

Education and Research in Agriculture (ERA)

Annual Report: Year 4 – FY 2014

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Office of International Research, Education, and Development (OIREd)

Project Management Unit
Mailing address: BP 24690 Ouakam
Street address: Rue 26 Ngor, Almadies
Dakar, Senegal
(221) 33 869 78 90

Home office
526 Prices Fork Road (0378)
Blacksburg, VA 24061 USA
www.oired.vt.edu
(1) 540-231-6338

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ERA Project Contacts

Management Entity

Larry Vaughan, Chief of Party
ERA Program Management Unit
BP 24690 Ouakam
Dakar, Senegal
Country code (221) 33 869 75 21
larryjv@vt.edu

Michael Bertelsen, Executive Director
Office of International Research,
Education, and Development
526 Prices Fork Road (0378)
Blacksburg, VA 24061 USA
Country code (1) 540-231-6338
bertel@vt.edu

Ministry of Higher Education & Research

Ministerial Contact
Nouhou Diaby
nouhou.diaby@ucad.edu.sn

ANAQ-Sup
Abdou Lahate Cissé
abdou-lahate.cisse@anaqsup.sn

Collaborative Research and Outreach Partnerships

ENSA
Saliou Ndiaye
drsaliou@gmail.com

ISFAR
El Hadj Faye
hadjfaye@yahoo.fr

ISRA/Djibelor
Siméon Bassene
basseneisra@gmail.com

ITA
Nafissation Diop Ndiaye
ndiop@ita.sn

UGB
Amadou Bocar Bal
amadou-bocar.bal@ugb.edu.sn

Senegal Partner Institutions

CFPH
Mandoye Ngom
mandoyengom@yahoo.fr

CNFTEIA
Fatou Sarr
fatousarr1809@yahoo.fr

CNFTEFCPN

Moussa Cissé
cissemoussasn@yahoo.fr

ISFAR (University of Bambey)

Birahim Fall
birahimfall@voila.fr

ITA

Abdoulaye Mbaye
ablombaye@yahoo.com

UASZ

Daouda Ngom
ngom_daouda@yahoo.fr

UGB

Amadou Bocar Bal
amadou-bocar.bal@ugb.edu.sn

ENSA (University of Thies)

Mamadou Thiam Diop
mtdiop@univ-thies.sn

ISRA

Elhadji Traoré
elhadji.traore@isra.sn

LTAEB

Ibou Diédhiou
ibsoutou@gmail.com

UCAD

Kandioura Noba
kandioura.noba@ucad.edu.sn

United States University Partners**Purdue University**

Jess Lowenberg-Deboar
lowenbej@purdue.edu

University of Connecticut

Boris Bravo-Ureta
boris.bravoureta@uconn.edu

Tuskegee University

Ntam Baharanyi
baharany@mytu.tuskegee.edu

Virginia Tech

Kurt Richter
richter@vt.edu

Abbreviations and Acronyms

AETR: Agricultural Education, Training and Research Institutions

ANCAR: National Agency for Agricultural and Rural Council

BFAR: *Bureau de la Formation Agricole et Rurale*

CAGE: Commercial and Government Entity

CAMES: African and Malagasy Council for Higher Education

CCR: Central Contractor Registration

CFPH: *Centre de Formation Professionnelle en Horticulture*

CIRIZ: *Comité Interprofessionnel du Riz*

CNCR: *Conseil National de Concertation et de Coopération des Ruraux*

CNFTEIA: *Centre National de Formation des Techniciens d'Élevage et des Industries Animales*

CNFTEFCPN: *Centre National de Formation des Techniciens des Eaux et Forêts, Chasse et des Parcs Nationaux*

DDL: Distance and Distributed Learning

DRDR: *Direction Régionale du Développement Rural*

ENSA: *Ecole Nationale Supérieure d'Agriculture*

ERA: Education and Research in Agriculture

ESEA: *Ecole Supérieure d'Économie Appliquée*

FEPRODES: *Fédération des Femmes Productrices de la Vallée du Fleuve Sénégal*

FNRAA: *Fonds National de Recherches Agricole et Agro-Alimentaires*

FOG: Fixed obligation grant

FTF: “Feed the Future” – The Presidential Food Security Initiative

GDP: Gross Domestic Product

GIE: *Groupements d'Intérêts Économique* - Economic Interest Groups

GIS: Geographic Information Systems

GOANA: *Grande Offensive Agricole Pour la Nourriture et l'Abondance*

GRAAS: *Groupe De Réflexion Sur L'Agriculture et l'Agro-alimentaire au Sénégal*

ICT: Information and communications technology

ISFAR: *Institut Supérieur de Formation Agricole et Rurale*

ISRA: *Institut Sénégalais pour la Recherche Agricole*

ITA: *Institut de Technologie Alimentaire*

LTAEB: *Lycée Technique Agricole Emile Badiane*
MOU: Memorandum of Understanding
OIRED: Office of International Research, Education, and Development
PCE: *Projet Croissance Economique*
PMP: Performance Monitoring Plan
PMU: Project Management Unit
REVA: Return to Agriculture Program
SEP: Strategic Engagement Priority
SNRASP: Agro-Sylvo-Pastoral Research of Senegal
TOR: Terms of Reference
UASD: *Université Asane Seck de Ziguinchor*
UCAD: *Université Cheikh Anta Diop de Dakar*
UConn: University of Connecticut
UGB: *Université Gaston Berger*
UT: *Université de Thiès*
VT: Virginia Tech

Executive Summary

Strengthening Agricultural Education and Training

Capacity building activities in Component 1 featured capacity building in pedagogy, content, and institutional improvement processes. Syllabi, a basic pedagogic tool not originally anticipated as lacking, became a central effort throughout Year 4. Syllabus development is now an established responsibility for faculty members at five partner institutions. Over 1500 students were enrolled in courses guided by syllabi. Building upon the success of these syllabi, ERA introduced a survey tool for teaching evaluation. E-learning for faculty members and local ERA scholars, was supported through training in the Moodle online platform. The first online class offered by an agricultural institution in Senegal – a course on plant breeding and crop water balance – was completed during Year 4. Tuskegee University offered the first training in a business planning series to faculty members from ten institutions, as a means to develop their capacity to support students with entrepreneurial interests. The value chain faculty of ENSA received a week-long intensive training by the University of Connecticut to strengthen teaching in its Master’s of Agricultural Value Chains program. Institutional self-assessments, a fundamental step in revising curriculum training for faculty members, were completed by four institutions, with one advancing to strategic planning.

Local ERA Scholars who received scholarships to attend Senegalese institutions began to graduate. Some scholarships awarded during a recipient’s senior year moved on to graduate school with the second year of ERA support. Twenty Senegalese graduate students in the US continued coursework and research plans, with nine of these students coming back to Senegal during the rainy season to conduct their research.

