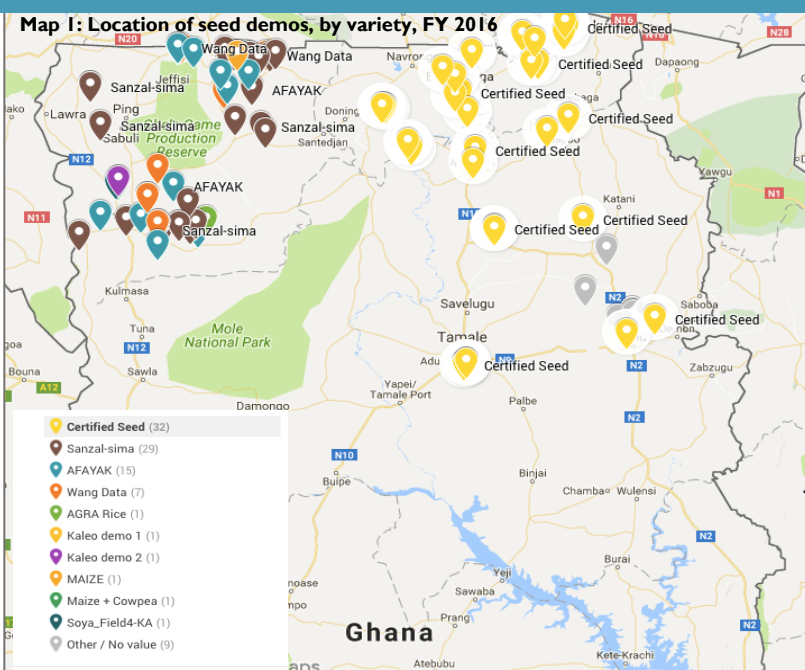




FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative



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FY16 Annual Report

OCTOBER 2015 – SEPTEMBER 2016



P.O. Box 2040
Muscle Shoals, AL 35662 USA
www.ifdc.org

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ACRONYMS

| | |
|---------|--|
| 2SCALE | Toward Sustainable Clusters in Agribusiness through Learning in Entrepreneurship |
| ADVANCE | Agriculture Development and Value Chain Enhancement (Project) |
| AGRA | Alliance for a Green Revolution in Africa |
| AOR | Agreement Officer Representative |
| ANM | Automatic Nursery Machine |
| APSP | Agriculture Policy Support Project |
| ATT | Agriculture Technology Transfer (Project) |
| AWM | Agricultural Water Management |
| BBS | Beneficiary-Based Survey |
| BIT | Bhungroo Irrigation Technology |
| BMGF | Bill and Melinda Gates Foundation |
| CA | Conservation Agriculture |
| CAI | Conservation Alliance International |
| CALC | Conservation Agriculture Learning Center |
| CDI | Centre for Development Innovation (Wageningen University) |
| CIP | International Potato Center |
| COR | Contract Officer Representative |
| CRI | Crop Research Institute |
| CSA | Climate Smart Agriculture |
| DCDI | Double Cropping Dual Income |
| EDAIF | Export Development and Agricultural Investment Fund |
| EGS | Early Generation Seed |
| FBO | Farmer-based Organization |
| FinGAP | Financing Ghanaian Agriculture Project |
| FTC | Farmer Training Center |
| FTF | Feed the Future |
| FY | Fiscal Year |
| GAABIC | Ghana Agricultural Associations Business and Information Center |
| GAIDA | Ghana Agri-Input Dealers Association |
| GAPs | Good Agronomic Practices |
| GCAP | Ghana Commercial Agriculture Project |
| GHC | Ghana Cedis |
| GIDA | Ghana Irrigation Development Authority |
| GROW | Growing Rice Market Opportunity for Women |
| GSIU | Ghana Seed Inspection Unit |
| ICT | Information and Communication Technology |
| IFDC | International Fertilizer Development Center |
| IR | Intermediate Result |
| ISFM | Integrated Soil Fertility Management |
| ISSD | Integrated Seed Sector Development |
| ISU | Iowa State University |

