucaena* and urea blocks only form a part of the diet. These efforts have been successful as substantiated by the livestock officer's report on higher survival rates of the livestock this last season. A third central challenge with the livestock program was that a communal livestock program was considered unrealistic as it required shared work responsibility and the difficult task of then ensuring equitable distribution of benefits amongst all villagers. The communal vision of the project was never accepted by farmers, due to the strong land tenure system and the fact there is no single family clan that was prepared or willing to give up their agricultural land towards such a communal / group-owned venture. Accordingly, the strategy was restructured so that each community would do backyard semi-intensive livestock rearing and smaller groups would share the responsibility of fodder and fencing for their individual livestock. The communities with the most successful livestock programs are Jahaur Tukolor, Tchisse Mass, Panneh Ba and Gunjur, which have fully grasped the requirements for animal management and have concurrently developed agroforestry programs to supplement as fodder.

**Learning Farms:** There were also lessons learned on the learning farms. Several of the villages with minimal experience with rice cultivation techniques struggled with the NERICA rice and, as a consequence, experienced failures resulting in little or no yield. In Tchisse Mass for example, farmers seeded the NERICA with a millet seeder, which caused the rice to be too close together. In another location (Samba Musu), the rice was planted in an extremely sandy soil since they were told it was an upland variety. These errors are ultimately evidence of communication break-down between project management, COs, and FTs. COs should have been equipped with a full understanding of the NERICA rice variety and should have passed that knowledge onto the farmer trainers in training before handing new seeds over to the community. In any case, the lesson was learned. For the 2010 growing season, farmer trainers in Samba Musu planted their NERICA seed in a lowland area with higher clay content. One of the offshoots of this lesson has been additional training to the FTs on specifics of any new seed varieties and the implementation of a backup seed bank at the NATC in order to supplement farmers who experience failures or errors with seed for next year.

**Agroforestry:** The agroforestry and nursery component of the project really took off in the final year of the project. At first, however, there were challenges involved in increasing the survival rate of the trees for the agroforestry efforts. It was identified that a more durable version of local tree guards to protect tree seedlings from browsing and trampling by stray animals was needed. Generally, guards are woven with natural materials and cost 50-60 D to purchase. One challenge with using local guards is that they start to break down after about two years. Many seedlings, especially fruit trees, need to be protected for longer than two years. To address this issue, project staff came up with a design that combines metal and local materials. The cost would be closer to 100 D, and it would last much longer than local versions. When tested with project communities, however, the new tree guards were found to be too costly to be feasible at a large scale. Another approach was to source 1-gallon nursery pots to allow for longer nursery growing time of the trees and for more secure protection of plant roots. Several of these trees are still in village nurseries so it is too early to comment on whether they have increased the survival rates of trees planted. However, the visible results have been outstanding thus far as trees have grown faster and taller while in the nurseries, and farmers feel quite positive that they will be able to increase the tree survival rates once planted in 1-2 years.

**Training Needs:** A comprehensive training needs assessment was completed in all 10 project villages in mid-December 2010 to incorporate the highest priorities of communities into the final training term of the project. Some of the topics suggested by communities include: organic pest and disease management for both field and vegetable crops, livestock disease management, income diversification (i.e. value added), literacy training, and hay and fodder production. Particularly surprising was the importance of literacy training to the farmers. Many of the women and men farmers felt that without literacy, they were at a disadvantage for the other trainings where they could benefit from reading text and writing notes.

Although the project will not be able to address all of these training areas, it is an important lesson learned for a future project since literacy training as a prerequisite for some of the other trainings could help the FTF training program overall.

## ***10. Public Engagement***

Knowledge sharing and public engagement are now widely recognized as an important catalyst for positive and well-informed sustainable development. Therefore, throughout the GGIGS project, efforts were made ensure that the public becomes aware of the AEV development approach, with the methods and results of the GGIGS project broadcast locally through farmers' networks and regional workshops held at the NATC, nationally throughout the Gambia and Senegal, and internationally in Canada. The project outcomes will continue to be shared with others in the development community, both in the Gambia, Senegal and abroad, so that any lessons learned may be applied elsewhere

### ***Gambian / Senegalese Outreach***

In the Gambia and Senegal this included outreach to the local outlying communities, as well as furthering ties and networking between other developmental and governmental organizations both locally, and nationally, to improve their understanding of holistic agricultural programming. Throughout the project, local staff and REAP interns have worked to expand and strengthen regional networks and disseminate information about the GGIGS project to other NGOs, members of the international academic community, Gambian and Senegalese professionals, and to farmers from surrounding communities. Some of the organizations that have become aware of project activities throughout GGIGS within the Gambia and Senegal include:

- National Research Institutes (Gambian National Agricultural Research Institute (NARI); Insitut sénégalais de recherches agricoles (ISRA); Université Cheikh Anta Diop (UCAD); Institut des technologies agroalimentaires (ITA) Centre pour le développement de l'horticulture (CDH) (*affiliated to ISRA*); Laboratoire national de recherche sur les productions végétales (LNRPV) (*affiliated to ISRA*); and AfricaRice)
- NGOs (GREEN-Senegal, ADWAC, VSO-CUSO, GTZ - German International Cooperation; Peace Corps; BeeCause, Sandele Eco-Resort, Concern Universal)
- Farmers Groups (CLCOP Wack Ngouna farmers group, Wassu womens association; Cadre de concertation des producteurs d'arachides (CCPA))

During the GGIGS project, the Gambian project manager, Mr. Mama Manneh, was nominated and awarded the prestigious ASHOKA fellowship in part due to the seed saving and distribution systems set up in the project. This honorarium allowed Mr. Manneh the unique opportunity to travel to an international networking and knowledge sharing conference in Mali (July 25-30, 2011) and a nutritional and ecological farming conference in Kenya (Sept 22-26, 2011). At these conferences, Mr. Manneh used his experiences with GGIGS and other NATC initiatives to discuss positive examples of support to small-scale women's groups around income generation, and specially, value-added processing.

The GGIGS project has also been featured several times in the "Today" newspaper and a National radio program called 'World view' on Gambia Radio & Television Services (GRTS). Most recently, a freelance journalist aired his story about meeting several of the GGIGS farmers on GRTS on October 7-8, 2011. His story included narratives from farmers stating that the project has reduced their hungry period from six to three months due to the provision and access to high yielding, early maturing crops.

### ***International/ Canadian Outreach***

Over the three-year GGIGS project, REAP-Canada has participated in considerable public outreach, both within Canada and internationally. Public presentations, seminars, articles, and a newly revised website ([www.reap-canada.com](http://www.reap-canada.com)) have exposed a wide audience to their programming. The REAP website

receives over 200 unique hits every day. REAP-Canada'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. REAP-Canada regularly attends conferences in Canada where project results are shared. REAP also has close collaborations and networks within other university sites such as the Organic Agriculture Centre of Canada (OACC), Nova Scotia Agricultural College (NSAC), agricultural campus of Guelph University, York and Ryerson Universities. REAP-Canada is also a part of the Canadian Environmental Network (RCEN), the Canadian Coalition for Climate Change and Development (C4D) and other associations which often host conferences and events where public engagement opportunities exist. The RCEN has 27 years of experience in facilitating networking among ENGOs within and outside of Canada with over 800 member groups involved in environmental issues.

The IYIP interns also have a Canadian public engagement mandate to fulfil. When the interns arrive back from overseas, they promote our projects and the internship program through CIDA's Youth Zone opportunities and a newly created intern blog ([www.reapcanadainternblog.wordpress.com](http://www.reapcanadainternblog.wordpress.com)).

The following is a list of public engagement activities in Canada and internationally, outside of Gambia and Senegal, over the course of GGIGS project:

| Year                                 | Location/Venue   | Details of Public Engagement Activity  |
|--------------------------------------|--|--|
| Online Public Engagement / Publicity |  |  |
| 2008 - 2011                          | REAP-Canada Website<br><a href="http://www.reap-canada.com">www.reap-canada.com</a>  | The REAP web site was enhanced to promote its international activities, and all previous Gambian project reports were made public. The REAP MTS stove site was also enhanced and the stove documents metrified to encourage stove adoption. MTS Stove production agreements in 2008-2011 were made with partners in The Gambia, Senegal, Sri Lanka, Ghana, Ivory Coast, Indonesia, India, Zimbabwe, Tanzania, the Philippines, Japan, and Italy.   |
| 2011                                 | Canadian Geographic – Atlas Online<br><a href="http://www.canadiangeographic.ca/atlas">www.canadiangeographic.ca/atlas</a> | The AEV was chosen to be featured on Canadian Geographic's online thematic entitled 'Canada and International Development', to be published on the Canadian Atlas Online in the coming month. This is an online learning resource targeted at Canadian secondary school students!  |
| 2009                                 | World Bank Development marketplace, Washington   | Mr. Badarra Jobe, executive director of NATC attended the World Bank Development marketplace competition in November 2009 in Washington as NATC/APROFES/and REAP were selected as semi-finalists in the Development Marketplace 2009 competition. The project was entitled Pro-Millet "Green Shoots for Sub-Saharan Africa" built upon the GIGGS project model and specifically focused on a comprehensive millet value development chain for adaptation using participatory processes developed through the existing project design. Unfortunately the project was not selected as a finalist; however, it proved to be an excellent opportunity for networking and promotion of our development efforts and orientation. |
|                                      | Guelph Organic Conference  | Mr. Roger Samson and Ms. Stephanie Bailey attended the 2009 Guelph Organic Conference and put on a trade show booth which featured the project to Canadian farmers and university students.  |
| 2010                                 | The Gambia and Organic Meadows Inc. In Guelph  | Along with four Canadian dairy farmers from Organic Meadows, Ms. Shelly Juurlink travelled to the Gambia and Senegal. There, the NATC hosted a training and cross-cultural idea sharing workshop on "farmer organization" between the Canadian farmers and farmers the GGIGS village. Upon their return, these farmers presented to local farmers groups about their experiences.  |
|                                      | Guelph Organic Conference  | For the 2010 Guelph Organic Conference, REAP-Canada in   |

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|      |   | conjunction with RCEN's International Program Caucus hosted a panel workshop on international ecological agriculture programs within which GGIGS was featured prominently.  |
|      | York University   | Ms. Meredith Kushnir presented in an academic panel discussion on food security programming and featured the GGIGS project to targeted audiences of professors, students and professionals.   |
|      | Aprovecho Stove Camp, Massachusetts, USA (August 2010)                                  | REAP-Canada interns Catherine Bourgault and Simon Lavoie attended a 'stove camp' with Aprovecho in Massachusetts and disseminated information about the GGIGS renewable energy activities.  |
| 2011 | Guelph Organic Conference   | Mr. Roger Samson and Ms. Meredith Kushnir attended the 2011 conference and put on a trade show booth which featured the project to Canadian farmers and university students. In addition, REAP-Canada, in conjunction with the RCEN International Program Caucus, hosted a panel workshop entitled 'Participatory Development & Agroecological Farming for Food Security – International Perspectives' where REAP's international work was highlighted prominently. |
|      | ETHOS conference, Seattle USA   | REAP-Canada interns Mr. Kyrke Gaudreau and Mr. Thomas Blaine attended the 2011 Engineers in Technical and Humanitarian Opportunities of Service (ETHOS) conference around appropriate technologies and development. They made contacts with important international NGOs such as GTZ, Aprovecho, FAO and Oxfam.   |
|      | Biomass Energy Foundation (BEF) stove conference, New England, USA (August 7-12, 2011). | REAP-Canada intern Audrey Yank attended the BEF conference in New England, USA. The conference revolved around residue burning household stoves and biochar technologies for developing countries. Ms. Yank was able to bring more awareness about the GGIGS project and the MTS stove.   |
|      | McGill University – Food Security Conference  | Mr. Erik Delaquis attended the McGill Food Security Conference and presented a poster highlighting the GGIGS project and AEV approach in West Africa. He also participated in a short radio interview for CKUT's program called 'Health on Earth'.  |
|      | Prairie Architects, Winnipeg  | Mr. Bhanu Duggirala, former intern of REAP-Canada, is presenting to a group of engineers and architects on the successes of the GGIGS project and specifically focusing on the Mayon Turbo Stove (MTS).   |

## ***11. Project Sustainability***

GGIGS was designed to bring about lasting and continuing effects long after the end of the project. The long-term impact is envisioned to improve the lives of farmers living in environmentally degraded environments through the widespread adoption of sustainable agriculture and soil conservation techniques and other capacity building activities. In order to do this, it is essential that the project is environmentally, socially and financially sustainable beyond the 3-year duration of the project.