Responding to the Government of Senegal’s Plan *Sénégal Emergent* initiative, partner institutions identified a gap in curriculum on seeds. With support from ERA, an inter-institutional committee designed curriculum for a new certificate program in certified seed production, carried out the pilot phase of technician training, and supported training of nearly 300 seed producers and potential seed producers. The curriculum for a degree program in certified seed systems was in the final stages of development at the end of the year.

ERA and USAID’s InnovATE project co-hosted a regional West Africa symposium to promote the inclusion of gender elements in the teaching of agriculture and nutrition courses. InnovATE’s Community of Practice was used by ERA to establish an online, francophone, professional network that is helping to increase and sustain participation by project partners. The relationships established at the symposium will be beneficial for engaging individual institutions during Year 5 in policies inspired by the ERA gender strategy.

Strengthening Applied Research and Outreach

ERA scholars coming from Tuskegee and VT, were able to install their field experiments during the fourth quarter. Many scholars worked in cooperation with the Senegal research teams leading the five Collaborative Research and Outreach Programs (CROPs) in their second season.

The project promoted outreach and service to the community in helping arrange public/private partnerships between universities and local agribusiness organizations. These relationships will help to orient the intellectual resources of Senegal's universities toward specific issues and training needs of small female-led enterprises. UCAD entered a partnership with the women's agri-processing association POPAS, and UGB entered a partnership with the national organization of non-governmental organizations, CONGAD.

Strengthening Project Management and Policy Support

Based on ERA's experience with institutional assessment tools, ANAQ-Sup, the entity of the Ministry of Higher Education and Research responsible for quality assurance and university accreditation, partnered with ERA to adapt ANAQ's assessment methodology to agriculture.

During a retreat held for the inter-ministerial, public/private policy group GRAAS, participants gathered a list of proposed policy items that ERA will selectively support during Year 5 in cooperation with the Ministry of Higher Education and Research.

Introduction

This report presents accomplishments for Year 4, October 1st 2013 to September 31, 2014 and tasks undertaken during the 4th quarter to be completed during Year 5.

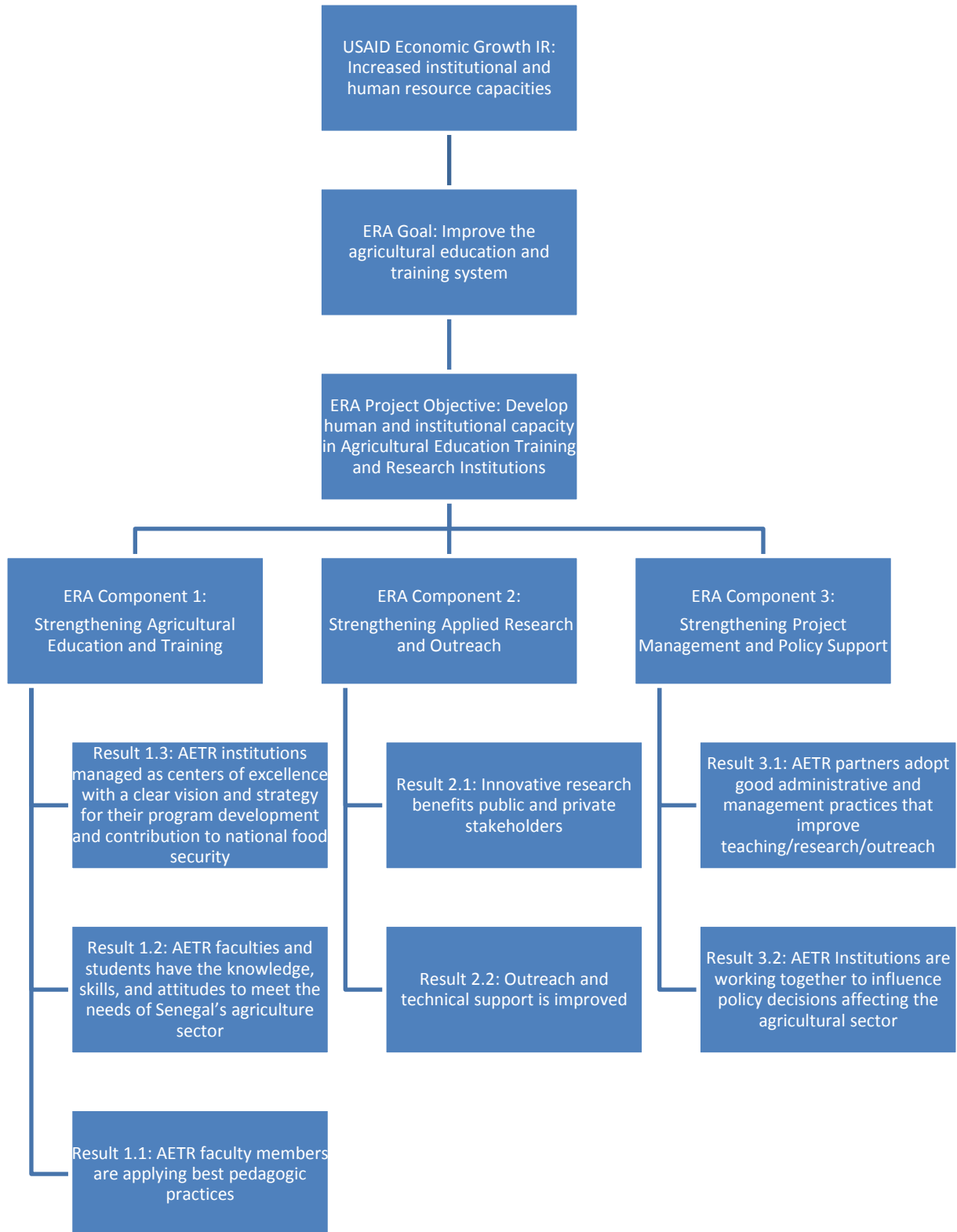
The presentation of results are organized according to the project's three components: 1) Strengthening Agricultural Education and Training; 2) Strengthening Applied Research and Outreach; and 3) Strengthening Project Management and Policy Support. Seven Intermediate Results (**Figure 1**) guide work plan development and implementation. The annual accomplishments of the project as well as an account of work undertaken in the 4th quarter are reported according to these seven Intermediate Results. Impacts are reported at the level of the three components.

ERA strengthens agricultural education, research, and outreach to support the USAID objectives of poverty and hunger reduction and inclusive economic growth, thus contributing to the President's Feed the Future initiative. ERA targets institutions responsible for training and educating the next generation of decision makers, farmers and educators. A core element of ERA's approach is the promotion of the tri-partite mission of teaching, research, and outreach. Outreach, including traditional agricultural extension, continuing professional education (certificate programs), and community development is a mission that is not part of Senegal's tradition. While the roles of institutions are reconsidered, ERA supports the traditional teaching and research missions of its partners.