| | |
|---------|--|
| IWAD | Integrated Water Management and Agricultural Development Ghana Ltd |
| IWMI | International Water Management Institute |
| KUAPA | “Good Farming” in the Akan Language |
| LIP | Local Implementing Partner |
| LNGO | Local Non-Governmental Organization |
| LoP | Life of Project |
| M&E | Monitoring and Evaluation |
| MAP | Modern African Productions |
| MOFA | Ministry of Food and Agriculture |
| MT | Metric Ton |
| MTP | Mechanized Transplanter |
| NARO | National Agricultural Research Organization |
| NASTAG | National Seed Traders Association of Ghana |
| NGSP | Northern Ghana Seed Platform |
| NRGP | Northern Rural Growth Program |
| NVRC | National Variety Release Committee |
| PATs | Participatory Adaptive Trials |
| PHLIL | Post-Harvest Loss Innovation Lab |
| PIT | PAVE Irrigation Technology |
| PPP | Public Private Partnership |
| PPRSD | Plant Protection and Regulatory Services Directorate |
| RELC | Research-Extension Linkages Committee |
| RING | Resiliency in Northern Ghana Project |
| RSSP | Rice Sector Support Project |
| SARI | Savannah Agricultural Research Institute |
| SEEDPAG | Seed Producers Association of Ghana |
| SIL | Soybean Innovation Lab |
| SIR | Sub-Intermediate Result |
| SPRING | Strengthening Partnerships, Results, and Innovations in Nutrition Globally Project |
| SSA | Sub-Saharan Africa |
| SSTP | Scaling Seeds and Technologies Partnership |
| SRI | Soil Research Institute |
| TSP | Triple superphosphate |
| UDP | Urea Deep Placement |
| UDS | University of Development Studies |
| USAID | United States Agency for International Development |
| USG | Urea Supergranules |
| WASP | West African Seed Program |
| YHFG | Youth Harvest Foundation Ghana |

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“This equipment has contributed to my success as a farmer. Harvesting is supposed to be a joyful period for every farmer, but it wasn’t for me. I couldn’t get clean grain because my sheller was unable to separate the maize grains from the chaff. The B4 equipment is making that happen now”

Mr. Kasim Badakia (middle) awarded “Best Farmer” in the Upper West Region



“With the new and modern equipment granted by ATT we can fill 480 bags of seed instead of 12 per day. We have become more cost and time efficient and can now focus on making new deals”

Alhaji Abdulai Antika Seidu, Chief Executive Officer of Antika Company Limited



“I don’t regret accepting to apply a technology before seeing the results. My strong faith did not fail me. I even offered my land to be used for the first trial. First harvest after application I collected 20 bags instead of the 7 bags I used to get before applying UDP”

Lydia Akazagsi, farmer and UDP Ambassador

I INTRODUCTION

The Feed the Future USAID Agriculture Technology Transfer Project (FTF-USAID ATT) is a five-year project funded by USAID/Ghana to increase competitiveness of the maize, rice and soybean value chains, fostering broad-based and sustained economic growth through the increased availability of agricultural technologies and increasing productivity in northern Ghana. The project focuses on Ghana's Feed the Future intervention zone covering the Sudan-savannah ecological zones of northern Ghana: Northern, Upper East and Upper West Regions.

The International Fertilizer Development Center (IFDC) is the lead implementer, with additional technical support provided through Iowa State University (ISU), the Center for Development Innovation (CDI) of Wageningen University and Research Center, as well as Ghanaian research institutions, including the Savannah Agricultural Research Institute (SARI) and the University for Development Studies (UDS). Other key partners include Ghana Agricultural Associations Business and Information Center (GAABIC), local non-governmental organizations (LNGOs) and other public and private sector institutions. ATT works closely with the Ministry of Food and Agriculture (MOFA) - its host ministry – in particular the three northern regional MOFA offices, the Plant Protection and Regulatory Services Directorate (PPRSD) and the Ghana Seed Inspection Unit (GSIU), as well as other offices within the Government of Ghana. All play an important role in providing support to ensure the implementation of regulatory and institutional reforms needed for a performing and private sector-driven seed and fertilizer sector in Ghana.