### ***Social sustainability:***

- One of the most important long-term contributions of GGIGS is the establishment and strengthening of local farmers' associations (CBOs). The purpose of these associations has been primarily to give the farmers greater influence by producing more cohesive goals and objectives as well as to develop local capacity for community action and to continue project activities and impacts long after the project is completed. The CBOs were formed in each of the beneficiary villages and have increased their capacity through training programs. They were responsible for community resource mobilization as well as the even distribution of project inputs/implements to the local farmers and farmer trainers. After project completion, the CBOs will continue on-farm



research, farm-tool distribution/manufacture, and maintenance of seed sharing and livestock breeding programs.

- Through the PRA process of the community-based action planning, farmer trainings, and learning farms, GGIGS communities have built skills on critical evaluation of their own social, economic & environmental constraints and on organizing for collective and individual action.
- The project has challenged traditional gender roles and worked towards empowering women to play a more active role in household and community decision-making. Evidence of changing gender roles have already surfaced in the communities through increased participation of women in village affairs, decision-making, and increased income through vegetable gardening and other micro-enterprises.
- FTF training networks will continue to help sustain innovation, learning, and alliances for future farmer development. Throughout GGIGS, beneficiary farmers have establishing links between government offices, research institutes, local technicians, extension officers and neighbouring farmers. We have already seen evidence that the FTF training will continue through informal, ‘out of project’ training sessions lead by GGIGS farmer trainers for neighbouring communities and will continue to be facilitated through the farmer networks developed in the project.
- Local ownership: The farmer trainers worked to maintain and improve their own farms while supporting the community by sharing information and plant materials. Most of the farmer trainers have continued to learn and test new varieties on their farms.

#### ***Financial sustainability:***

- Household level: The project has helped farmers to increase both their yields and their incomes. The project survey showed that over the three years beneficiary villages experienced a 56% increase in overall average household income and a 29% increase in average yields for staple crops. Furthermore, results such as decreased collection and purchase of fuel-wood, decreased purchase of seeds and synthetic fertilizer, and increased food production (yield and diversity) have all helped to free-up household income.
- Community level: With individual members having more income, many of the CBOs have been able to increase their own income / in-kind contributions from members. This has been used to reinvest capital into newly identified income generating opportunities valued by beneficiaries such as food preservation, niche vegetable production/marketing, seed banking and sale to surrounding communities, agroforestry, livestock rearing, rental of communally-owned farming equipment, and micro-credit loan systems for individual enterprise. CBOs will maintain their income moving forward through these community-based businesses in addition to ongoing fees from memberships.

#### ***Environmental sustainability:***

- There has been a strong emphasis on ecological farming systems, environmental rehabilitation, training, and capacity enhancement around the benefits of protecting and regenerating the local biodiversity of agro-ecosystems. Beneficiary farmers have also increased their capacity in plant material multiplication, and preservation and dissemination is a crucial activity for improving rural livelihoods.
- Seed sustainability: The project has helped to strengthen community seed resources through distribution of improved varieties to learning farms and through scaling-up of superior plant materials for greater community access. After three-years of scaling-up, most community members now have access to the improved seeds and the COs have worked with the CBOs in the development of business plans for further up-scaling of seeds for sustainable income generation as well as in ongoing recruitment for new improved seeds.
- All beneficiary villages are using at least one type of improved stove at the end of the project. Over the course of the project, GGIGS communities have decreased their annual average fuel-wood consumption by 33% and, concurrently, have increased tree biodiversity with over 1700 shelterbelt and fruit tree species planted.

## ***12. Risks and Assumptions***

Community planning and organizing activities are expected to increase the ability of CBOs, Farmers Associations (FAs) and women's groups to improve farmers' access to ecological farm inputs. We identified a low risk that this process would take more than the three year life-span of the project and groups would not effectively be able to assist in this function. To decrease this risk, the project proponents have integrated with the existing community infrastructure, thereby reducing the time required for this process to be successful. The project partners have been aware that the institutional building process could take more than 3 years if the community has had no previous organization. While it may be true that communities with less previous organization (i.e. Jahour Tukulor) have taken longer to form effective village-level structures during GGIGS than villages with stronger proceeding organization (i.e. Suwareh Kunda), at the end of the project it is clear that all of our project villages have made significant progress to building their community infrastructure over the past three years.

There was another low risk that erratic weather conditions may prevent farmers from allocating sufficient time or resources to implement improved agricultural practices after completing trainings and developing learning farms. Drought, downpours, flash floods and locust invasions have been known to affect regional crop production and therefore posed a threat of famine in project areas. Trainings and learning farms have therefore been designed to ensure that many project initiatives would be more readily adopted in the event of an agricultural disaster or famine, as they minimize the risk of disasters to individual farmers. Soil rehabilitation and farm weatherproofing have improved agricultural productivity during droughts or floods, and pest management and food security has been achieved through early maturing varieties, farm planning and diversification. Community seedbanking has been another important approach to ensure the resilience of communities. Villages have been encouraged to institutionalize support to each other during crisis conditions.

A medium to low risk was identified that soil and agricultural production would continue to decline despite the increased adoption of soil management and conservation practices in the communities, due to the combination of increasing pressures of desertification, salinization, erosion, and escalating population growth (increasing livestock grazing and agricultural intensification). These risks are regional in scope and are issues the project has worked to directly confront. Some of the communities have experienced heightened seasonal erosion during the heavy rains of 2009 (i.e. villages in Kaur). Community specific strategies for these villages included a heavier emphasis on agroforestry and planting of perennials into the landscape to help decrease the threat of erosion in the future. Also, through strengthening local CBOs and regional networking, committees have increasingly participated in solving village and regional-level environmental issues such as climate change adaptation, deforestation, and free-range livestock grazing.

Finally, the project has assumed all along that decreased consumption of wood fuel in households will reduce deforestation. Yet, there was a final risk (low) that that mounting economic pressure will encourage some people to produce charcoal to generate income. Most beneficiary communities do not have access to sufficient forest resources for this to be an efficient option. The strong emphasis on agroforestry trainings and the FTF training program has ensured that farmers of all ages are educated on the importance of maintaining forest resources in a sustainable manner.

ANNEX 1: Results-Based Project Summary Table

| <p><b>Requested CIDA contribution: \$398,000</b><br/> <b>Total budget: \$516,500</b></p>  | <p><b>Purpose(s):</b> The purpose of the Gaining Ground in Gambia and Senegal (GGIGS) Project is to accelerate the adoption of ecological agriculture and soil conservation practices by impoverished peoples in rural communities.</p>  | <p><b>Goal(s):</b> The goal of the GGIGS Project is to counter the trend in land degradation and desertification occurring in vulnerable agrarian communities in the Gambia and Senegal.</p>   |
|---|--|--|
| <p><b>EXPECTED OUTPUTS</b></p>  | <p><b>ACTUAL OUTPUTS</b></p>   | <p><b>VARIANCES</b></p>  |
| <ol style="list-style-type: none"> <li>1. Improved capacity of men and women farmers in local communities to access ecological farming materials (<i>seeds, plant materials, livestock fodder/fencing</i>)</li> <li>2. Increased capacity of Farmer to Farmer (FTF) Training Network to advance education on ecological farming and soil conservation</li> <li>3. Learning farms demonstrate improved agricultural and soil conservation practices (crop rotations, cover cropping, reduced tillage, field border establishment and agroforestry, crop residue incorporation and sustainable livestock management)</li> <li>4. Increased availability and adoption of organic fertilizers (e.g. Bokashi) in target communities</li> <li>5. Local distribution of 250 improved stoves</li> </ol> | <ol style="list-style-type: none"> <li>1. <i>Local farmers (M/F) access to improved materials</i></li> <li>2. <i>Number of trainers and farmers (M/F) trained in ecological agriculture/soil conservation through the FTF Training Network</i></li> <li>3. <i>Number of farms and farmers (M/F) adopting improved agricultural and soil conservation practices</i></li> <li>4. <i>Amount of organic fertilizer produced and used in beneficiary communities (kg)</i></li> <li>5. <i>Number of women/households cooking with improved stoves in beneficiary villages and qualitative reports of household air quality</i></li> </ol> <p>1. A diversity of improved crops and vegetable seeds (over 5 tonnes in total) were multiplied in 2009, redistributed for 2010, multiplied in 2010, and then redistributed in 2011. 10 communities have sustainable livestock projects underway and four communities have established agroforestry nurseries for fodder production. The project survey indicated that there was a 160% net increase in farmers reporting increased access to improved farm materials.</p> <p>2. 40 farmer trainers (21F/19M) were trained on ecological methods using ecological farming training modules adapted for the region. These farmer trainers have subsequently conducted farmer training sessions for a total of 3084 farmers (2422F/665M).</p> <p>3. 40 learning farms have been established in upland cropping areas (i.e. where peanuts are widely cultivated), rice farming in the lowlands, and in vegetable gardens. All 40 learning farms have adopted various improved agricultural and soil conservation practices. In 2010, over 60% of survey respondents were using more than 15 ecological agriculture and soil conservation techniques compared with only 16% in 2008.</p> <p>4. Organic fertilizer production is being built up step-by-step as more farmers do semi-intensive livestock rearing (to facilitate manure gathering, and acquire crop milling residue burning cookstoves in order to produce carbonized biomass). 40 farmer trainers (21F/19M) have received formal trainings on Bokashi organic fertilizer and these farmers have begun training other farmers in their communities. To date, 2 tonnes of Bokashi fertilizer have been produced and used in beneficiary communities. Further production will begin after the rainy season and production volumes will be subsequently monitored.</p> <p>5. The two types of improved cookstoves continue to incorporate local feedback into modifications. In total, 400 improved cookstoves have been produced and distributed in the communities (as of July 2010). Community feedback indicates that the stoves appreciably reduce smoke &amp; reduce fuel-wood use. There has been a net decrease of 33% of fuel-wood use.</p> | <ol style="list-style-type: none"> <li>1. Seed distribution and multiplication systems are now well developed and proving well appreciated. Project has successfully expanded the diversity and testing of new cultivars (incl. cowpea, millet varieties, sorghum). Actual outputs coincide with expected outputs. Sustainable livestock ventures including fencing fodder strategies have been highly successful in four villages; Agroforestry and gardening ventures set up in 10 villages.</li> <li>2. The trainers' training and the farmer-to-farmer training proceeded very well. Actual outputs were higher than expected outputs.</li> <li>3. This activity has proceeded very well. Actual outputs coincide with expected outputs.</li> <li>4. This activity has proceeded well but slowly. Some farmers have started to fully understand the benefits of Bokashi, but it will still take more time for full commercial development of Bokashi to take place.</li> <li>5. Cookstove testing and mass distribution proceeded rapidly due to the high levels of interest from women. This activity can be considered highly successful since actual outputs have exceeded expected outputs.</li> </ol> |
| <p><b>EXPECTED OUTCOMES</b></p>   | <p><b>ACTUAL OUTCOMES</b></p>  | <p><b>VARIANCES</b></p>  |
| <ol style="list-style-type: none"> <li>1. Increased soil fertility on local farms</li> <li>2. Measurable increase in agricultural productivity and farm income</li> <li>3. Reduction in local deforestation</li> </ol>  | <ol style="list-style-type: none"> <li>1. <i>Qualitative assessments (M/F) of soil conservation in project target areas</i></li> <li>2. <i>Agricultural yield, ability to produce food year-round, and farm income in project area (M/F)</i></li> <li>3. <i>Household consumption of fuel wood in target area</i></li> </ol> <p>1. All farmer trainers participated in trainings enabling them to undertake improved ecological soil fertility management and comprehensive approaches to soil erosion control. As well many</p>   |  |