After an external mid-term evaluation provided to Virginia Tech in March 2014, the administration took stock of the project's strengths, weaknesses, and missed opportunities. Activities were critically evaluated. Inadequate participation of partners in the planning process was identified as a constraint to success. An ambitious work plan revision was undertaken with full participation of the PMU program

staff in order to specify the tasks that best advance every project activity. The new plan guided implementation during the last four months of Year 4.

Figure 1. USAID/ERA Results Framework



Component 1: Education and Training Strengthened

Result 1.1: AETR faculty members are applying best pedagogic practices

Annual Achievements

During Year 4 the focus on improved teaching practices was centered on the development, implementation and use of course syllabi in six AETR (ENSA, ISFAR, UASZ, LTAEB, CNFTEFCPN, and CFPH). Syllabi are a key mechanism for transforming teaching and learning to shape human behavior and institutional practices in the agricultural sector. In collaboration with the consortium members (Virginia Tech, Tuskegee), ERA supported 83 faculty members participation in workshops and mentoring activities on how to better present course materials, transition to a student-centered teaching approach and prepare students to work in the private sector. One hundred twenty-seven syllabi were distributed to 1568 students as a result of these efforts. Of the total, 210 students evaluated the effectiveness of course syllabi. Experienced faculty that participated in these workshops and developed syllabi will share their experiences in three other AETR (UGB, UCAD, and CNFTEIA).

ERA and InnovATE are collaborating on a project titled “Community/stakeholder-based Processes for Curriculum Design.” To support these, members of the teams conducted a pilot exercise with UASZ that solicited community input on how UASZ’s curriculum could be shaped in the future to address the needs of agriculturalists in Casamance. Important contributions were made by LTAEB and CNFTEFNPN, which used their community networks as a point of departure for gathering information and whose personnel participated in the exercise. As a result, the exercise became a joint effort of CNFTEFCPN, LTAEB, and UASZ to benefit all three partners. Through group discussions with producers and processors, the team documented difficulties and opportunities in local agriculture and identified skills needed by individuals that should be included in outreach training and university programs.

With the foundational knowledge from previous ERA training in pedagogy and e-learning, faculty at partner institutions were greatly anticipating training in distance learning course delivery approaches and methods. Fifteen faculty members from five AETRs (ENSA, ISFAR, CNFTEIAUGB and ITA) were introduced to ERA’s Moodle e-learning platform and are now capable of developing online courses. ERA provides ICT equipment which allows faculty members at the University of Thies who already have basic e-learning skills to expand their e-learning courses. During Year 4, the University of Thies offered the first online agricultural education courses in Senegal. Mr Tala Gueye from ENSA and Mr Ibrahima Mbodj for ISFAR, have developed online courses focused on crop production, plant breeding and crop water balance.

4th Quarter Highlights

- Evaluation of syllabus effectiveness via survey (CNFTEFCPN, UASZ, LTAEB, ISFAR)
- Work session for sixteen librarians resulted in the decision to pool resources, and share experiences at different institutions. They also developed an action plan for strengthening library services for students.

Result 1.2: AETR faculties and students have the knowledge, skills, and attitudes to meet the needs of Senegal's agriculture sector

Annual Achievements

The ERA Young Scholars Program supports the best and brightest, who are preparing for careers in the agricultural sector. Learning for both faculty and students, is being enhanced by introduction and use of ICT tools, career management tools, gender and value chain analyses, seed quality management skills, and private sector internships.

To enhance the knowledge, skills and attitudes of agricultural professionals, ERA has established a Young Leaders Development program for the education and training of the next generation of Senegalese agricultural professionals. 20 Senegalese professionals and 105 young local scholars are pursuing their studies respectively in US and Senegalese Universities.

Local ERA Scholars participated in a career management workshop on helping agricultural science students prepare for careers in the private sector or with a governmental agency. This capacity building program has contributed to student career development through training on resume and cover letter writing, and job interview strategies.

ERA also supported Young Scholars in using the Moodle platform and introducing them to tools for learning and research through Moodle, Google Apps, and other applications. The local scholars now have the tools to participate in courses on the Moodle e-learning platform.

ERA continued to build the capacity of agricultural faculty with short term train-the-trainer workshops. Topics included value chains, agribusiness, entrepreneurship, business incubation and business plan development and market-driven research. Trainings on teaching the agricultural value chain approach, designing and implementing agricultural value chain programs were provided.

During Year 4, ERA initiated implementation of new program called "Public-private Partnerships for the Development of Training Programs on the Seed Sector." Two major objectives were defined. The first objective is to work on a jointly implemented certificate program in certified seed production. The second is the integration of certain aspects of the seed value chain into curricula for AETR partners in Senegal. To achieve these goals, ERA facilitated training for seed technicians and producers, the start the process of seed-centered curriculum development with the participation of AETR and both public and private partners. An inter-institutional standing committee on curriculum development was formed to conduct a seed curriculum development process which will be completed during Year 5.

ERA and InnovATE worked together in collaboration to organize a West African regional symposium on strategies and tools for the integration of gender into agriculture and nutrition education. Educators and gender experts, 43 in total, and female agro-entrepreneurs participated (26 women, 19 men) of whom 23 were from ERA's partner institutions. The workshop brought together educators, development professionals, government agents, and female business owners for helping educators to incorporate gender into agricultural and nutrition courses. Key speakers provided a framework for understanding gendered aspects of agriculture and nutrition that are relevant to teachers of agriculture and nutrition. To provide a space for continued discussion and networking around ideas generated at the symposium, a French language discussion group was set up on InnovATE's online Community of Practice.

During this FY14, USAID/ERA has provided support to 16 faculty members (4 females and 12 males) for their participation at national and/or international training workshops related to FTF or food security; this contributed to build their capacities and foster exchange with their respective peers.

4th Quarter Highlights

- Two training workshops on career management for ERA 53 scholars from UCAD, CFPH, ENSA, ISFAR, CNFTEIA, and UGB to provide technical tools for students to prepare for job searches and employment.
- Pilot Training Program Implementation in Certified Seed Production, 28 participants – Thies. See the press report here: http://www.aps.sn/articles.php?id_article=131875
- Trainings on seed legislation, technical production, control and certification of seeds for farmers in Saint Louis, Kolda, Ziguinchor, Sandiara, and Rosso-Bethio.
- Capacity building workshop for teachers and researchers of agricultural value chains with a field visit to onion producer's farms – 15 participants

Result 1.3: AETR institutions managed as centers of excellence with a clear vision and strategy for their program development and contribution to food security

Annual Achievements

The ERA project has supported partner AETR institutions to improve management and organization and enhance services and teaching programs. Institutional self-assessments were carried out with 7 institutions to empower faculty and administrators to review and analyze their organizational and management systems based on assets and proposed services.

Institutional self-assessments are based on a set of procedures and standards that measures program quality and empower institutional actors to improve performance.