The Annual Report for the period of October 2015 to September 2016 begins with an Executive Summary including Key Achievements. A more detailed description of the fiscal year's activities and results will follow, along with a section on Cross-Cutting Issues (Grants Program, Gender, Monitoring and Evaluation and Program Management, Administration and Finance). Challenges and Lessons Learned, Success Stories, Media Coverage, ATT's M&E matrix outlining progress on FTF Indicators and Key Activities planned for the next quarter are found in the Annex.

2 EXECUTIVE SUMMARY

Year Three (FY2016) of ATT's implementation was again characterized by steady advancement towards its objectives and goals: increased use of certified seed by rice, maize and soybean farmers in the northern regions continued its upward trend rising from a 2015 baseline of 24,535 ha. to 43,246 ha. over the reporting period. This almost doubling in area under certified seed is attributed to greater market access due to increased certified seed production by ATT's contract growers, wider distribution and thereby availability of certified seed through the agro-dealer network supported by the project, ATT's farmer training activities, and the project's multi-pronged ICT, radio and television media campaigns. Market demand for certified seed was undoubtedly also influenced by the significant yield increases ATT farmer beneficiaries and their neighbors witnessed, with rice, maize and soybean harvests producing 61%, 95% and 97% growth, respectively, over traditional farming practices based on recycled seed. Those 66,964 farmers who adopted one or more of ATT's Climate Smart technologies harvested on average, 3.3 MT maize per hectare, 3 MT of rice/ha., and 2 MT/ha of soybeans, as compared to their non-adopting neighbors whose yields averaged only 1.7 MT/ha, 1.8 MT/ha and 1 MT/ha.

Three ATT USAID-funded state-of-the-art seed testing laboratories, one in each of the northern regions, and all equipped to levels compliant with International Seed Trade Association standards, will ensure that northern Ghana's seed sector continues to have the ability to assure seed processors and farmers that declared 'certified' seed meets those standards required in terms of purity, germination and freedom from disease or pests. To ensure consistent and increasing throughput of certified seed, ATT trained 65 private seed companies in how to produce certified seed, post-harvest best practices and business management. These companies then successfully produced 1,309 MT of certified seed for release into the market for the 2017 growing season. Seed processors located in the proximity of these growers were furnished and trained in the use of labor-saving, automated seed processing machinery to improve the efficiency and competitiveness of their businesses. ATT collaboration with SARI has over the past year led to the identification and trial establishment of three promising CSA varieties of maize whose release, again with ATT financial and technical support, will be accelerated once the Institute's Wambong Dam and irrigation infrastructure is rehabilitated, thus allowing for dry season out-growing.

In 2015/2016, ATT's ISFM team brought to completion 25 adaptive trials designed to scientifically confirm a range of theoretically beneficial varietal, fertilizer, soil amendment and conservation agriculture practices across ATT's Zone of Influence. Results of these 'adaptive' trials generated the evidence-based technical packages ATT disseminated to lead farmers through its hands-on field day demonstrations. Training on UDP, increasing soil organic matter, composting and CA was delivered directly to over 10,700 farmers through 'Green Day' events focused on field preparation/tillage, soil testing (processed by a local private sector firm), seed varietal selection and pre-treatment (in the case of soybean with TSP and rhizobium inoculation). These training activities were subsequently followed by 'Brown Day' events, which compared yields of the plots employing ATT's CSA practices versus those which did not. As already mentioned, M&E field surveys confirmed that over the 2015 main growing season, yields on ATT beneficiary farms increased rice, maize and soybean yields by 61%, 95% and 97%, respectively.

Forty-one 'Learning Centers' which will be handed over to ATT's public, NGO and private sector partners will be an important component of the project's sustainability strategy, continuing to provide women, youth and other farmers with the opportunity to witness and understand how CSA technologies work and can benefit them. These Learning Centers will form an important aspect of ATT's enduring legacy.

Previous studies conducted by ATT and others have confirmed that key segments of the rice, maize and soybean value chains are either non-functioning or inefficient and fail to deliver value to farmers. It is consequently of no surprise that farmer engagement with the formal agro-input sector is minimal. ATT has used its grants facility to selectively and strategically ‘bolt’ back together these value chains, targeting those specific services essential to their efficient and effective function. ATT grants have been made to both the public as well as private sector, depending on the service provided. Irrigation infrastructure, transportation for seed field inspection, public – and private sector - seed labs and equipment, seed processing machinery, fertilizer briquetting equipment, agricultural water management systems trials, seed sector platform establishment (NASTAG), grant-leveraged seed sector finance – all essential to well-functioning agricultural value chains, have benefited from over 2.8 million USD in ATT grant funding this year. ATT’s grants have leveraged other USAID FtF funding through collaboration with other FtF projects, ADVANCE, RING and SPRING, by way of joint training and in-kind grant award of equipment to their beneficiaries.