|  | <p>project beneficiaries were exposed to these concepts through the PRA and subsequent farmer to farmer training. The impacts of changes in soil fertility management have been seen through increased yields and less erosion reported through the PM&amp;E program.</p> <p>2. The third round of surveys were carried out to determine production levels of crops and vegetables in 10 households in each of the 10 communities as well as levels of food self sufficiency and sources of farm income. Comparisons to the baseline gathered in 2008 show that average household farm income increased by 56% from 2008 to 2010 (68% Male, 79% female ). Farmers have reported decreases to the “hungry season” as a result of early maturing varieties of millet, groundnut, cowpea and maize. Finally, yields have also increased. Farmer survey respondents reported a 29% net yield increase for staple crops and 10% for vegetables from 2008-2010.</p> <p>3. The introduction of improved cookstoves has already begun to have an impact on reducing fuelwood gathering in the communities since from the 2010 surveys an average of 33% decrease in annual fuel-wood consumption was observed amongst project villages. Based on previous experience it is estimated that for each Mayon Turbo Stove introduced, household fuelwood consumption should decline by 80% and for each rocket stove introduced a 40% reduction in fuelwood use should occur (i.e. 1.2 and 0.6 tonne reduction in fuelwood for the MTS and rocket stove respectively). Thus, with 296 MTS introduced and 104 Rockets, fuel-wood consumption has decreased by approximately 350 tonnes (290 MTS; 61.4 Rocket) .</p>   | <p>All three of these desired outcomes can be considered have proceeded very well. The increase in household income is promising and can be attributed to improved farming practices and the sustainable livestock program. The cookstove activity has made considerable progress in the project lifespan.</p>  |
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| EXPECTED IMPACTS   | ACTUAL IMPACTS  | VARIANCES   |
| <p>Increased soil conservation and agricultural productivity will lead to reduced poverty, enhanced food-security, minimize the impacts of climate change, and create a sustainable livelihood for women, families and impoverished peoples in participating and surrounding communities</p> | <p>Perception of farming as a viable livelihood option for women and youth in target areas (M/F/Youth)</p> <ol style="list-style-type: none"> <li>1. Generally communities are quite optimistic presently about their livelihood opportunities as a result of the support they have received through the project and because the weather has continued to be quite favorable for farm production. In some communities such as Jahour Tukulor, women are particularly pleased with the project as men have generally controlled all resources coming into the community in the past. Most feed-backing from communities during project site visits throughout the project in particular commented that improved seed varieties and early maturing crops were particularly helpful in the first year for decreasing the hunger gap and for increasing livelihood potential for future cropping cycles. Also during site visits, the majority of farmers have indicated their overall perception of farming as a viable livelihood option.</li> <li>2. The yields and trials on the learning crop and rice farms and vegetable gardens have proceeded well and have provided diversified crops in vegetable gardens and farmland and increase food security, especially during the rainy season. Many women, especially in Tchisse Mass, have noticed appreciable increases to vegetable availability since the implementation of their gardens at the start of the project.</li> <li>3. A major benefit of the project has been reducing womens’ labour burden through the households’ acquisition of improved cookstoves. This has been a major success story to date for individual households in terms of improved quality of life for women.</li> </ol> | <ol style="list-style-type: none"> <li>1. Actual impact coincided with anticipated impacts.</li> <li>2. Spread of ecological orientation and understanding of ecological principles and methods has occurred as expected. Vegetable gardening has had an appreciable impact on the quality of life for many farmers.</li> <li>3. Cookstoves have provided a significant and rapid change impact in terms of quality of life for women.</li> </ol>   |
| Cross-cutting Themes   | EXPECTED OUTCOMES   | ACTUAL OUTCOMES   |
| <p>IFD &amp; EG / WID&amp;GE</p>   | <p>The project gender strategy emphasizes bridging the economic, social and educational disparity between men and women through increasing women’s access to education around ecological agriculture/soil conservation, increased farm income through value</p>   | <p><i>Activities include: Community organizing to support women’s access to inputs; Training of local women in ecological agriculture practices; Assisting women demonstrate improved practices on their farms; Farm income generation through value added product production</i></p> <p>1. Women have had equal opportunity to participate in project activities and act as agents of change through inclusion in project management and implementation. There have been six women engaged as community organizers, a women project officer, and a woman stoves coordinator. In addition, there were 21 women working as farmer trainers and a high percentage of women participating in farmer to farmer training activities. The project</p> |

|   |  |   |
|---|--|---|
|   | added products (eg. Bokashi), and access/control over agricultural inputs ( <i>seeds, plant materials, organic fertilizer, livestock, fencing materials</i> ):   | <p>has also retained nine Animal Care Axillaries in the villages who are being trained on animal management and heath. This has been an especially beneficial advancement because livestock is considered to be part of the male domain. Women have also begun to attain prominent roles in the VDC in their communities which are the main bodies for decision making and community organization.</p> <p>2. The main project farming activities that have been especially appreciated by women are activities supporting rice farming and vegetable production. Women have specifically appreciated the project's efforts to support access to vegetable seeds and improved rice variety multiplication. Since 2008, women farmer survey respondents have reported a 208% increase in their access to farm inputs such as seeds, compost, livestock, fodder, and fencing.</p> <p>3. Women also appreciate the intervention of improved stoves. The main benefits they see is in reducing indoor smoke and their labour burden as women are spending up to 1/3<sup>rd</sup> of their time fuelwood gathering. It is especially difficult in the Kaolack and Kaur area villages and villages in the Njawara are that have no nearby mangroves. The MTS in particular is appreciated as some communities can access all their fuel needs now within the community and use crop residues that before would have been considered waste.</p>   |
| <b>ENVIRONNEMENT / ENVIRONMENT</b>              | The project focuses on the introduction of ecological agricultural practices (crop and livestock management) as a means to promote long-term soil conservation in rural areas of the Gambia. Improved cookstoves are also important to decrease deforestation: | <p><i>Activities include: Training of local farmers and demonstration of ecological agriculture; Local organic fertilizer production program developed; Research and development of improved household stoves</i></p> <p>There is now widespread awareness within the communities of the need for holistic approaches to resolving the major environmental problems of: 1) soil erosion/soil fertility decline 2) deforestation and 3) stray grazing/overgrazing. This is being achieved through training on ecological farming and improved household stove use. Overall the cookstoves have been especially well appreciated by communities as they are deemed highly useful as a means to reduce deforestation and indoor air pollution. As well the MTS stove produces appreciable quantities of carbonized crop milling residues for soil fertility improvement. The challenge of stray livestock has already been met with some success but will require more effort to resolve all aspects of this resource degrading practice. It appears to have a higher degree of complexity than other environmental problems to resolve as it is more management intensive.</p>  |
| <b>ENGAGEMENT DU PUBLIC / PUBLIC ENGAGEMENT</b> | [see section 9 : for more detail on all public engagement activities throughout the project]   | <ul style="list-style-type: none"> <li>• The REAP web site was enhanced to promote its international activities, all previous Gambian project reports were made public. The REAP MTS stove site was also enhanced and the stove documents metrified to encourage the stoves' adoption. MTS Stove production agreements in 2008-2009 were made with partners in The Gambia, Senegal, Sri Lanka, Ghana, Ivory Coast, Indonesia, India and Zimbabwe.</li> <li>• The AEV was chosen to be featured on Canadian Geographic's online thematic entitled 'Canada and International Development', to be published on the Canadian Atlas Online in the coming month. This is an online learning resource targeted at Canadian secondary school students!</li> <li>• REAP Representatives at the 2009, 2010 and 2011 Guelph Organic Conferences hosted a workshop on international ecological agriculture and the GGIGS project was featured prominently.</li> <li>• Canadian/North American public engagement activities and/or networking at other academic conferences at York University and McGill University, Aprovecho Stove Camp, ETHOS conference, and the Biomass Energy Foundation (BEF) stove conference.</li> <li>• African public engagement and/or networking included outreach to regional and international research institutes, NGOs and farmers groups, GPM traveling to a networking and knowledge sharing conference in Mali and a nutritional and ecological farming conference in Kenya.</li> <li>• GGIGS project has been featured in the "Today" newspaper in the Gambia and on Gambian national radio program called 'World view' on Gambia Radio &amp; Television Services (GRTS).</li> <li>• Mr. Badarra Jobe, executive director of NATC traveled to Washington as NATC/APROFES/and REAP were selected as semi-finalists in the World Bank Development Marketplace 2009 competition. The project entitled Pro-Millet "Green Shoots for Sub-Saharan Africa" built upon the GIGGS project model and specifically focused on developing a comprehensive millet value chain for adaptation using participatory processes. Unfortunately the project was not selected, however, it proved to be an excellent networking opportunity and promotion of our development efforts.</li> </ul> |

ANNEX 2: GGIGS Project Three Year Detailed Work Plan 2008 – 2011

| ACTIVITIES  | Yr 1 |             |             |             |             |      |             |             |             |             | Yr 2        |             | Yr 3        |             | INDICATORS<br>(CIDA performance indicators in bold)<br>(Project management implementation indicators in italics) |  |
|---|------|-------------|-------------|-------------|-------------|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--|--|
|   | 2008 |             |             |             |             | 2009 |             |             |             |             | 2009        | 2010        | 2010        | 2011        |  |  |
|   | AUG  | S<br>E<br>P | O<br>C<br>T | N<br>O<br>V | D<br>E<br>C | JAN  | F<br>E<br>B | M<br>A<br>R | A<br>P<br>R | M<br>A<br>Y | J<br>U<br>N | JUL-<br>DEC | JAN-<br>JUN | JUL-<br>DEC |  | JAN-<br>JUN  |
| <b>Activity 1 - Gender analysis, baseline studies and community planning</b>                          |      |             |             |             |             |      |             |             |             |             |             |             |             |             |  |  |
| Coordination, collection and analysis of baseline data collection, PRA, and gender analysis           | X    | X           | X           | X           | X           |      |             |             |             |             |             |             |             |             |  | - PRA and data gathering results incorporated into workplan  |
| Conduct PRAs/gender analysis in all 10 project villages   | X    | X           | X           |             |             |      |             |             |             |             |             |             |             |             |  | - Completion of PRA report<br>- Participatory planning and evaluation practices institutionalized into community activities and organizations<br>- Increased skills and confidence in understanding the local economic, social, and agricultural issues that affect beneficiaries and ability to identify emerging opportunities |
| Development, administration and analysis of Questionnaire   |      |             |             |             |             | X    | X           | X           | X           | X           | X           | X           | X           | X           | X  | - Panel group formation<br>- Development, administration, and analysis of Questionnaire  |
| Identify COs in each beneficiary village  | X    | X           | X           | X           | X           |      |             |             |             |             |             |             |             |             |  | - Number of COs identified   |
| Identification of existing CBOs, FAs, womens groups in each beneficiary village                       | X    | X           | X           | X           | X           |      |             |             |             |             |             |             |             |             |  | - Number of CBOs identified  |
| If no existing group, formation of CBOs/farmer associations in each beneficiary village               |      |             |             |             |             | X    | X           | X           | X           | X           | X           |             |             |             |  | - Number of CBOs registered  |
| Training of COs on community organizing   |      |             |             |             |             | X    | X           | X           |             |             |             |             |             |             |  | - 10 COs identified and trained  |
| Training of CBOs on CBO management  |      |             |             |             |             | X    | X           | X           |             |             |             |             |             |             |  | - Number of CBO trainings held<br>- Local CBO's, women's groups and/or farmers associations will be encouraged to develop marketing strategies and revolving credit programs to support income-generation (particularly for women)   |
| Community organizing  | X    | X           | X           | X           | X           | X    | X           | X           | X           | X           | X           | X           | X           | X           | X  | - Number of meetings held  |
| Development and ongoing assessment of project gender strategy   | X    | X           | X           | X           | X           | X    | X           | X           | X           | X           | X           | X           | X           | X           | X  | - Strategies developed and assessed  |
| <b>Activity 2 – Farmer to Farmer (FTF) training program</b>   |      |             |             |             |             |      |             |             |             |             |             |             |             |             |  |  |
| Revision of existing basic training modules on ecological agriculture and soil conservation           |      |             | X           | X           | X           | X    |             |             |             |             |             |             |             |             |  | - Number of basic training modules developed   |
| Technical writing and research to support the development of any missing training modules             |      |             | X           | X           | X           | X    |             |             |             |             |             |             |             |             |  | - Technical writing and research completed to assist in training module development  |
| Coordinating research on sustainable livestock management (basic and advanced) together with the OACC |      |             |             | X           | X           | X    | X           | X           | X           | X           | X           | X           | X           | X           | X  | - Number of livestock training modules developed   |
| Development of advanced training modules on ecological agriculture and soil conservation              |      |             |             |             |             |      |             |             |             |             | X           | X           | X           | X           | - Number of advanced training modules developed  |  |
| Adaptation of training modules to increase cultural sensitivity and local comprehension               |      |             |             | X           | X           | X    | X           | X           | X           | X           | X           | X           | X           | X           | X  | - Beneficiaries will increase their understanding of sustainable agricultural practices by developing long-term farm plans and management skills (vs. their current "year-to-year" approach) to ensure increases in agricultural productivity into the future  |
| Identify 40 farmer trainers for the 10 villages   | X    | X           | X           | X           | X           |      |             |             |             |             |             |             |             |             |  | - Number of trainers identified in each village  |
| Train 40 farmer trainers on basic trainings   |      |             |             |             | X           | X    | X           |             |             |             |             |             |             |             |  | - Number of Farmer Trainers trained (Target 40: 50% female, 25% youth)<br>- Number of trainings planned  |