During Year 4, CNFTEFCPN, LTAEB, UASZ, and CFPH completed the final stage of the self-assessment process and leveraged concessions from their ministerial stakeholders. They also cultivated new relationships with partners in the private sector. The private sector now has a greater awareness of the institutions' programs and LTAEB completed and submitted its Ministerial performance contract.

Support given to the five institutions which have completed their self-assessment program contributed to their empowerment to design, manage, and upgrade instructional and research programs that foster learning and are responsive to market needs.

The human capacity building program provided to ENSA faculties on key conceptual issues associated with the study of Agricultural Value Chains, with a technical and pedagogical focus, helped to improve teaching practices. One of the key results of these efforts is the initiation of the certification process for the Masters in agricultural value chains.

In an effort to strengthen linkages between AETR institutions and the private sector, ERA supported many work sessions and meetings to create discussion and exchanges between professors from UCAD, UASZ and entrepreneurs such as owners of small food processing enterprises represented by the group POPAS, women processors, or producers.

Faculty members now have a better understanding of the needs of small women-owned enterprises and have developed a targeted training program to improve the technical capacities of private sector actors. As a result of this collaboration, a MOU was signed between UCAD and the association of women food processors, POPAS to increase internship opportunities for students in the private sector.

4th Quarter Highlights

- Work session with AETR institutions (UASZ, and LTAEB) to prepare for the collaboration between UASZ, LTAEB and the private sector for Year 5 – 8 participants
- Work session with UASZ, UCAD, UGB, LTAEB and local private sector actors to facilitate discussion between these Institutions about opportunities for students – 46 participants

Component 1 Impacts

- Syllabi are now considered as a norm by faculty members and students at ISFAR, ENSA, UASZ, CNFTEFCPN, and LTAEB. Class evaluation is still in the early stages of introduction, but it is a revolutionary activity in the context of Senegal's education system. The adoption of syllabi and the use of course evaluation reflect a shift toward a student-centered learning approach. In Year 5, ERA will expand the syllabus project to its remaining partner institutions using the experienced colleagues at the five pioneer institutions to train peers.
- New certified seed production curriculum was produced by a unique inter-institutional body that would not have been possible without the relationships created by the project, and will contribute to the priorities of *Plan Senegal Emergent*. Within a year the committee completed development and implementation of a non-degree program (see Component 2 Impacts) spanning the actors in certified cereal seed production

Component 2: Applied Research and Outreach Strengthened

Result 2.1. Innovative research benefits public and private stakeholders

Most of ERA's research investment has been made through Collaborative Research and Outreach Partnerships. CROPs enable Senegalese researchers to conceive, test, and disseminate innovative solutions for to improve local food security and promote economic growth. ERA's approach in creating the CROPs was to ensure multi-institutional partnerships, emphasize on-farm-experimentation and engage the private sector. The highlights of ERA's five CROPs are presented followed highlights from two other research projects.

ERA's scholarship recipients in the U.S. were associated with local investigators managing the CROPs to increase the impact of the research projects and for conducting summer field research. Six students from VT, under guidance of their advisors were involved with CROPs. Three other students from Tuskegee University and VT carried out their graduate research outside the CROPs

The late onset of rains meant that none of the research on rain-fed crops was started until the 4th quarter.

Inasmuch as each CROP has many outputs and partners and thus functions like a separate project within ERA, the achievements of ERA's research activities are presented separately rather than grouped together.

Intensification and Sustainable Management of Millet Production in the areas of Thiès, Louga and Nioro: Improvement, Dissemination, and Strengthening of the Elite Varieties Value Chain (ENSA)

Annual Achievements

Molecular markers were used to identify genetic traits that covered improved drought response of pearl millet varieties. Researchers from ENSA screened 200 accessions (lines) of local millet varieties for drought tolerance. In March 2014, these lines were planted at the ISRA/Bambey station, in the objective to identify 20 drought tolerant lines that yield well and have good seed quality. Two local agricultural engineering students started their millet research with local AETR institutions. The data collection and analyses are being completed by an ERA scholar who is working towards an MS in the Department of Crop and Soil Environmental Sciences at Virginia Tech.

A survey identified the variables that influenced the success of community seed management programs and examined the role of millet in the local food production system.

ENSA signed an MOU with ANCAR to train ANCAR agents in delivering seed production training to local farmers. Seed producers learned to produce high quality certified seeds for higher yielding varieties with the assistance of ANCAR. ITA signed an MOU with ANCAR to train ANCAR agents to deliver training to millet processing processors.

4th Quarter Highlights

- Analysis of genetic diversity of millet varieties
- Setting up trials of on-farm millet seed multiplication and monitoring plots

Production and Processing of Sweet Corn: Sterilized Canned Corn Manufacturing (ITA)

Annual Achievements

Despite unforeseen delays, the project completed the student *memoire* on canning sweet corn market, established irrigated agronomic trials at Ndiol and Sangalkam and determined optimal dose of fertilizer, planting density and biochemical analyzes of the sweet corn yields.

During the rainy season, agronomic trials were established at 3 sites (Ndiol, Nioro Sangalkam) where irrigation facilities are available. An ERA scholar working towards their MS at VT started their research into the pose of the resin thinning plants at the 3 locations for the thesis memory purposes.

4th Quarter Highlights

- Determination of the optimal dose and density of mineral fertilizers on four sweet corn varieties
- MS student work from VT, the pose of the resin thinning plants is performed at the 3 locations for determining the optimal dose of 15 – 15 – 15 NPK fertilizer in sweet corn varieties

Sustainable Improvement of Cereal Productivity in Salty Environment (ISFAR)

Annual Achievements

A socioeconomic and biophysical baseline survey was completed, which focused on soil analyses, an inventory existing salt-resistant plants found in these environments, and the conditions under which

farmers expand their land resources. The project used community resources to plant grass as biological fixation for levee networks at Fadial and Ndoff. Five new millet varieties were tested for their adaptation to salty environments. Two ERA Scholars and two local students from UCAD were integrated in the project work. Three rice varieties were tested for their adaptation to salty environments.

The impact of soil amendments (compost, manure from local feedlot, and a mixture of compost and manure) on rice yields in low- and high-salinity soils was tested. This work is associated with the Science and Technology Faculty at UCAD, through an ERA Scholar enrolled at VT.

4th Quarter Highlights

- Tested varieties of millet and technical amendments salty soils
- Tested varieties of rice and technical amendments salty soils
- Completed the socioeconomic and biophysical baseline survey

Improving rain-fed rice productivity in Casamance (ISRA/Djibelor)

Annual Achievements

To remediate soils subject to iron toxicity, lime, pulverized oyster shell, and biochar, were used as soil amendments to test their capacity raise soil pH to promote more beneficial chemical and biological processes in these soils were used. Soil chemistry, groundwater, and plant nutrient content was monitored regularly for evidence of improved fertility and rice productivity.