]This strategic provision of grant funds and consequent ‘repair’ of many aspects of the rice, maize and seed value chains has had the very significant effect in terms of also attracting private sector funding. Since ATT’s inception, over 972, 725 USD in new private sector investment is estimated to have been attracted to these seed industries, with incremental sales adding another 1.02 million USD to sectoral growth.

Coupled with ATT’s Digital Classroom screenings - which reached an estimated 59,250 million farmers last year – Farmer Radio International and KURAPA television series reinforced the project’s messages on Climate Smart Agricultural technologies and practices to over an estimated 1.64 million farmers. The projects ATT’s Monitoring and Evaluation field surveys estimated that over 66,964 farmers adopted at least one of the new CSA or Conservation Agriculture (CA) technologies. Honoring its commitment to ensure inclusion of women farmers, ATT has to date trained over 34,264 women in ISFM/CSA practices.

ATT’s achievements have not only drawn the attention of local audiences but those of international CSA practitioners as well. ATT now has seven scientific articles based on its work having been accepted by peer-review publications.

The following pages describe in fuller detail the achievements mentioned above. Sixty-percent through the life of the project, ATT has achieved well over 60% of the target levels for 20 of its 25 indicators (see Table I below): 16 indicators have attained 75% or more of their set target. In Year 4, ATT’s plans to build on these notable achievements with a series of activities set to significantly accelerate its progress. Continuing to work through an expanded network of public, private and international NGO partners, ATT fully anticipates to meet its LOP targets and, indeed, to greatly exceed many.

2.1 KEY ACHIEVEMENTS

INTERVENTIONS

Seed

- 3 hybrid maize varieties (MS1, MH1463 and MH1466I) at the variety release trial stage
- 1,349 acres of maize, rice and soybean seed fields cultivated by 55 seed producers supported through ATT seed production grants
- 3 "state-of-the-art" GSIU laboratories handed over to MOFA PPRSD to improve seed quality testing
- Rehabilitation of Wambong Dam to shorten the release process of new crop varieties by SARI
- 3 labor-saving seed processors awarded to 3 seed companies

Soil

- 3 Rice Adaptive Trials to observe differences in efficacy among various ISFM technologies
- 13 Soybean Adaptive Trials to observe benefits of Rizobial Inoculation, TSP and organic fertilizer
- 9 Conservation Agriculture Participatory Adaptive Trials to learn with farmers what cropping systems perform better
- 41 Learning Centers established for maize, rice and soybean, showcasing different ISFM technologies
- 55 seed producers supported to obtain soil testing services from the private sector - indirectly supporting private-sector soil health services

Water

- Conservation Agriculture and composting messages related to water conservation extended to ATT farmers.
- Initiation of 2 Agriculture Water Management Projects (PAVE Project and Secure Water Project) to pilot 2 water harvesting, storage, lifting and irrigation systems.