| ACTIVITIES   | Yr 1 |             |             |             |             |     |             |             |             |             |             | Yr 2        |             | Yr 3        |             | INDICATORS<br>(CIDA performance indicators in bold)<br>(Project management implementation indicators in italics) |      |  |   |
|--|------|-------------|-------------|-------------|-------------|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--|------|--|---|
|  | 2008 |             |             |             |             |     | 2009        |             |             |             |             |             | 2009        | 2010        | 2010        |  | 2011 |  |   |
|  | AUG  | S<br>E<br>P | O<br>C<br>T | N<br>O<br>V | D<br>E<br>C | JAN | F<br>E<br>B | M<br>A<br>R | A<br>P<br>R | M<br>A<br>Y | J<br>U<br>N | JUL-<br>DEC | JAN-<br>JUN | JUL-<br>DEC | JAN-<br>JUN |  |      |  |   |
| Coordinate FTF training program at the local level   |      |             |             |             |             | X   | X           | X           | X           | X           | X           | X           | X           | X           | X           | X  | X    |  |   |
| Deliver basic step-down trainings for 500 local farmers  |      |             |             |             |             |     |             |             | X           | X           | X           | X           | X           | X           |             |  |      |  | - Number of Local farmers trained (Target 500: 50% female, 25% youth)   |
| Train Farmer Trainers on Advanced Trainings  |      |             |             |             |             |     |             |             |             |             |             |             | X           | X           |             |  |      |  | - Number of Farmer Trainers trained (Target 40: 50% female, 25% youth)  |
| Deliver advanced step-down trainings for 500 local farmers   |      |             |             |             |             |     |             |             |             |             |             |             |             |             | X           | X  |      |  | - Number of Local farmers trained (Target 500: 50% female, 25% youth)   |
| Training assessment and identification of further training needs in each community   |      |             |             |             | X           | X   | X           | X           | X           | X           | X           | X           | X           | X           | X           | X  | X    |  | - Increased capacity of Farmer to Farmer (FTF) Training Network to advance education on ecological farming and soil conservation<br>- Development of plan by local community associations to continue trainings after project completion  |
| <b>Activity 3 –Ecological agriculture and soil conservation carried out on learning farms</b>  |      |             |             |             |             |     |             |             |             |             |             |             |             |             |             |  |      |  |   |
| Learning Farm Selection  |      |             | X           | X           | X           | X   | X           | X           |             |             |             |             |             |             |             |  |      |  |   |
| Establish 40 learning farms in the 10 project villages   |      |             |             |             |             | X   | X           | X           | X           | X           | X           |             |             |             |             |  |      |  | - Number of learning farm/gardens selected and preparation of sites for planting<br>- Community announcements on locations and welcoming community members to visit the farms through the season  |
| Collection of improved seeds by PMT  |      |             | X           | X           | X           | X   | X           | X           | X           | X           | X           | X           | X           | X           | X           | X  | X    |  | - Quantity of seeds collected (kg/ variety and species type)  |
| Provision of improved plant materials for crops, vegetables, agroforestry and fodder to at least 40 farmers on learning farms in beneficiary communities                                       |      |             |             |             |             |     |             | X           | X           | X           | X           | X           | X           | X           | X           | X  |      |  |   |
| Establishment of seed selection and evaluation criteria, and preservation, multiplication and (multi-year) distribution protocols in each community  |      |             |             |             |             | X   | X           | X           | X           | X           | X           | X           | X           | X           | X           | X  |      |  | - Public announcement of seed distribution plans for 3 years of the project<br>- Seed breeding and exchange programs developed (both within and between communities)  |
| Planting of field crops on learning farms  |      |             |             |             |             |     |             |             |             |             | X           | X           | X           | X           | X           | X  |      |  |   |
| Planting of vegetables for rainy season harvest  |      |             |             |             |             |     |             |             |             |             | X           | X           | X           | X           | X           | X  |      |  |   |
| On-going assessments and documentation of tests of materials and practices through both local farmer assessments (not scientific), leading farmers, and NARI experts                           |      |             |             |             |             |     |             |             |             |             | X           | X           | X           | X           | X           | X  |      |  | - Incorporation of testing results into further seed multiplication programs  |
| New farmers access various types of improved agricultural inputs (vegetable seeds, crops and fodder) that were favorably assessed and scaled up on learning farms                              |      |             |             |             |             |     |             |             |             |             |             | X           | X           | X           | X           | X  |      |  | - Increased access of community members to seeds, improved plant materials (M/F) (PRA methodologies only)<br>- Evaluative interviews and follow-up field visits to determine if farmers are able to identify strategies to minimize the risks of seed loss, and intended on implementing them in the future |
| Implementation of ecological techniques (including crop rotations, cover cropping, reduced tillage, field border establishment and agroforestry, crop residue incorporation) on learning farms |      |             |             |             |             |     |             | X           | X           | X           | X           | X           | X           | X           | X           | X  |      |  | - Learning farms demonstrate improved agricultural and soil conservation practices<br>- Comparison of farm trial results between farmers and between communities<br>- Extension of successes into community   |
| Establishment of fodder production for livestock in villages   |      |             |             |             |             |     |             | X           | X           | X           | X           | X           | X           | X           | X           | X  |      |  | - Demonstration of sustainable fodder and holistic animal health/ nutrition as a 1 <sup>st</sup> step towards semi-intensive production   |
| Coordination of sustainable livestock management plan in each village  |      |             |             |             |             |     |             |             |             |             |             | X           | X           | X           | X           | X  |      |  | - Semi-intensive management enclosures are planned for each village (if possible)   |

| ACTIVITIES   | Yr 1 |             |             |             |             |     |             |             |             |             |             | Yr 2        |             | Yr 3        |             | INDICATORS<br>(CIDA performance indicators in bold)<br>(Project management implementation indicators in italics) |  |
|--|------|-------------|-------------|-------------|-------------|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--|--|
|  | 2008 |             |             |             |             |     | 2009        |             |             |             |             |             | 2009        | 2010        | 2010        |  | 2011   |
|  | AUG  | S<br>E<br>P | O<br>C<br>T | N<br>O<br>V | D<br>E<br>C | JAN | F<br>E<br>B | M<br>A<br>R | A<br>P<br>R | M<br>A<br>Y | J<br>U<br>N | JUL-<br>DEC | JAN-<br>JUN | JUL-<br>DEC | JAN-<br>JUN |  |  |
|  |      |             |             |             |             |     |             |             |             |             |             |             |             |             |             |  | - Livestock breeding and exchange programs developed (both within and between communities)<br>- <b>Increased access to livestock, fodder and fencing materials (M/F)</b> (PRA methodologies only)  |
| Farm trial assessment program (PM&E) and identification of further farm material needs in each community |      |             |             |             |             |     |             |             | X           | X           | X           | X           | X           | X           | X           | X  | - Development of marketing plan for farm products (i.e. seeds; organic produce, etc.) as a source of income generation after project completion  |
| Technical Support for learning farms   |      |             |             |             |             |     |             |             | X           | X           | X           | X           | X           | X           | X           | X  |  |
| Technical Support for plant material improvement   |      |             |             |             |             |     |             |             | X           | X           | X           | X           | X           | X           | X           | X  |  |
| Project Questionnaire  |      |             |             |             |             | X   | X           | X           | X           | X           | X           | X           | X           | X           | X           | X  | - <b>Measurable increase in agricultural productivity (yield/year round production) and farm income (M/F)</b><br>- <b>Number of farms/farmers using ecological agricultural/soil conservation practices (M/F)</b>  |
| Project PM&E program   | X    | X           | X           | X           | X           | X   | X           | X           | X           | X           | X           | X           | X           | X           | X           | X  | - <b>Measurable increase in agricultural productivity (yield/year round production) (M/F)</b><br>- <b>Number of farms/farmers using ecological agricultural/soil conservation practices (M/F)</b><br>- <b>Perception of farming as a viable livelihood option for women and youth in target areas (M/F/youth)</b> (PRA methods only)<br>- <i>Planning sessions conducted on developing and institutionalizing PM&amp;E program after completion of project</i> |
| <b>Activity 4 – Local organic fertilizer production program</b>  |      |             |             |             |             |     |             |             |             |             |             |             |             |             |             |  |  |
| Encourage and develop organic fertilizer/manure production programs in all the 10 project villages       |      |             |             |             | X           | X   | X           | X           | X           | X           | X           | X           | X           | X           | X           | X  | - <i>Development of business plan for continued fertilizer production as a source of income generation after project completion (possibly in coordination with CBOs/partners)</i><br>- <b>Amount of organic fertilizer produced and used in beneficiary communities (kg)</b>   |
| Project Questionnaire and PM&E program on soil conservation impacts on 40 learning farms                 | X    | X           | X           | X           | X           | X   | X           | X           | X           | X           | X           | X           | X           | X           | X           | X  | - <b>Degree of increase of soil fertility on local farms (M/F)</b> (PM&E only)<br>- <b>Measurable increase in agricultural productivity (yield/year round production) (M/F)</b><br>- <b>Farm income (Household/M/F)</b> (Questionnaire only)<br>- <b>Availability and adoption of organic fertilizers (e.g. Bokashi) in target communities (M/F)</b> (PRA methods only)  |
| <b>Activity 5 – Research and development of improved household stoves</b>                                |      |             |             |             |             |     |             |             |             |             |             |             |             |             |             |  |  |
| Stove workshop and project stove team meeting  |      |             |             |             |             | X   |             |             |             |             |             |             |             |             |             |  |  |
| Market research on opportunities for improved stoves   |      |             |             |             |             |     |             | X           | X           | X           | X           | X           |             |             |             |  |  |
| Research and development on production of improved household stoves                                      |      |             |             |             |             |     |             | X           | X           | X           | X           | X           |             |             |             |  | - <i>Development of a business plan for project stove production</i>   |
| Production of initial pilot stoves   |      |             |             |             |             |     |             |             |             |             |             |             | X           | X           |             |  | - <i>50 pilot stoves produced</i>  |
| Testing of pilot stoves in each of the project villages  |      |             |             |             |             |     |             |             |             |             |             |             | X           | X           |             |  |  |
| Production of the remainder of the stoves  |      |             |             |             |             |     |             |             |             |             |             |             |             | X           | X           |  | - <i>200 further stoves produced</i>   |
| Distribution of the remainder of stoves to women   |      |             |             |             |             |     |             |             |             |             |             |             |             | X           | X           |  |  |