To remediate salt infiltration, experiments were set up to test the value of four soil amendments (crushed heated shell, biochar, biochar + shell, and control). Modification of planting practices was also tested (presence and absence of ridges).

Monitoring of water table dynamics and soil chemistry began at the beginning of the rainy season to provide insight into what occurs in these soils during a growing season and between growing seasons.

Participatory varietal selection, breeder seed production, and creating a rice seed producers network

Participatory varietal selection testing of improved rice varieties for adaptation to local conditions was set up in the villages of Badiatte, Bassaf, Karthiack, and Bodé, as well as at ISRA's Djibélor and Séfa stations. These sites represented four soil toposequences: (*plateau, nappe, bas-fond, and mangrove*). The varieties are from ISRA (10), AfricaRice (14), and Brazil (10).

The project set up certified seed in plots on-station in farmer fields adapted to each soil topo-sequence. At the time of this report, plots had not been harvested.

ISRA researchers trained ANCAR agents and lead-farmers for a training-of-trainers on rice production and seed conservation, plant protection, fertilization and good practices.

4th Quarter Highlights

- testing conditioning of iron-affected soils to reduce toxic effects on rice plants
- testing means of reducing salinity and acidity to improve rice yields
- Participatory varietal selection, seed production, and creating a rice seed producers network

- Training of trainers

Promoting local rice in the valley and delta of the Senegal River (UGB)

Annual Achievements

A training was held for 67 potential seed producers on seed legislation and the Senegalese certification system. These trainings were organized at Gaya (*département* of Dagana, Fanaye, *département* of Podor, and Bokidiawé (*département* of Matam). Demonstration plots for eight varieties were setup in collaboration with the CIRIZ of Podor, Matam and the DRDR of Saint Louis with two producers in Dagana and two producers in Podor.

ITA surveyed 40 paddy rice marketing and processing companies of paddy rice to characterize equipment and processing capacity. ITA and ISRA/BAME (*Bureau d'Analyse Macroéconomique*) conducted a rapid assessment of the rice value chain. The data from both surveys is being analyzed and will be available in the first quarter of FY2015.

4th Quarter Highlights

- Demonstration parcels of registered varieties and good production practices
- Completion of paddy rice processing survey
- Completion rice value chain rapid assessment

Development and assessment of fortified instant cereal-based products for the Senegalese market (ITA)

Annual Achievements

ITA Developed of fortified instant cereal products suitable for beverage and porridge applications. With the support of the women's entrepreneur group "GIE Elhadji Mouhamadou Lamine Bara Mbacké Falilou" ITA unveiled these new products to the public in June.

These products are made from a base of instant flour to which a combination of millet, peanut and cowpea are added. To provide different flavors and further enrichment, 3% of one of four local dried fruit is added: dried monkey bread (baobab, bouye), dried mango, dried carrot, or dried papaya. Preferences were identified by tastings.

4th Quarter Highlights

Principal investigator Djibril Traoré was supported by ERA to attend the World Congress of Food Science and Technology in Canada in August. There he presented ITA research on possible anti-diabetic properties of fonio.

Conservation Agriculture Program

Annual Achievements

- Three conservation agriculture (CA) practices (cover crop, rotations/association, and minimum tillage with millet) were tested at ENSA and ISFAR experimental sites.
- Mungbean and local cowpea varieties were tested for their ability to provide sufficient ground cover, additional nitrogen for the primary crop, and an early season food crop. The data were collected in November 2015, after the reporting period.

4th Quarter Highlights

- Three conservation agriculture practices of intercropping various bean crops with pearl millet to evaluate the potential benefit were tested at ENSA's field station

Result 2.2: Outreach and technical support is improved

Annual Achievements

One of the core successes of the ERA project during Year 4 was the linking of women led small-scale food processors to AET institutional partners. The ERA project successfully brokered two such partnerships:

CONGAD – a nationwide association of non-governmental organizations- served as a platform for small food processing enterprises and producers in in the Senegal River Valley in order to better communicate their technical assistance needs to universities. As a result. An MOU was been signed between CONGAD and UGB in order to meet these needs.

Following the outreach mission ideal of U.S.-agricultural universities, an innovative collaboration has been created between universities and private sector with ERA's support. ERA facilitated a series of workshops, at end of which UCAD and POPAS – a large association of small food processing enterprises – signed an MOU in June 2014. The agreement formalized UCAD's long-term commitment to providing short-term training that improves the competitiveness of POPAS members. It also stipulated benefits for UCAD through student internship opportunities at POPAS member enterprises. A detailed training plan in four technical aspects of commercial food processing was develop between POPAS and UCAD. This cycle of four trainings will be funded in Year 5 through a FOG. The president of POPAS presented this model at an international forum as “a case study” of public/private partnership in West Africa.

Outreach and research activities with farmers were initiated to link farmers with several research and academic institutions. ERA led collaboration with several key partner institutions ENSA, ISFAR, and ANCAR to develop linkages between research and outreach activities, create interaction with farmers through hands-on outreach services, and illustrate the use of on-farm demonstrations for outreach and extension purposes. An outreach advisory group comprised members from ANCAR, ENSA, ISFAR and local farm communities. The group took charge of facilitating information flow between the research, and teaching institutions and the farming community, exploring new technology to increase and improve food and feed to the farm community. The outreach advisory group established farm schools where producers and farmer organization could come together to discuss agricultural productivity constraints.

The outreach group assured timely delivery of educational programs (prior to planting, during the growing season and prior or at harvest) and prepared production guidelines using the principles of conservation agriculture and data collected from the field that allowed for geographically tailoring of training information.

4th Quarter Highlights

- Created opportunities for extension-based education to women-led food process organizations
- Facilitated joint collaboration between extension service providers and higher education institutions

- Supported resilience and improved nutrition by working with AET institutions to improve the delivery of new technology via extension

Component 2 Impacts

Research

The CROPs are beginning to yield results, but they have not yet had an impact, - being only in their second field season. Research impacts lie in the future. ERA designed the CROPs to be multi-institutional, multi-disciplinary projects led by Senegalese research teams to address FTF commodities in both research and technology transfer. Such a project design is rare in Senegal. Also notable is the participation of the private sector including small-scale women entrepreneurs.

ERA has increased universities' and research centers' interest in creating public/private partnerships, especially those improving the economic activities of female small-scale food processors.

Outreach

ERA has increased universities' and research centers' interest in creating public/private partnerships, especially those improving the economic activities of female small-scale food processors for which ERA has facilitate two such agreements. The impact of ERA on partners' sense of service to the community is demonstrated by the signature of a partnership between UCAD and the food processors' association POPAS as well as a similar agreement signed between UGB and the NGO association CONGAD.

The project's first new curriculum product was produced by a unique inter-institutional body that would not have been possible without the relationships created by the project. The two-tier training system in the seed sector responding to the roles of producers, technicians, and extension agents. The certified seed production curriculum is contributing to a priority of *Plan Senegal Emergent*.