OUTPUT

Technology Transfer Rate

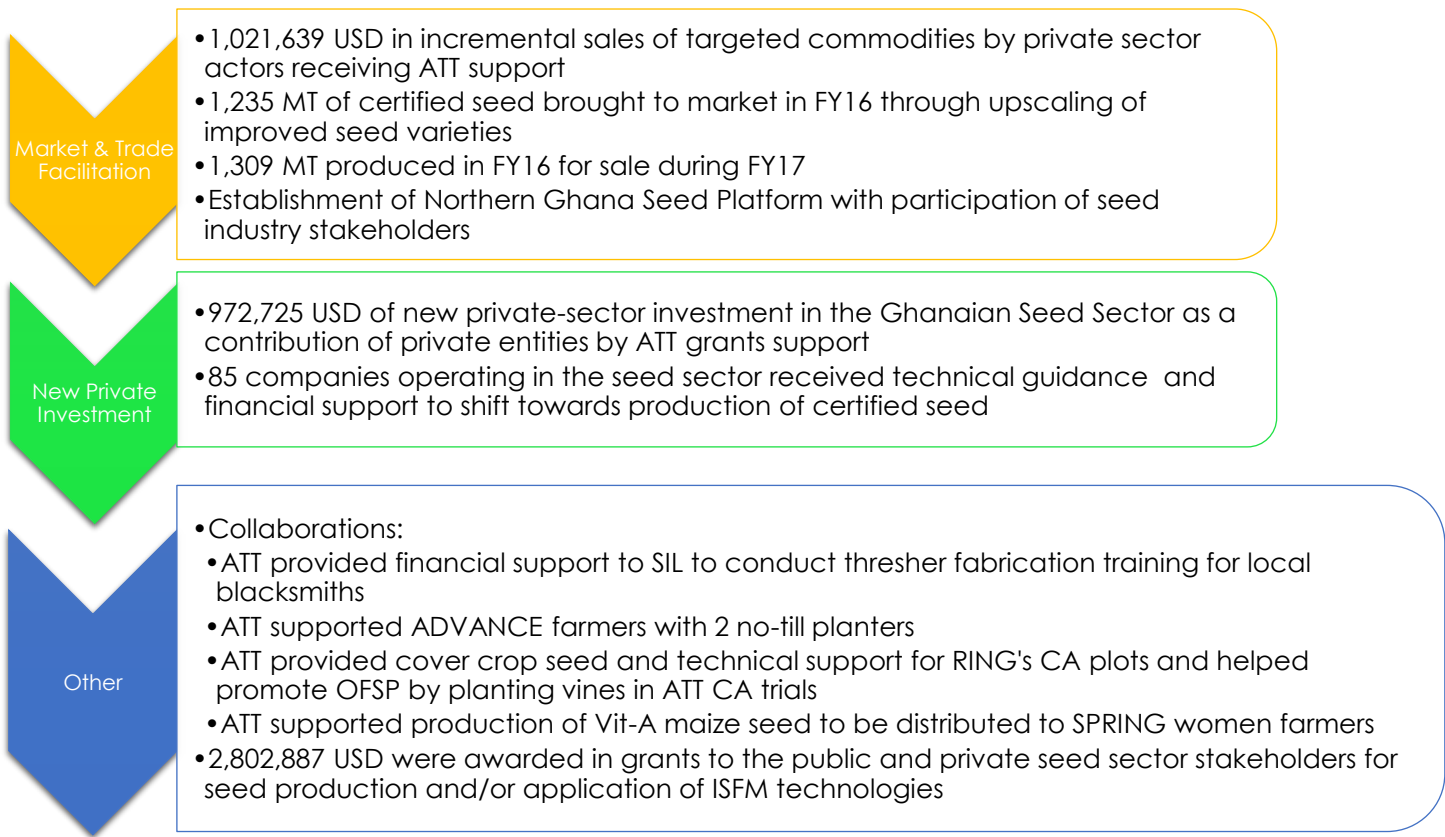
- 43,246 hectares under improved technologies
- 66,964 farmers applying improved technologies and management practices