| ACTIVITIES  | Yr 1 |             |             |             |             |      |             |             |             |             |             | Yr 2        |             | Yr 3        |             | INDICATORS<br>(CIDA performance indicators in bold)<br>(Project management implementation indicators in italics)   |  |
|---|------|-------------|-------------|-------------|-------------|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--|--|
|   | 2008 |             |             |             |             | 2009 |             |             |             |             |             | 2009        | 2010        | 2010        | 2011        |  |  |
|   | AUG  | S<br>E<br>P | O<br>C<br>T | N<br>O<br>V | D<br>E<br>C | JAN  | F<br>E<br>B | M<br>A<br>R | A<br>P<br>R | M<br>A<br>Y | J<br>U<br>N | JUL-<br>DEC | JAN-<br>JUN | JUL-<br>DEC | JAN-<br>JUN |  |  |
| in the 10 project villages  |      |             |             |             |             |      |             |             |             |             |             |             |             |             |             |  |  |
| Continued evaluation of the stoves in each of the project villages  |      |             |             |             |             |      |             |             |             |             |             |             | X           | X           | X           | - Development of business plan for continued stove production as a source of income generation after project completion (possibly in coordination with CBOs/partners)                      |  |
| Project Questionnaire   | X    | X           | X           | X           | X           | X    | X           | X           | X           | X           | X           | X           | X           | X           | X           | - Number of women cooking with improved stoves<br>- Household air quality improvements<br>- Household fuel wood consumption<br>- Reduction in local deforestation (PRA methodologies only) |  |
| <b>Project management and reporting</b>   |      |             |             |             |             |      |             |             |             |             |             |             |             |             |             |  |  |
| Formation of Project Management Team (PMT), Project Implementing Team (PIT) and initial project planning and design                       | X    | X           | X           | X           |             |      |             |             |             |             |             |             |             |             |             | - Completion of Project Workplan   |  |
| Selection and management of project staff   |      |             |             |             |             |      |             |             |             |             |             |             |             |             |             | - Formation of PMT and PIT   |  |
| Project review, assessment and performance monitoring   | X    | X           | X           | X           | X           | X    | X           | X           | X           | X           | X           | X           | X           | X           | X           | - AEV programming is improved in response to feedback from communities   |  |
| Coordination of all project activities and partners in the NBD, the CRD and Senegal   | X    | X           | X           | X           | X           | X    | X           | X           | X           | X           | X           | X           | X           | X           | X           |  |  |
| Facilitation of project implementation in the CRD and Senegal under the direction of NATC   | X    | X           | X           | X           | X           | X    | X           | X           | X           | X           | X           | X           | X           | X           | X           |  |  |
| Overall narrative and financial reporting for the project to CIDA (annual and semi-annual)  |      |             |             |             | X           |      |             |             |             |             | X           | X           | X           | X           | X           |  |  |
| Annual narrative and financial report consolidation for submission to Canada (in English)   |      |             |             |             |             |      |             |             |             |             | X           |             | X           |             | X           | - Annual narrative and financial reports completed in an accurate and timely manner  |  |
| Semi-Annual narrative and financial report consolidation for submission to Canada   |      |             |             |             | X           |      |             |             |             |             |             | X           | X           | X           | X           | - Semi- narrative and financial reports completed in an accurate and timely manner   |  |
| Submission of quarterly project report from NATC to REAP  |      |             |             |             | X           |      |             | X           |             |             |             | X           | X           | X           | X           |  |  |
| Submission of narrative and financial progress reports from implementing partners to NATC   |      |             |             |             |             |      |             |             |             |             |             |             |             |             |             |  |  |
| Staff/community/field activity report consolidation   |      |             |             |             |             |      |             |             |             |             |             |             |             |             |             |  |  |
| Submission of monthly reports by COs & PM&EO  |      | X           | X           | X           | X           | X    | X           | X           | X           | X           | X           | X           | X           | X           | X           |  |  |
| <b>Financial Management</b>   |      |             |             |             |             |      |             |             |             |             |             |             |             |             |             |  |  |
| Overall financial report consolidation to CIDA  |      |             |             |             | X           |      |             |             |             |             | X           | X           | X           | X           | X           |  |  |
| Financial report consolidation (Gambian expenditures) for submission to Canada  |      |             |             |             | X           |      |             |             |             |             | X           | X           | X           | X           | X           |  |  |
| Documentation of finances, bookkeeping and accounting of individual budget allocations  | X    | X           | X           | X           | X           | X    | X           | X           | X           | X           | X           | X           | X           | X           | X           | - Effective and accurate financial management of the project with little over or under expenditures  |  |
| Audit – Gambian Operations  |      |             |             |             |             |      |             | X           |             |             |             | X           |             | X           |             | - Integrity of financial recording systems maintained  |  |
| <b>Communications and public engagement</b>   |      |             |             |             |             |      |             |             |             |             |             |             |             |             |             |  |  |
| Disseminate information to the public through conferences, publications, websites and presentations                                       | X    | X           | X           | X           | X           | X    | X           | X           | X           | X           | X           | X           | X           | X           | X           |  |  |
| Facilitate national and international networking and information exchange between farmers, scientists, governments and the private sector | X    | X           | X           | X           | X           | X    | X           | X           | X           | X           | X           | X           | X           | X           | X           |  |  |

ANNEX 3: GGIGS Partner Roles and Responsibilities

| Activity   | Roles and Responsibilities<br><i>(x = responsibility, xx = primary responsibility, ✓ = participation)</i> |      |      |       |         |                    |
|--|---|------|------|-------|---------|--------------------|
|  | REAP  | NATC | NARI | AVISU | APROFES | Beneficiary Groups |
| <b>Activity 1 - Gender, baseline studies and community planning</b>  |   |      |      |       |         |                    |
| Coordination, collection and analysis of baseline data collection, PRA, and gender analysis  | x   | xx   | ✓    | xx    | xx      | ✓                  |
| Conduct PRAs/gender analysis in all 10 project villages  | xx  | xx   | xx   | xx    | xx      | ✓                  |
| Development, administration and analysis of Questionnaire  | x   | xx   | ✓    | x     | x       | ✓                  |
| Identify COs in each beneficiary village   | ✓   | xx   |      | x     | x       | ✓                  |
| Identification of existing CBOs, FAs, womens groups in each beneficiary village.   |   | xx   |      | x     | x       | ✓                  |
| If no existing group, formation of CBOs/farmer associations in each beneficiary village  |   | xx   |      | x     | x       | xx                 |
| Training of COs on community organizing  |   | xx   |      | xx    | xx      | ✓                  |
| Training of CBOs on CBO management   |   | xx   |      | xx    | xx      | ✓                  |
| Community organizing   |   | xx   |      | xx    | xx      | x                  |
| Development and ongoing assessment of project gender strategy  | x   | xx   | x    | xx    | xx      | x                  |
| <b>Activity 2 – Farmer to Farmer (FTF) training program</b>  |   |      |      |       |         |                    |
| Revision of existing basic training modules on ecological agriculture and soil conservation  | xx  | xx   | x    | x     | x       | ✓                  |
| Technical writing and research to support the development of any missing training modules  | xx  | x    | x    | ✓     | ✓       |                    |
| Coordinating research on sustainable livestock management (basic and advanced) together with the OACC  | xx  |      |      |       |         |                    |
| Development of advanced training modules on ecological agriculture and soil conservation   | xx  | x    | xx   | ✓     | ✓       |                    |
| Adaptation of training modules to increase cultural sensitivity and local comprehension  |   | xx   | xx   | xx    | xx      | ✓                  |
| Identify 40 farmer trainers for the 10 project villages  |   | xx   |      | x     | x       | xx                 |
| Train 40 farmer trainers on basic trainings  | ✓   | xx   | xx   | xx    | xx      | ✓                  |
| Coordinate FTF training program at the local level   |   | x    |      | x     | x       | xx                 |
| Deliver basic step-down trainings for 500 local farmers  |   |      |      |       |         | xx                 |
| Train farmer trainers on advanced trainings  | ✓   | xx   | xx   | xx    | xx      | ✓                  |
| Deliver advanced step-down trainings for 500 local farmers   |   |      |      |       |         | xx                 |
| Training assessment and identification of further training needs in each community   |   | xx   | xx   | xx    | xx      | xx                 |
| <b>Activity 3 –Ecological agriculture and soil conservation carried out on learning farms</b>  |   |      |      |       |         |                    |
| Learning Farm Selection  |   | x    | ✓    | x     | x       | xx                 |
| Establish 40 learning farms in the 10 project villages   | ✓   | x    | ✓    | x     | x       | xx                 |
| Collection of improved seeds by PMT  | x   | xx   | xx   | ✓     | ✓       | ✓                  |
| Provision of improved plant materials for crops, vegetables, agroforestry and fodder to at least 40 farmers on learning farms in beneficiary communities                                       |   | xx   |      | xx    | xx      |                    |
| Establishment of seed selection and evaluation criteria, and preservation, multiplication and (multi-year) distribution protocols in each community  |   | ✓    |      | ✓     | ✓       | xx                 |
| Planting of field crops on learning farms  |   | ✓    |      | ✓     | ✓       | xx                 |
| Planting of vegetables for rainy season harvest  |   | ✓    |      | ✓     | ✓       | xx                 |
| On-going assessments and documentation of tests of materials and practices through both local farmer assessments (not scientific), leading farmers, and NARI experts                           | x   | xx   | xx   | xx    | xx      | xx                 |
| New farmers access various types of improved agricultural inputs (vegetable seeds, crops and fodder) that were favorably assessed and scaled up on learning farms                              |   | ✓    |      | ✓     | ✓       | xx                 |
| Implementation of ecological techniques (including crop rotations, cover cropping, reduced tillage, field border establishment and agroforestry, crop residue incorporation) on learning farms |   | ✓    |      | ✓     | ✓       | xx                 |
| Establishment of fodder production for livestock in villages   |   | ✓    |      | ✓     | ✓       | xx                 |
| Coordination of sustainable livestock management plan in each village  |   | ✓    |      | ✓     | ✓       | xx                 |