Component 3: Management and Policy Support Strengthened

Result 3.1: Management and administrative systems of targeted AETRs strengthened

Annual Achievements

In order to define strategies of the quality improvement in agricultural education, ERA and ANAQ-Sup supported the promotion of institutional self-assessment as a tool for strategic planning and quality assurance at the AETRs. A series of meetings was established between ERA and ANAQ SUP to harmonize their self-assessment methodologies and they started provide technical assistance and facilitate participation of partner institutions in the development of each other's ministerial performance contracts (Table 1).

USAID/ERA supported an ISFAR faculty retreat focused on developing ISFAR's strategic plan.

4th Quarter Highlights

- Sign an agreement with ANAQ to cooperate on institutionalization of institutional evaluation at AETR
- Harmonization of ANAQ-Sup and ERA self-assessment methodologies.
- Led an ISFAR faculty retreat focused on developing ISFAR's strategic plan.

Table 1: AETR partner institutional self-assessment status (as of end of FY 2014)

Institution	Location	Status
CFPH	Dakar	Internal validation
CNFTEFCPN	Djibelor	Validated
ENSA	Thiès	Suspended
ISFAR	Bambey	Validated
LTAEB	Bignona	Validated
UASZ	Ziguinchor	Internal validation Final validation
UCAD	Dakar	Suspended
UGB	Saint Louis	Suspended

Result 3.2 Institutions are working together to influence policy decisions affecting the agriculture sector

Annual Achievements

The ERA supported GRAAS (*Groupe de Réflexion sur l'Agriculture et l'Agro-alimentaire au Sénégal*) developed an action plan to address policy issues in higher education. The GRAAS membership has set a goal for the organization to become a key player in AET decision making within Senegal. GRAAS developed a draft action plan within the input and collaboration from representatives from educational institutions, private and public sectors.

In FY14 ERA made significant progress in strengthening the management and administration of AET partners. ERA was able to attain this success by engaging with partners at all levels of the AET political system. The Director General of the Ministry of Higher Education has arranged for ERA to help in the certification and evaluation of AET universities by asking the *Autorité Nationale de l'Assurance Qualité de l'enseignement Supérieur* (ANAQ-Sup) to work with ERA. ERA and ANAQ-Sup worked together to define a strategy of collaboration that allow for ERA and ANAQ-Sup's to jointly promote institutional self-assessments as a tool for strategic planning and quality assurance. An MOU between ERA and ANAQ-Sup was signed on 20 May 2014. To inaugurate the partnership ANAQ-SUP was invited to the two-day retreat of the GRAAS.

ERA has identified that performance contracts play a key role in communicating and setting expectations between AET institutions and their respective governmental ministries. ERA's work in institutional self-assessment facilitated ministerial performance contracts being established between ITA with the *Ministère de l'Industrie et des Mines*, LTAEB with the *Ministère de la Formation Professionnelle, de l'Apprentissage et de l'Artisanat*. ISFAR completed its ministerial performance contract in 2013.

FY14 saw renewed effort in increasing engagement with partner institutions. M. Oumar Sock, Director of Higher Education, presided over the fourth meeting of the Technical Steering Committee of the ERA. The TSC expressed enthusiasm for the work of ERA and identified a role for GRAAS in the policy discussion. In June the TSC met again to review the revised ERA work plan and kick off the planning for Year 5. Paired with the TSC meeting was a day and a half retreat for GRAAS members. The objective of the retreat was to propose policy issues that GRAAS could work on with ERA support.

ERA Project Management Unit (PMU) held a series of meetings with AETR partners: UCAD, ISRA, ITA, CFPH, UASZ, UGB, CNFTEIA, LTAEB, CNFTEFCPN, ENSA, and ISFAR. ERA activities with each institution were reviewed, difficulties identified, and new areas of collaboration discussed to reorient project implementation and to highlight project impacts.

MOU signed between Virginia Tech and the *Université de Kaolack*.

4th Quarter Highlights

- Established a series of meetings between ERA-ANAQ SUP to harmonize their self-assessment methodologies, identify and plan the quality assurance activities to be undertaken in 2015
- Completed the first joint ERA-ANAQ-SUP institutional self-assessment with UASZ
- Led an ISFAR faculty retreat focused on developing ISFAR's strategic plan.

- Engaged with each AET partner institution to jointly prepare the FY 15 work plan

Component 3 Impacts

The law governing universities has not been revised in decades. A new law is being prepared for deliberation by the *Assemblée Nationale*. In it a new mission is being added for universities - service to the community. The changing role of universities has been influenced by ERA's to promote three missions of American agricultural universities – teaching, research, and outreach.

The way that agricultural universities are being evaluated for program accreditation is due to ERA's work in institutional self-assessment. The institutional self-assessment tools designed and used by ERA for agricultural institutions have been harmonized with those of ANAQ-Sup, thus establishing an enduring assessment platform and facilitating ANAQ's foray into accrediting agriculture programs according to CAMES.

Constraints encountered and unresolved issues

- Building the routines and practices for increased collaboration between private sector stakeholders, ministry officials and AETR administration and faculty takes considerable time and effort. Each actor is driven by their institutions priorities and demands on his/her time. Nevertheless, USAID/ERA has helped build the willingness to move forward. Now is the time to do so.
- Component 3 has been weak. The revised work plan is addressing this weakness by creating new activities and populating them with tasks that will be completed before the end of the project year. Increased effort to build administrative and research management capacity is reflected in the tasks that will be undertaken in the future.
- Several action plans drafted by GRAAS members focused on expensive additions to the infrastructure of higher education rather than policy issues. There are fewer choices that correspond to ERA objectives than anticipated

Considerations for the Future

As a capacity building project whose development targets are institutions, change is inevitably slow compared to a traditional agricultural development project that work directly with farmers. However, when institutional change comes, it is, by nature, long-term. Mutual understanding, shared objectives, trust, and steady communication steadily build the relationships necessary to influence points of view and guide change that is generated from within institutions, not imposed.

Accepting the pace of progress does not mean accepting slow performance in individual activities. Implementation by the PMU team is fast-paced. The challenge of the revised work plan pushed the team to new levels of activity. The pace of work in Year 5 will not abate as the project hits its stride with clear vision for the direction of each activity and strong relationships with partners.

Reflection by the PMU team members highlights some constraints encountered during Year 4, some missed opportunities that need to be revisited, and some lessons learned.

Constraints

Reticence of some partners to engage in institutional self-assessment. In order to respond to the needs of a changing agricultural sector, an institution must understand itself relative to this changing environment. Institutional self-assessments are a fundamental tool for analyzing the

curriculum, organization, and human resources of teaching institutions. ERA has had great success with implementing this tool with some partners. Some of those institutions have subsequently benefited from the studies in subsequent strategic planning or setting up ministerial performance contracts. Other partner institutions have been uninterested or unable to undertake this long, participatory exercise. As ERA moves onward to support strategic planning and accreditation of degree programs with ANAQ-Sup, it will end support for institutional self-assessments at the end of March 2015.