Long & Short Term Training

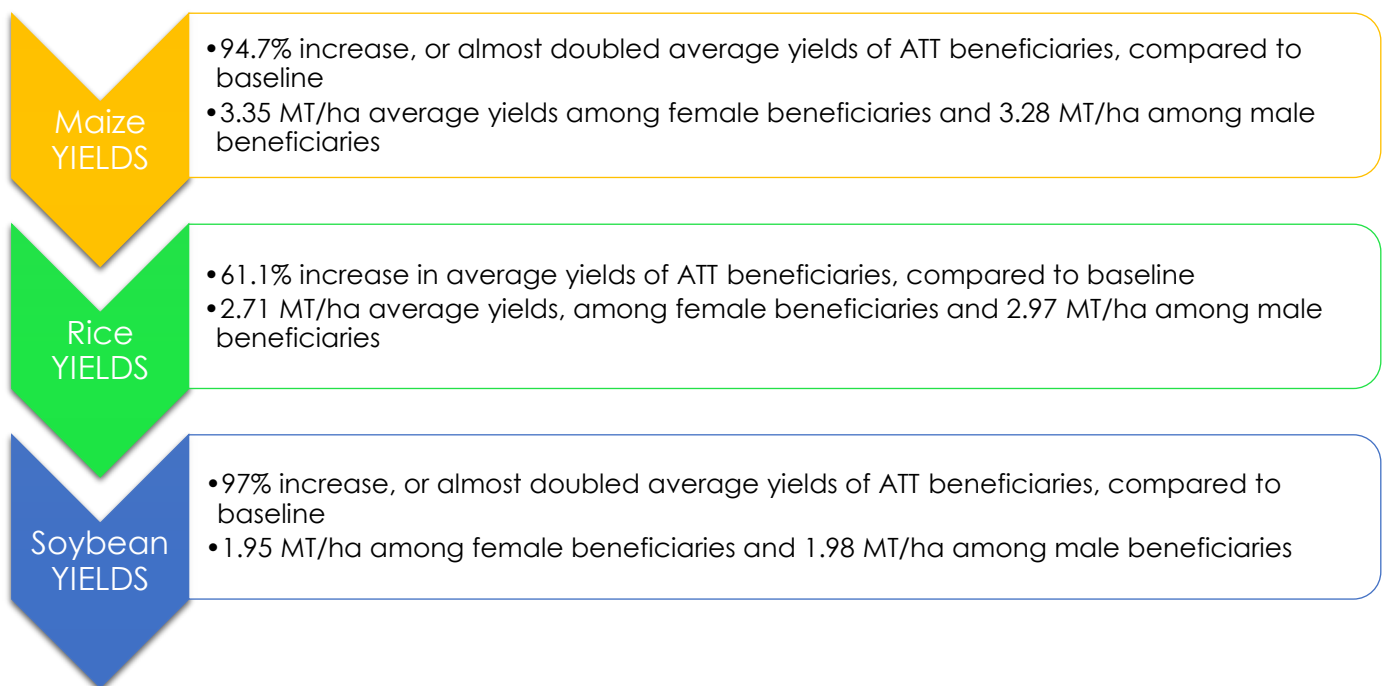
- 10,739 farmers trained during Field Days
- 804 farmers trained in Conservation Agriculture practices
- 59,250 farmers trained through ICT (Digital Classroom Systems and video screening) on best production and management practices for maize, rice and soybean
- 22 officials trained on soil testing
- 23 public and private sector participants trained on seed quality testing
- 85 seed companies trained on seed certification, post-harvest practices and business management
- 34,264 female farmers trained in total

Information Dissemination on Seed, ISFM, biotechnology

- 7 publications covering various ISFM and Seed Topics across the value chain
- 356,000 people reached through television broadcasts
- 1,278,775 people reached through radio broadcasts