| Activity  | Roles and Responsibilities<br>(x = responsibility, xx = primary responsibility, ✓ = participation) |      |      |       |         |                    |
|---|--|------|------|-------|---------|--------------------|
|   | REAP   | NATC | NARI | AVISU | APROFES | Beneficiary Groups |
| Farm trial assessment program (PM&E) and identification of further farm material needs in each community                                  | x  | xx   | xx   | xx    | xx      | xx                 |
| Technical Support for learning farms  | x  | xx   | xx   | xx    | xx      |                    |
| Technical Support for plant material improvement  | x  | x    | x    | x     | x       |                    |
| Project Questionnaire   | x  | xx   | x    | xx    | xx      | ✓                  |
| Project PM&E program  | x  | xx   | xx   | xx    | xx      | xx                 |
| <b>Activity 4 – Local organic fertilizer production program</b>   |  |      |      |       |         |                    |
| Encourage and develop organic fertilizer/manure production programs in all the 10 project villages  |  | ✓    |      | ✓     | ✓       | xx                 |
| Project Questionnaire and PM&E program on soil conservation impacts on 40 learning farms  | x  | xx   | xx   | xx    | xx      | ✓/xx               |
| <b>Activity 5 – Research and development of improved household stoves</b>   |  |      |      |       |         |                    |
| Stove workshop and project stove team meeting   | xx   | xx   |      | x     | xx      | x                  |
| Market research on opportunities for improved stoves  | xx   | xx   |      | x     | x       |                    |
| Research and development on production of improved household stoves   | xx   | xx   |      |       | xx      | ✓                  |
| Production of initial pilot stoves  | xx   | xx   |      | ✓     | ✓       |                    |
| Testing of pilot stoves in each of the project villages   | ✓  | ✓    |      | ✓     | ✓       | xx                 |
| Production of the remainder of the improved stoves  | xx   | xx   |      | ✓     | ✓       |                    |
| Distribution of the remainder of stoves to women in the 10 project villages   |  | xx   |      | xx    | xx      | ✓                  |
| Continued evaluation of the stoves in each of the project villages  | xx   | xx   | xx   | xx    | xx      | xx                 |
| Project Questionnaire   | xx   | xx   | x    | x     | x       | ✓                  |
| <b>Project Management</b>   |  |      |      |       |         |                    |
| Formation of Project Management Team (PMT), Project Implementing Team (PIT) and project initial planning and design                       | xx   | xx   | x    | x     | x       | ✓                  |
| Selection and management of project staff   | x  | xx   | x    | x     | x       |                    |
| Coordination of all project activities and partners in the NBD, the CRD and Senegal   |  | xx   |      |       |         |                    |
| Facilitation of project implementation in the CRD and Senegal, respectively, under the direction of NATC                                  |  |      |      | xx    | xx      | x                  |
| Project review, assessment and performance monitoring   | xx   | xx   | x    | x     | x       | x                  |
| Overall narrative and financial reporting for the project to CIDA (annual and semi-annual)  | xx   |      |      |       |         |                    |
| Annual narrative and financial report consolidation for submission to Canada (in English)   |  | xx   |      |       |         |                    |
| Semi-Annual narrative and financial report consolidation for submission to Canada (in English)  |  | xx   |      |       |         |                    |
| Submission of quarterly project report from NATC to REAP  |  | xx   |      |       |         |                    |
| Submission of narrative and financial progress reports from implementing partners to NATC   |  | xx   | xx   | xx    | xx      | ✓                  |
| Staff/community/field activity report consolidation   |  | xx   | xx   | xx    | xx      | xx                 |
| Submission of monthly reports by COs & PM & E Officers  |  | xx   |      | xx    | xx      |                    |
| <b>Financial Management</b>   |  |      |      |       |         |                    |
| Overall financial report consolidation to CIDA  | xx   |      |      |       |         |                    |
| Financial report consolidation (Gambian expenditures) for submission to Canada  |  | xx   |      |       |         |                    |
| Documentation of finances, bookkeeping and accounting of individual budget allocations  | xx   | xx   | xx   | xx    | xx      | xx                 |
| Audit – Gambian Operations  |  | xx   |      | xx    | xx      |                    |
| <b>Communications and public engagement</b>   |  |      |      |       |         |                    |
| Disseminate information to the public through conferences, publications, websites and presentations to interested parties                 | xx   | x    | x    | x     | x       | ✓                  |
| Facilitate national and international networking and information exchange between farmers, scientists, governments and the private sector | xx   | x    | x    | x     | x       | ✓                  |

*ANNEX 4: Community Action Plans*

**CONTRACTUAL AGREEMENT BETWEEN THE GGIGS PROJECT AND THE BENEFITING COMMUNITIES**

This agreement is hereby made under the mutual and partnership relationship between the Gaining Ground in the Gambia and Senegal Project and the benefiting project intervention villages. The **GGIGS** being the contractor shall be considered the financier while the benefiting village shall be considered the beneficiary.

The contract shall be made under the underline following responsibilities of the two partners in development that will ensure a sustainable programme implementation leading to achieving the desired goals of the project intervention in the best practices of adopting improved animal husbandry.

**RESPONSIBILITY OF GGIGS PROJECT**

- Provide financial capital to the village for the purchasing of quality sheep for breeding
- Provide support in the maintenance of ensuring good veterinary service in terms of drugs
- Provide training of the village auxiliaries in basic animal health care management
- Provide and maintain routine technical support and advice to the group
- Monitor the progress of the breeding on regular bases

**RESPONSIBILITY OF THE COMMUNITY GROUP**

- Take the responsibility of purchasing quality sheep for breeding purposes
- All animals for breeding must be certified by a recognized and certified veterinary personal
- An improved housing must be provided by the group at their own cost
- All animals must be confined under a semi intensive management system
- Feeding and watering of the animals shall be the duty of the group
- Regular drug administration to the animals is the duty of the trained village auxiliaries
- The animal house or pen shall be regularly clean twice in the week

In the event that any of the partners happens to violate its responsibility, the later has the right to cancel the agreement

**SUCH AS**

- If the animals are found loitering or stray, GGIGS project shall have the right to withdraw the animals including the young once
- If GGIGS project fail to continue supplying drugs to the group, the group has the right to live animals go stray
- Any time during the project monitoring, the house or pen was found very dirty GGIGS project can withdraw the animals
- The group can allow the rams to be used by any member to mount their ewes on the bases that such members have confined their animals
- Only group members whose animals are confined can benefit from the drug services
- If such services are provided to any group member without fulfilling the requirement, the group will be fined by GGIGS project and in failure to pay the fine GGIGS project can stop the drug support and may likely lead to the closure of the breeding programme
- The off springs in particular the male can be sold to any member of the group who would like to adopt breeding
- Any proceeds realized during the breeding programme from the sale of off spring males must be deposited to any financial institution must desired by the group in particular credit union

This agreement has been developed through mutual partnership and all the contents are read and agreed to by the two partners in development and do hereby append their signatures.

GGIGS PROJECT CO SIGNATURE: -----

GROUP PRESIDENT: -----

WITNESS BY THE ALKALO: -----

CHAIRPERSON:-----

WITNESS BY GGIGS PROJECT MANAGER:-----

VDC

DATE:-----

The GGIGS Project was very indebted to the back-up support to the Director who was always on the neck of the PM which has paid dividend in all the registered achievements since the start of the project. He was very supportive in regards to the releasing of NATC resources to the project such as the use of vehicles. Despite all other project financial administration, Sainabou was always on top of everything when it comes to the financial disbursement for the implementation of the plan activities.

The project recognize the corporation and support of the Director of APROFES who like NATC Director always release institutions resource to the project anytime request is made in particular vehicles and office utilities. Nari was very supportive in their responsibility and the entire staff of GGIGS and communities.

REAP Canada was behind all the successes being registered by the project in particular the Program Manager and the Executive Director who are always pushing the project management in regards to the program implementation.

GGIGS wished everyone a very good and promising raining season with bumper harvest.

PRODUCED AND COMPILED  
BY GGIGS PROJECT MANAGER  
NATC

| <i>ANNEX 5- Key Findings from the Implementation of the PRAs</i> |  |  |
|--|--|--|
| <b>Topic</b>   | <b>Main problems faced in communities</b>  | <b>Possible areas of intervention</b>  |
| <b>Soil</b>  | <ul style="list-style-type: none"> <li>• Extreme soil erosion from field runoff and wind with no knowledge or skills in soil conservation techniques</li> <li>• Low soil fertility and continuous depletion of nutrients without replacement (more nutrients taken off field than replaced)</li> <li>• Lack of organic carbon amendments (manure, crop residues and trees)</li> <li>• Free-ranging livestock reduce vegetative cover on the landscape</li> <li>• Threat of salt intrusion and ph increase to rice fields</li> <li>• Lack support for dyke construction in the rice fields</li> <li>• Poorly adapted seeds chosen for soil conditions</li> <li>• Lack of donkey carts and too much labour to haul manure</li> </ul> | <ul style="list-style-type: none"> <li>• Implement comprehensive plan to stop wind and water erosion including soil conservation techniques and practices including contour farming, field borders and reduced tillage</li> <li>• Increase organic soil amendments to improve carbon cycle (Bokashi organic fertilizer, leaf litter, recycle weeds back to field, increase compost quantity and quality)</li> <li>• Increase vegetative cover (plant more trees, better use of intercropping, use green manures)</li> <li>• Close nitrogen and mineral cycles (recycle straw and crop milling residues)</li> <li>• Limit free-range livestock movement and return manure to fields</li> <li>• Optimize rate and timing of chemical fertilizer application to minimize losses</li> <li>• Test and plant seeds adapted for soil fertility and drainage conditions</li> </ul> |
| <b>Agriculture</b>   | <ul style="list-style-type: none"> <li>• In general, there is poor knowledge of advanced farming practices</li> <li>• Continuous farming on a single piece of land reduces fertility</li> <li>• Low yields, pest and livestock damage (striaga in particular), and high cost of inputs (fertilizers)</li> <li>• Incorrect use of farming inputs (fertilizers, pesticides, etc.) and lack of knowledge about leguminous nitrogen fixing crops</li> <li>• Poor quality seeds and lack of seed storage facilities</li> </ul>  | <ul style="list-style-type: none"> <li>• Trainings and demonstrations in ecological agricultural practices, soil fertility management and farm planning including green manures, crop rotations, cover crops, fertilizer management, pest and disease management, intercropping, etc.</li> <li>• Introduce seed multiplication trainings and quality seed banking schemes to</li> </ul>  |

|                             |   |   |
|-----------------------------|---|---|
|                             | <ul style="list-style-type: none"> <li>No knowledge regarding practices of crop rotation, shifting and fallowing</li> <li>A lack of available farmlands limited by the land tenure system</li> <li>Poor access roads to fields of lower evaluation (usually rice)</li> <li>Lack of appropriate farming tools for women</li> </ul>   | increase yields and decrease pest damage  |
| <b>Gardening</b>            | <ul style="list-style-type: none"> <li>Damage to vegetables by free-range livestock and lack of access to durable fencing materials</li> <li>Low water table in some project villages limiting access to water for vegetables</li> <li>High pest infestations</li> <li>Poor cultural practices regarding seed conservation and multiplication and loss of indigenous seed varieties</li> <li>Limited availability and access to high quality seeds and high cost of hybrid vegetable seeds</li> <li>Threat from dry season bush fire</li> <li>High cost of chemical fertilizers and inadequacy of home-made composts</li> <li>Poor access to markets</li> <li>High supply of vegetables in the market at certain periods of the year</li> </ul> | <ul style="list-style-type: none"> <li>Limit free-range livestock movement</li> <li>Capacity building and training on indigenous seed quality networking and preservation (SSPPI), particularly improved seeds that can be grown in the rainy season</li> <li>Training and demonstrations on the production of organic manure and soil amendments (Bokashi)</li> <li>Enhance partners capacity in Integrated Plant and Pest management techniques (IPPM) and in the production and utilization of bio-insecticides</li> <li>Enhanced access to adequate water supply</li> <li>Assist in the development of marketing strategies and value-added products</li> </ul> |
| <b>Livestock Management</b> | <ul style="list-style-type: none"> <li>General lack of knowledge or skills on animal management</li> <li>Poor access to veterinary services</li> <li>Inadequate access to grazing land, lack of techniques for feed production</li> <li>Lack of proper housing</li> <li>Threat of animal thefts and injury to animals while wandering (across roads, etc.)</li> <li>Lack of access to high quality/value breeding stock</li> <li>In adequate livestock watering facilities</li> </ul>   | <ul style="list-style-type: none"> <li>Encourage villages to allocate land for fodder and semi-intensive pasture</li> <li>Support for fencing materials</li> <li>Training on basic animal health care, feed production and semi-intensive management</li> </ul>   |
| <b>Forestry</b>             | <ul style="list-style-type: none"> <li>Many villagers are negligent of laws regarding harvest of wood from nearby forests</li> <li>To clear lands and reduce pests there is indiscriminate burning of the grasslands, which can destroy forests and even villages as many houses have only thatched roofing</li> <li>There is a general disregard for the planting of new tree seedlings which results in them going unwatered or being eaten by free range livestock</li> <li>There is ongoing clearing of forested lands for new farmlands (slash and burn)</li> </ul>  | <ul style="list-style-type: none"> <li>Establishment of tree nurseries and institutionalize annual tree planting in villages</li> <li>Trainings and demonstrations in agroforestry</li> <li>Raise awareness on the dangers of burning practices and trainings on alternative pest and disease management</li> <li>Reduce firewood use through improved and multi-fuel stoves</li> </ul>   |
| <b>Water</b>                | <ul style="list-style-type: none"> <li>Inadequate supply of clean potable water for drinking</li> <li>High demand for water in all the villages due to increase in human and animal populations</li> <li>Expensive maintenance costs for existing hand pumps</li> <li>Low skills in water conservation techniques</li> </ul>  | <ul style="list-style-type: none"> <li>Improve access to water supply by using appropriate water lifting devices (rope and washer hand pumps)</li> <li>Trainings for community organizations to institutionalize water management committees</li> <li>Encourage partners to dig local watering facilities in their low lands exclusively for animal use</li> </ul>  |
| <b>Poverty</b>              | <ul style="list-style-type: none"> <li>Limited all-year round food supply contributes to the hungry season.</li> </ul>  | <ul style="list-style-type: none"> <li>Assist community associations in accessing credit from financial</li> </ul>  |

|  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• Lack of skills in resource mobilization</li> <li>• Illiteracy</li> <li>• Lack of access to credit facilities</li> <li>• High interest charged by operating micro-finance institutions</li> <li>• Lack of credit revolving schemes in the villages or ability for them to be managed by villagers (i.e. women groups)</li> </ul> | <ul style="list-style-type: none"> <li>• Adult literacy training programs</li> <li>• Encourage partner villages to create seed sharing networks as a safety net for cereal banking schemes to alleviate food deficits during the hungry season</li> </ul> |
|--|---|