Financial support for research. Financing the payments for CROP research were late relative to the needs of the research teams because of the complexity of the terms of payment for these fixed-price subawards and the complexity of the mechanism to evaluate satisfactory progress. Realizing this problem, the PMU has made improvements during the last quarter of Year 4 by simplifying some of the payment requirements. As the five CROP institutions exhaust their current research budgets and become eligible for the next allocation, ERA is applying this simpler model to payment schedules.

Weakness in Component 3. Component 3 should prepare partner institutions to manage projects with increasing independence. ERA should be training partners to meet USAID standards of project management as a contribution to USAID Forward. In order to address this weakness, two changes were needed. ERA needed to provide more instances of direct financing to partners instead of making purchases on behalf of partners, and it needed to provide training to manage those subawards. Training in finance and project management was added to the revised work plan to address this weakness during the last quarter of Year 4, but obligations of the finance team and the absence of the M&IE team leader before the end of the project year prevented this activity from being carried out on time. It has been rescheduled for the first quarter of Year 5. Revision of terms for the payment terms of existing fixed-obligation grants (FOGs) was begun as well as development of an entirely new fixed obligation grant to fund the UCAD/POPAS partnership. Substantial work remains to simplify all of the CROP

Internships. ERA has worked with partner institutions to increase opportunities for student internships. Having no way to distinguish the contribution of these efforts in increasing internships over the background level of internships already offered by partners, ERA resorted to counting only the internship excursions of ERA scholarship holders. ERA needs a better way to capture accurately the impact of these efforts.

Performance Indicators. The PMP was revised during Year 4. Transition to the new indicators began with the 3rd quarterly report. Data quality and documentation improved prior to and during completion of the annual report. This stronger M&E system will decrease the risk of failing to capture reportable outputs. Some of the targets for FY2014 were unrealistic even after having had the opportunity for revising them. One example was the level of direct engagement by ERA with civil society organizations and women's groups. The FTF indicators record only direct US government support to such organizations. ERA's works is through its partner institutions, but relationships with women's organizations through project partners do fit the definition. However, this direct support for outreach work with women's groups is mostly done under the umbrella of POPAS and CONGAD. The impact of outreach work may not be entirely captured by the performance indicator.

Late rainy season. The late arrival of rains delayed many experiments and almost scuttled the research projects of several graduate students. Most of the experiments were put in place, but the fact that rains almost arrived too late to plant millet in the Peanut Basin is a reminder that field research in precarious environments often takes longer than expected due to such unpredictable events.

Opportunities

Service to the community. ERA has been successful introducing the idea of outreach – applying an institution’s talents outside the traditional classroom and the laboratory bench. As the new university mission of service to the community is anticipated by ERA, it has the obligation of increasing the opportunities faculty members to experiment with outreach and to help administrations to recognize these efforts as equal to teaching and research.

Closer consultation with ministries. ERA works most closely with the Ministry of Higher Education and Research. Nevertheless ERA’s partner institutions report to five other ministries. GRAAS has brought together representatives of these ministries to discuss educational policy issues with private sector representatives and partner institutions. Nevertheless, the ERA PMU needs to reach out to these other ministries and meet with them frequently to accelerate policy dialogue and collaboration between partner institutions represented by different ministries.

E-learning. Despite an activity to promote e-learning, ERA missed an opportunity to achieve substantial results. Being an activity of individual faculty members rather than institutions, ERA will be expanding faculty training in e-learning tools and work with the Ministry of Higher Education and Research to help agriculture faculties to benefit from the expertise that already exists in departments of some of ERA’s partner institutions.

Collaboration with other USAID projects. As an institutional capacity building project, it is an obligation of ERA to transfer capture the achievements of other USAID projects and transfer them to Senegal’s agricultural higher education system. In Year 4 ERA worked with PCE and Yaajeende on specific tasks, but ERA did not have a mechanism in place to communicate the important changes in agriculture that are being brought about by these projects. Late in the year, ERA explored opportunities to work with COMFISH to develop case studies for ENSA’s value chain program and to perhaps find internship opportunities for students.

University of Sine Saloum of Kaolack. Development of this new university is a priority for MESR. Being oriented toward agriculture and the environment, USSK will become a pivotal element in Senegal’s AETR system. It is not, however, an ERA partner. Virginia Tech has signed a bilateral MOU with USSK, but ERA’s ability to support USSK is limited during this phase. ERA will be inviting administrative personnel from USSK in capacity building activities planned for other ERA partners and in policy dialogue events. ERA will also respond to MESR requests for technical support.

Annual Performance Indicator Table

The following table presents the PMP performance indicators for Year 4 along with targets for Year 5 (FY2015)

Indicator	Disaggregation		FY14 Target	FY14 Actual	% Target	FY15 Target	Comments
1.1.1. Number of AETR professors trained in syllabus development/curriculum design			75	83	111	50	ISFAR training in April ENSA training in June
1.1.2. Number of syllabi developed by AETR institutions			120	127	106	100	
1.1.3 Number of students in classrooms receiving course syllabi		Male	350	1147	327,7	1000	
		Female	350	421	120,3	1000	
		Total	700	1568	224,0	2000	
1.1.4 Number of students in classrooms using course syllabi		Male	350	147	42,0	1000	Use of syllabus began to be measured in June 2013. ISFAR was the only institution that had been surveyed by the end of the quarter.
		Female	350	63	18,0	1000	
		Total	700	210	30,0	2000	
1.2.1 Number of individuals who have received USG supported long-term agriculture sector productivity or food security training (FtF output Indicator 4.5.5-6)	Local scholars	Male	42	46	109,5	46	During the first year of the Scholars program, 116 local students were enrolled. During the second year, only 85 of the 116 local scholars were enrolled in school. Some of these "special cases" were taken care of in Q4.
		Female	58	59	101,7	59	
		Total	100	105	105,0	105	
	US scholars	Male	12	11	91,7	11	For US Scholars, in addition to the 17 scholars, 3 new students went to the U.S. during Q2
		Female	9	9	100,0	9	
		Total	21	20	95,2	20	
	New	Male	2	1	50,0	0	One student expected to start a program received a US visa, but was stalled waiting for his new Senegalese passport to be validated by the State Department
		Female	2	2	100,0	0	
		Total	4	3	75,0	0	
	Continuing	Male	55	56	101,8	57	
		Female	66	66	100,0	68	
		Total	121	122	100,8	125	
Total			125	125	100,0	125	
1.2.2 Number of faculty members	Faculty members (distance	Male		47			
		Female		5			