**ANNEX 6: Key Findings from the Socio-Economic Survey 2008, 2009 and 2010**

| INDICATOR   | 2010 SURVEY RESULTS  | NOTABLE CHANGES FROM BASELINE  |                         |                         |                         |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
|---|--|--|-------------------------|-------------------------|-------------------------|------------------------|------------------------|-----------|------|------|------|-----|-----|--------|-----|------|------|-----|-----|------|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|---------|-----|-----|-----|-----|------|---------|-----|-----|-----|-----|-----|-----------|----|-----|-----|------|------|--------------|--------------|--------------|--------------|------------|------------|-----------------|-------------------------|-------------------------|-------------------------|------------------------|------------------------|--------|-----|-----|-----|------|-----|-----------|-----|-----|-----|-----|-----|------|----|----|----|------|------|----------|-----|----|-----|------|-----|-------|-----|-----|-----|-----|----|----------|-----|----|-----|------|-----|-------|----|----|----|------|-----|--------------|--------------|------------|-------------|-------------|------------|--|
| <i>Annual farm income (household/ M/F)</i>  | Average household income amongst all villages is 51,326 Dalasi per annum. Average male income is approximately 26,000 Dalasi per annum while female's average income is 13,000 per annum.  | <ul style="list-style-type: none"> <li>• Increase of 56% in overall average household income over three-year project</li> <li>• Average female income increased from D7,283 to D12,823</li> <li>• 7 villages had significant increases to their household income over 3 years.</li> <li>• Possible correlations for high household income by village include: household size (lots of labour), high crop diversification (security if one crop fails), high overall yields (more \$), high vegetable production (more \$ for females)</li> </ul> |                         |                         |                         |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| <i>Agricultural products and yields (M/F)</i>   | <ul style="list-style-type: none"> <li>• Main cereal and staple crops (% farmers growing): 62% millet, 59% rice, 47% maize, 12% sorghum. Up to 9% of farmers are growing other staples such as cassava, and 25% are growing cowpeas</li> <li>• Main vegetable crops (% farmers growing): 34% of farmers are growing tomato, 40% bitter tomato, 40% okra, 28% eggplant, 26% chili, 24% onion, 15% cabbage, and 10% lettuce.</li> <li>• 29% increase in average yields for staple crops and 10% increase in average yields for vegetable.</li> </ul> <table border="1"> <caption><b>Table A - Average Yields for Main Crops &amp; Vegetables (2008, 2009 &amp; 2010)</b></caption> <thead> <tr> <th>Staple Crops</th> <th>Average yield 2008 (kg)</th> <th>Average yield 2009 (kg)</th> <th>Average yield 2010 (kg)</th> <th>% Change (2009 - 2010)</th> <th>% Change (2008 - 2010)</th> </tr> </thead> <tbody> <tr><td>Groundnut</td><td>1664</td><td>1671</td><td>2111</td><td>26%</td><td>27%</td></tr> <tr><td>Millet</td><td>980</td><td>1045</td><td>1842</td><td>76%</td><td>88%</td></tr> <tr><td>Rice</td><td>699</td><td>453</td><td>862</td><td>90%</td><td>23%</td></tr> <tr><td>Maize</td><td>699</td><td>360</td><td>651</td><td>81%</td><td>-7%</td></tr> <tr><td>Sorghum</td><td>679</td><td>271</td><td>466</td><td>72%</td><td>-31%</td></tr> <tr><td>Cassava</td><td>162</td><td>229</td><td>275</td><td>20%</td><td>70%</td></tr> <tr><td>S. Potato</td><td>67</td><td>205</td><td>163</td><td>-20%</td><td>143%</td></tr> <tr><td><b>TOTAL</b></td><td><b>4 950</b></td><td><b>4 234</b></td><td><b>6 370</b></td><td><b>50%</b></td><td><b>29%</b></td></tr> <tr> <th>Vegetable Crops</th> <th>Average yield 2008 (kg)</th> <th>Average yield 2009 (kg)</th> <th>Average yield 2010 (kg)</th> <th>% Change (2009 - 2010)</th> <th>% Change (2008 - 2010)</th> </tr> <tr><td>Tomato</td><td>235</td><td>113</td><td>261</td><td>131%</td><td>11%</td></tr> <tr><td>B. Tomato</td><td>110</td><td>122</td><td>186</td><td>52%</td><td>69%</td></tr> <tr><td>Okra</td><td>47</td><td>45</td><td>38</td><td>-16%</td><td>-19%</td></tr> <tr><td>Eggplant</td><td>147</td><td>70</td><td>166</td><td>137%</td><td>13%</td></tr> <tr><td>Onion</td><td>180</td><td>102</td><td>192</td><td>88%</td><td>7%</td></tr> <tr><td>Cucumber</td><td>391</td><td>73</td><td>382</td><td>423%</td><td>-2%</td></tr> <tr><td>Chili</td><td>22</td><td>23</td><td>20</td><td>-13%</td><td>-9%</td></tr> <tr><td><b>TOTAL</b></td><td><b>1 132</b></td><td><b>548</b></td><td><b>1245</b></td><td><b>127%</b></td><td><b>10%</b></td></tr> </tbody> </table> | Staple Crops   | Average yield 2008 (kg) | Average yield 2009 (kg) | Average yield 2010 (kg) | % Change (2009 - 2010) | % Change (2008 - 2010) | Groundnut | 1664 | 1671 | 2111 | 26% | 27% | Millet | 980 | 1045 | 1842 | 76% | 88% | Rice | 699 | 453 | 862 | 90% | 23% | Maize | 699 | 360 | 651 | 81% | -7% | Sorghum | 679 | 271 | 466 | 72% | -31% | Cassava | 162 | 229 | 275 | 20% | 70% | S. Potato | 67 | 205 | 163 | -20% | 143% | <b>TOTAL</b> | <b>4 950</b> | <b>4 234</b> | <b>6 370</b> | <b>50%</b> | <b>29%</b> | Vegetable Crops | Average yield 2008 (kg) | Average yield 2009 (kg) | Average yield 2010 (kg) | % Change (2009 - 2010) | % Change (2008 - 2010) | Tomato | 235 | 113 | 261 | 131% | 11% | B. Tomato | 110 | 122 | 186 | 52% | 69% | Okra | 47 | 45 | 38 | -16% | -19% | Eggplant | 147 | 70 | 166 | 137% | 13% | Onion | 180 | 102 | 192 | 88% | 7% | Cucumber | 391 | 73 | 382 | 423% | -2% | Chili | 22 | 23 | 20 | -13% | -9% | <b>TOTAL</b> | <b>1 132</b> | <b>548</b> | <b>1245</b> | <b>127%</b> | <b>10%</b> |  |
| Staple Crops  | Average yield 2008 (kg)  | Average yield 2009 (kg)  | Average yield 2010 (kg) | % Change (2009 - 2010)  | % Change (2008 - 2010)  |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| Groundnut   | 1664   | 1671   | 2111                    | 26%                     | 27%                     |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| Millet  | 980  | 1045   | 1842                    | 76%                     | 88%                     |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| Rice  | 699  | 453  | 862                     | 90%                     | 23%                     |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| Maize   | 699  | 360  | 651                     | 81%                     | -7%                     |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| Sorghum   | 679  | 271  | 466                     | 72%                     | -31%                    |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| Cassava   | 162  | 229  | 275                     | 20%                     | 70%                     |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| S. Potato   | 67   | 205  | 163                     | -20%                    | 143%                    |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| <b>TOTAL</b>  | <b>4 950</b>   | <b>4 234</b>   | <b>6 370</b>            | <b>50%</b>              | <b>29%</b>              |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| Vegetable Crops   | Average yield 2008 (kg)  | Average yield 2009 (kg)  | Average yield 2010 (kg) | % Change (2009 - 2010)  | % Change (2008 - 2010)  |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| Tomato  | 235  | 113  | 261                     | 131%                    | 11%                     |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| B. Tomato   | 110  | 122  | 186                     | 52%                     | 69%                     |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| Okra  | 47   | 45   | 38                      | -16%                    | -19%                    |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| Eggplant  | 147  | 70   | 166                     | 137%                    | 13%                     |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| Onion   | 180  | 102  | 192                     | 88%                     | 7%                      |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| Cucumber  | 391  | 73   | 382                     | 423%                    | -2%                     |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| Chili   | 22   | 23   | 20                      | -13%                    | -9%                     |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| <b>TOTAL</b>  | <b>1 132</b>   | <b>548</b>   | <b>1245</b>             | <b>127%</b>             | <b>10%</b>              |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |
| <i>Number of farms/farmers using ecological agricultural/ soil conservation practices (M/F)</i> | <ul style="list-style-type: none"> <li>• The data indicates that 98% of male respondents and 100% of female respondents were applying manure onto their fields. The percentages of respondents practicing seed saving were also as high as 90% of men and 89% of women. It also shows that a high number of respondents (both male and female) were engaged in vegetable production, reduction of chemical fertilizers and pesticides, crop rotation, organic pest &amp; disease management, and the use of labour-saving techniques and farm tools.</li> <li>• From 2008 to 2010 there was a major increase in almost all practices. The number of respondents using new livestock breeding more than tripled. The number of respondents testing new varieties, using organic pest &amp;</li> </ul>   |  |                         |                         |                         |                        |                        |           |      |      |      |     |     |        |     |      |      |     |     |      |     |     |     |     |     |       |     |     |     |     |     |         |     |     |     |     |      |         |     |     |     |     |     |           |    |     |     |      |      |              |              |              |              |            |            |                 |                         |                         |                         |                        |                        |        |     |     |     |      |     |           |     |     |     |     |     |      |    |    |    |      |      |          |     |    |     |      |     |       |     |     |     |     |    |          |     |    |     |      |     |       |    |    |    |      |     |              |              |            |             |             |            |  |