Indicator	Disaggregation		FY14 Target	FY14 Actual	% Target	FY15 Target	Comments
and students trained in:	and distributed learning, subject matter competencies, other)	Total	0	52		154	
		Students (distance and distributed learning, career management, other)	Male	42	77	183,3	
		Female	58	78	134,5	68	
		Total	100	155	155,0	125	
		Total	100	207	207,0	279	
1.2.3 Number of students participating in private sector internships		Male	40	10	25,0	40	27 students (10 males et 17 females) from the local ERA Scholars had internships. Because ERA's contribution could not be distinguished easily from the efforts already in place by ERA's partners, only ERA's cohort of scholarship holders were counted, not all interns placed by partners.
		Female	40	17	42,5	20	
		Total	80	27	33,8	60	
1.2.4 Number of AETR faculty members and students registered on Innovate's online community of practice		UCAD	5	4	80,0		
		UGB	5	2	40,0		
		UASZ	5	2	40,0		
		UT	5	1	20,0		
		ENSA	5	3	60,0		
		ISFAR	5	2	40,0		
		ITA	5	3	60,0		
		ISRA	5	4	80,0		
		CFPH	2	1	50,0		
		CNFTEFCPN	2	1	50,0		
		CNFTEIA	2	1	50,0		
		LTAEB	2	3	150,0		
		Other					
	Total	48	27	56,3	30		
1.3.1 Number of public-private partnerships formed as a result of FtF assistance			6	4	66,7	1	In Q1, two MOUs were signed: ITA/ANCAR and ENSA/ANCAR. In Q2 MOU signed between CONGAD and UGB. In Q3 MOU signed between UCAD and POPAS

Indicator	Disaggregation		FY14 Target	FY14 Actual	% Target	FY15 Target	Comments
1.3.2 Number of higher education partnerships between international institutions and host country higher education institutions that address regional, national, and local development needs			3	1	33,3	0	MOU signed in the Q1, between VT & Kaolack University
1.3.3 Number of AETR institutions tracking the employment of graduates			2	0	0,0	2	
1.3.4 Number of AETR institutions conducting self-assessments to improve institutional performance			7	4	57,1	1	LTAEB, CNFTEFCPN on October 2013 UASZ on June 2014 CFPH on September 2014 (UCAD, ENSA, UGB launched during the Q4 of FY14)
2.1.1 Number of new technologies or management practices under research as a result of USG assistance		Millet	20	74	370,0	0	
		Maize	8	15	187,5	0	
		Rice	60	87	145,0	0	
		Climate change	4	4	100,0	0	
		Other aspects of Food security or economic growth	15	15	100,0	0	
		Total	107	195	182,2	0	
2.1.2 Number of new technologies or management under field testing as a result of USG assistance		Millet	20	47	235,0	20	
		Maize	6	6	100,0	6	
		Rice	60	83	138,3	60	
		Climate change	4	4	100,0	4	
		Other aspects of Food security or economic growth	15	13	86,7	15	
		Total	105	153	145,7	105	
2.1.3. Number of new technologies or management practices made available for transfer as a result		Millet	10	13	130,0	10	
		Maize	8	0	0,0	2	
		Rice	15	12	80,0	20	
		Climate change	1	1	100,0	1	

Indicator	Disaggregation		FY14 Target	FY14 Actual	% Target	FY15 Target	Comments
of USG assistance		Other aspects of food security or economic growth	4	6	150,0	5	
		Total	38	32	84,2	38	
2.1.4. Number of farmers and others who have applied improved technologies or management practices as a result of USG assistance		Male	600	508	84,7	500	30 producers applied in Q1 & 71 news in Q2
		Female	400	296	74,0	250	More farmers will apply technologies in the rainy season
		Total	1000	804	80,4	750	
2.1.5. Number of private enterprises, producers organizations, water users associations, women's groups, trade and business associations and community-based organizations (CBOs) that applied improved technologies or management practices as a result of USG assistance		Private enterprises	11	6	54,6	6	
		Producer organizations	15	9	60,0	9	
		Water users	2	0	0,0	2	
		Women's groups	65	0	0,0	11	
		Trade & business associations	4	0	0,0	2	
		Community based organizations	30	0	0,0	0	
		Total	127	15	11,8	30	
		New	84	15	17,9	15	
		Continuing	43	0	0,0	15	
		Total	127	15	11,8	30	
2.1.6 Number of food security private enterprises (for profit), producers organizations, water users associations, women's groups, trade and business associations and community-based organizations (CBOs) receiving USG assistance		Private enterprises	12	13	108,3	10	
		Producer organizations	15	14	93,3	11	
		Water users	2	0	0,0	0	
		Women's groups	65	31	47,7	32	
		Trade & business associations	5	2	40,0	2	
		Community-based organizations	35	0	0,0	0	
		Total	134	60	44,7	55	
		New	84	54	64,3	0	
		Continuing	50	6	12,0	55	
		Total	134	60	44,8	55	
2.2.1. Number of individuals who	Producers	Male	400	689	172,3	780	122 producers were trained in Q1 and 319 in
		Female	580	432	74,5	0	

Indicator	Disaggregation		FY14 Target	FY14 Actual	% Target	FY15 Target	Comments
have received USG supported short-term agriculture sector productivity or food security training	People in government	Male	0	36		0	Q2 (31 Fanaye, 22 de Gaya and 14 de Bokidiawé, 252 producers trained in silage, engineering, technology, etc at Santamba) The remaining was trained on seed production and application of new technologies.
		Female	0	1		0	
	People in private sector	Male	12	0	0,0	40	
		Female	8	0	0,00	0	
	People in civil society	Male	0	0		40	
		Female	0	1		0	
	Total		1000	1159	115,9	860	
2.2.2. Number of partnerships developed to deliver training services to local farmers and the private sector			12	16	133,3	2	Q2 MOU signed between CONGAD and UGB. In Q1, two MOUs were signed: ITA/ANCAR and ENSA/ANCAR. Partnership with 11 trained trainers to do the demultiplication of the seed training
3.1.1 Number of AETR members trained in administration, finance or M&E			30	0	0,0	0	
3.1.2 Number of AETR institutions completing performance contracts with their respective ministries as a result of FtF assistance			3	2	66,7	3	ITA, LTAEB
3.2.1. Number of AETR stakeholder action plans for improving higher education policies for quality assurance			6	0	0,0	6	The target of six, was a leftover target from when this indicator was about the number of institutions working together to affect policy change. The indicator was revised to refer to an action plan, but the target was not changed from six to one.
Communication plan available and updated			1	1	100,0	1	
Number of communication updates			9	2	22,2	9	
Number of newsletters			3	4	133,3	3	
Number of weekly reports				15			
Number of success stories			2	1	50,0	2	

Indicator	Disaggregation		FY14 Target	FY14 Actual	% Target	FY15 Target	Comments
Number of highlight media coverage			5	16	320,0	5	
Number of insertions in national newspapers			3	0	0,0	3	
Number of video reports				2			
Number of participations on fairs and exhibitions				1			