|  |  |                      |             |             |                 |  |  |             |                 |                     |             |             |                 |
|--|--|----------------------|-------------|-------------|-----------------|--|--|-------------|-----------------|---------------------|-------------|-------------|-----------------|
|  | disease management, farm planning, growing fodder crops, and producing bokashi fertilizer more than doubled.   |                      |             |             |                 |  |  |             |                 |                     |             |             |                 |
| <i>Increased access of community members to seeds, improved plant materials (M/F) (PRA methodologies only)</i> | Respondents reported significant increases to access of to farm inputs in 2010. Overall, there was a 160% increase in farmers accessing farm inputs between 2008 and 2010. No farmers reported decreased access.   |                      |             |             |                 |  |  |             |                 |                     |             |             |                 |
|  | <b>Table B: Number of Respondents with Increased Access to Farm Inputs in 2010</b>   |                      |             |             |                 |  |  |             |                 |                     |             |             |                 |
|  | <b>Farm Input</b>  | <b>Female Number</b> |             |             |                 | <b>Male Number</b>   |  |             |                 | <b>Total Number</b> |             |             |                 |
|  |  | <b>2008</b>          | <b>2009</b> | <b>2010</b> | <b>% Change</b> | <b>2008</b>  | <b>2009</b>  | <b>2010</b> | <b>% Change</b> | <b>2008</b>         | <b>2009</b> | <b>2010</b> | <b>% Change</b> |
|  | <b>Seeds</b>   | 15                   | 36          | 42          | <b>180%</b>     | 15   | 24   | 26          | <b>42%</b>      | 30                  | 60          | 68          | <b>126%</b>     |
|  | <b>Compost</b>   | 6                    | 8           | 29          | <b>383%</b>     | 7  | 9  | 13          | <b>46%</b>      | 13                  | 17          | 42          | <b>223%</b>     |
|  | <b>Organic Fertilizer</b>  | 15                   | 37          | 35          | <b>133%</b>     | 12   | 17   | 25          | <b>52%</b>      | 27                  | 54          | 60          | <b>122%</b>     |
|  | <b>Livestock Breeds</b>  | 7                    | 22          | 25          | <b>257%</b>     | 6  | 15   | 17          | <b>65%</b>      | 13                  | 37          | 42          | <b>223%</b>     |
|  | <b>Fodder</b>  | 0                    | 7           | 11          |                 | 0  | 4  | 5           |                 | 0                   | 11          | 16          | <b>-</b>        |
|  | <b>Fencing</b>   | 7                    | 9           | 12          | <b>71%</b>      | 4  | 3  | 4           | <b>0%</b>       | 11                  | 12          | 16          | <b>45%</b>      |
| <b>TOTAL</b>   | <b>50</b>  | <b>119</b>           | <b>154</b>  | <b>208%</b> | <b>44</b>       | <b>72</b>  | <b>90</b>  | <b>100%</b> | <b>94</b>       | <b>191</b>          | <b>244</b>  | <b>160%</b> |                 |
|  | When these numbers are broken down by gender, the data indicates that 58% of the respondents reporting increased access to farm inputs in 2010 were female and 51% were male. Furthermore, between 2008 and 2010, there was a 208% increase in female respondents reporting increased access verses a 51% increase in males. Strong efforts to increase female access to farm inputs were made in 2009 while more efforts were put towards male access to input in 2010.   |                      |             |             |                 |  |  |             |                 |                     |             |             |                 |
| <i>Food Security</i>   | <ul style="list-style-type: none"> <li>72% of food consumed by households is reported to come from production on household farms. Thus, a quarter of food consumed by the household is bought from shops and markets. Not surprisingly, 89% of respondents said that the food they produced on their farms is currently <i>not</i> sufficient for household food needs throughout the year.</li> <li>Majority of respondents said their food need is particularly acute during the rainy season (Jul-Sep)</li> </ul> |                      |             |             |                 |  | <ul style="list-style-type: none"> <li>There were no notable differences between the 2008 and 2010 responses to questions about overall food security. The achievement of food security is a long-term goal that extends beyond the reach of the project.</li> </ul> |             |                 |                     |             |             |                 |
| <i>Number of women cooking with improved household stoves</i>  | <b>Table C: Number of Respondents Using Improved Stoves</b>  |                      |             |             |                 | <ul style="list-style-type: none"> <li>59% of households are using improved stoves</li> <li>There was an overall 183% increase in respondents using improved stoves</li> </ul> |  |             |                 |                     |             |             |                 |
|  | <b>Stove Type</b>  | <b>2008</b>          | <b>2009</b> | <b>2010</b> | <b>% Change</b> |  |  |             |                 |                     |             |             |                 |
|  | MTS  | 0                    | 23          | 22          | -4%             |  |  |             |                 |                     |             |             |                 |
|  | Rocket Stove   | 6                    | 18          | 13          | 117%            |  |  |             |                 |                     |             |             |                 |
|  | Improved local woodstove   | 18                   | 3           | 26          | 44%             |  |  |             |                 |                     |             |             |                 |
|  | Ceramic charcoal stove   | 0                    | 1           | 7           | 600%            |  |  |             |                 |                     |             |             |                 |
| <b>TOTAL</b>   | <b>24</b>  | <b>45</b>            | <b>68</b>   | <b>183%</b> |                 |  |  |             |                 |                     |             |             |                 |
| <i>Household air quality improvements</i>  | <ul style="list-style-type: none"> <li>Of those using the MTS &amp; the Rocket Stoves 66% reported improvements to their household air quality. Conversely, only 50% of the respondents using 'other' improved stoves reported improvements to their household air quality.</li> </ul>   |                      |             |             |                 |  | These results are very encouraging for future expansion of improved stoves (both the MTS and the Rocket) throughout the project villages.  |             |                 |                     |             |             |                 |
| <i>Household fuel wood consumption</i>   | <ul style="list-style-type: none"> <li>The average annual household consumption of fuel wood is 1 192 kg which is a 598 kg decrease from the 2008 average annual household consumption of 1790 kg.</li> </ul>  |                      |             |             |                 |  |  |             |                 |                     |             |             |                 |

| <b>Village</b>       | <b>2008</b>   | <b>2009</b>   | <b>2010</b>      | <b>% change</b> |
|----------------------|---------------|---------------|------------------|-----------------|
| Banni                | 2160          | 2220          | 2220.523         | 3%              |
| El Hagie Mabeye      | 3187          | 3517          | n/a              | -               |
| Gonkuru Tukulor      | 705           | 1250          | 857.743          | 22%             |
| Jahhour Tukulor      | 1312          | 1265          | 878.8351         | - 33%           |
| Panneh Ba            | 1140          | 1392          | 1148.345         | 1%              |
| Samba Musu           | 3310          | 1500          | 1101.473         | - 67%           |
| Suwareh Kunda        | 540           | 990           | 1277.24          | 137%            |
| Tchisse Mass         | 2185          | 1275          | n/a              | -               |
| Torro Tayam          | 1574          | 1470          | 861.2584         | - 45%           |
| <b>Total</b>         | <b>17 035</b> | <b>16 004</b> | <b>8 345.418</b> | <b>- 48%</b>    |
| <b>Total Average</b> | <b>1 790</b>  | <b>1 653</b>  | <b>1 192</b>     | <b>-33%</b>     |

ANNEX 7: Official GGIGS Project Management and Implementation Team Members

| <b>Project Management Team (PMT)</b>  |                            |          |          |           |  |  |           |           |                                      |          |           |           |
|---|----------------------------|----------|----------|-----------|--|--|-----------|-----------|--------------------------------------|----------|-----------|-----------|
| <b>Gambian Project Coordinator</b> - Badarra Jobe, Director, NATC                                     |                            |          |          |           |  | <b>Project Livestock Officer</b> - Abdoulie Loum, NATC                                   |           |           |                                      |          |           |           |
| <b>Project Leaders (CRD)</b> – Emmanuel Mendhi, Director, AVISU                                       |                            |          |          |           |  | <b>Project Officer (CRD)</b> – Sulayman Darboe, AVISU                                    |           |           |                                      |          |           |           |
| <b>Project Leaders (Senegal)</b> – Binta Sarr, President, APROFES                                     |                            |          |          |           |  | <b>Project Officer (Senegal)</b> – Absa Jahateh, APROFES                                 |           |           |                                      |          |           |           |
| <b>NARI Research Coordinator</b> - Ansumana Jarju, Agroforestry, NARI                                 |                            |          |          |           |  | <b>Canadian Project Manager</b> – Claudia Ho Lem, Project Manager, REAP                  |           |           |                                      |          |           |           |
| <b>Gambian Project Manager</b> – Mama K. Manneh, NATC   |                            |          |          |           |  | <b>2<sup>nd</sup> Canadian Project Manager</b> - Meredith Kushnir, Project Manager, REAP |           |           |                                      |          |           |           |
| <b>Project Monitoring &amp; Evaluation Officer</b> – Balla Drammeh, NATC                              |                            |          |          |           |  | <b>Canadian Agronomist</b> – Roger Samson, Executive Director, REAP                      |           |           |                                      |          |           |           |
| <b>Project Implementation Team (PIT)</b>  |                            |          |          |           |  |  |           |           |                                      |          |           |           |
| <b>Technical Expert</b> - Stephanie Bailey-Stamler, Project Manager, REAP                             |                            |          |          |           |  | <b>Finance Officer</b> – Kanye Faal  |           |           |                                      |          |           |           |
| <b>Technical Expert</b> - Derek Lynch, Assistant Professor at Nova Scotia Agricultural College (NSAC) |                            |          |          |           |  | <b>Stove Development Coordinator</b> - Haddy Nying                                       |           |           |                                      |          |           |           |
| <b>Technical Expert</b> - Shelly Juurlink, Organic Agriculture Centre (OACC)                          |                            |          |          |           |  | <b>Stove Coordinator Assitant</b> - Pa Sanneh Jobe                                       |           |           |                                      |          |           |           |
| <b>Technical Expert</b> - Kebba Sabally, Post-doctoral researcher, McGill University                  |                            |          |          |           |  | 10 COs & 10 CBOs & 40 FTs & 20 Animal Auxiliaries  |           |           |                                      |          |           |           |
| Village   | Community Organizers (COs) | F        | M        | Total     | Farmer Trainers (FT)   | F  | M         | Total     | Animal Care Auxiliaries              | F        | M         | Total     |
| Suwareh Kunda   | Fasenah Jobe               | 0        | 1        | 1         | Ebriama Bajo, Kaddy Touray, Njai Sannoh, Kalifa Suwareh          | 4  | 4         | 8         |                                      | 1        | 1         | 2         |
| Panneh Ba   | Mariama Ceesay             | 1        | 0        | 1         | Hoja Touray, Fatou Jeng  | 1  | 1         | 2         | Fatou Nyang, Jim Fanneh              | 1        | 1         | 2         |
| Toro Tayam  | Nday Fatou Panneh          | 1        | 0        | 1         | Ebriama Jallow, Amie Trawalleh, Fatou Bah                        | 2  | 1         | 3         | Alhagie Yunusa, Amie Trawally        | 1        | 1         | 2         |
| Gunjur  | Mao Jaiteh                 | 0        | 1        | 1         | Samboujang Touray, Satou Touray, Lisanding Sawaneh, Amie Drammeh | 3  | 4         | 7         | Bintou Touray, Omie Ceesay           | 2        |           | 2         |
| Banni   | Lamin Njie                 | 0        | 1        | 1         | Alfusaine Touray, Kaddy Jabbi, Musu Kebba Ceesay, Sarjo Konteh   | 4  | 4         | 8         | Touraynding Conteh, Alusainey Touray | 1        | 1         | 2         |
| Samba Musu  | Ebuu Sarr                  | 0        | 1        | 1         | Sally Camara, Kaddy Jallow                                       | 2  | 0         | 2         | Ismaila Keita, Awa Bah               | 1        | 1         | 2         |
| Jahwurr Tukulor   | Babourcarr Sisse           | 0        | 1        | 1         | Tam Loum, Mala Colley  | 1  | 1         | 2         | Mala Colley, Talibe Sallah           | 1        | 1         | 2         |
| Gunkur Tukulor  | Kaddijatou Jallow          | 1        | 0        | 1         | Kumba Ceesay, Biran Bah  | 1  | 1         | 2         | Biram Bah, Biram Dellam Sey          |          | 2         | 2         |
| El Hagie Mabaye   | Alimatou Badgie            | 1        | 0        | 1         | Mass Beye, Fatou Conteh  | 1  | 2         | 3         | Ngoneh Samba Mortalla Beye           | 1        | 1         |           |
| Tchisse Mass  | Aram Maal                  | 1        | 0        | 1         | Mamat Ceesay, Mam Jobe, Haddy Ceesay                             | 2  | 1         | 3         | Mass Beye, Mamat Ceesay              |          | 2         | 2         |
| <b>Total</b>  |                            | <b>5</b> | <b>5</b> | <b>10</b> |  | <b>21</b>  | <b>19</b> | <b>40</b> |                                      | <b>9</b> | <b>11</b> | <b>20</b> |