OUTCOME



2.2 INDICATORS AND PROGRESS TOWARDS ACHIEVEMENT: A SNAPSHOT OF WHERE WE ARE NOW¹

Table I: Progress towards achievement of indicators for FY 2016 and LOP

| Indicator | Level of Achievement FY 2016 in % | Level of Achievement LOP in % | Indicator Category |
|--|-----------------------------------|--|--------------------|
| Ind. 1 – Yield per hectare of targeted commodity (maize, rice and soy) | | | Custom |
| Yields for Maize (Mt/Ha) | 139.1% | 97.4% | |
| Yields for Rice (Mt/Ha) | 115.1% | 80.6% | |
| Yields for Soybean (Mt/Ha) | 140.7% | 98.5% | |
| Ind. 2 – Number of hectares under improved technologies or management practices as a result of USG assistance (FTF Indicator # EG.3.2-18) | 216.2% | 62.9% | FTF |
| Ind. 3 – Number of farmers and others who have applied improved technologies or management practices as a result of USG assistance (FTF Indicator # EG.3.2-17) | 334.8% | 97.0% | FTF |
| Ind. 4 – 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 (FTF Indicator # EG.3.2-20) | 131.5% | 59.5% | FTF |
| Ind. 1.1 – Value of incremental sales of targeted ATT's commodities (seed, fertilizers and other soil amendments) attributed to FTF implementation | 510.8% | 130.8% | Custom |
| Ind. 1.2 – Value of new private sector investment in the agriculture sector or food chain leveraged by FTF implementation (FTF Indicator # EG.3.2-22) | 194.6% | 101.0% | FTF |
| Ind. 1.3 – Number of individuals who have received USG-supported short-term agricultural sector production and food security training (FTF Indicator # EG.3.2-1) | 178.0% | 81.0% | FTF |
| Ind. 1.4 – Number of individuals who have received USG supported long-term agricultural sector production and food security training (FTF Indicator # EG.3.2-2) | 26.7% | 12.0% | FTF |
| Ind. 1.5 – 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 | 97.0% | 95.5% | FTF |
| Ind. 2.1 – Number of public-private partnerships formed as a result of FTF (FTF Indicator # EG.3.2-5) | 420.0% | 320.0% | FTF |
| Ind. 2.2 – Number of technical publications made available for public dissemination | 77.8% | 93.2% | Custom |
| Ind. 1.1.1 – Volume and value of seed (rice, soy bean, maize) available for Northern Ghana, as a result of USG assistance | 103.3% | 40.3% | Custom |
| Ind. 1.1.2 – Number of MSMEs, and others registered and are producing seeds (certified and foundation) | 340.0% | 93.1% | Custom |
| Ind. 1.2.1 – Number of farmers, and others accessing market and technology information on seed, ISFM and general agricultural practices through ICT mechanisms | 1780.0% | 1634.8% | Custom |
| Ind. 1.2.2 – Number of field trials implemented by privately owned/operated seed companies and other partners receiving USG assistance | 515.0% | 189.0% | Custom |
| Ind. 1.3.1 – Number of Policies/ Regulations/Administrative Procedures in each of the following stages of development as a result of USG assistance in each case: (FTF Indicator # EG.3.1-12) | 100.0% | 60.0% | FTF |
| Ind. 1.4.1 – Number of private enterprises, NGOs, sector actors, etc. promoting new technologies | 168.3% | 80.0% | Custom |
| Ind. 1.4.2 – Number of links between international and local companies that result in accessing new technologies | 180.0% | 52.0% | Custom |
| Ind. 2.1.1 – Number of months that the research takes to complete the process for variety release | 0.0% | 0.0% | Custom |
| Ind. 2.1.2 – Number of Seed Testing Laboratories set up to facilitate seed testing and certification | 100.0% | 100.0% | Custom |
| Ind. 2.1.3 – Number of Seed Processing Plants established to enhance seed quality | 100.0% | 100.0% | Custom |
| Ind. 3.1.1 – Number of technologies or management practices in one of the following phases of development (FTF Indicator # EG.3.2-7) | | | FTF |
| In Phase I: Under research as a result of USG assistance | 0.0% | | |
| In Phase II: Under field testing as a result of USG assistance | 30.0% | 61.4% | |
| In Phase III: Made available for transfer as a result of USG assistance | 0.0% | | |
| Ind. 3.2.1 – Number of conferences, forums etc. attended by project partners with USG assistance. | 100.0% | 70.0% | Custom |
| Ind. 3.3.1 – Number of communication messages on plant biotechnology produced | 0.0% | 33.3% | Custom |
| Ind. 3.3.2 – Number of farmers, processors or others who received information on biotechnology | | Messages aired on community and national radio stations, there by far exceeding the targets of 1,000 and 4,075 for FY16 and LoP respectively . | Custom |

¹ Levels of LOP target achievement: Red indicates <40%; Yellow indicates 40% - 60%; Green indicates >60%.

3. INCREASING AGRICULTURAL PRODUCTIVITY IN THE MAIZE, RICE AND SOYBEAN VALUE CHAINS IN NORTHERN GHANA

The Agriculture Technology Transfer Project was designed with the ambitious goal of increasing competitiveness of the rice, maize and soybean value chains. Operationalization of the needed interventions first required a thorough understanding of the constraints and challenges in order to respond to them adequately. Past studies^{2,3,4} and ATT field experience with regard to agriculture productivity in Northern Ghana immediately reveal a number of deficiencies and their adverse impact on food and livelihood security.

- Agriculture production in the North lags far behind in terms of potential yield with maize, rice and soybean² at 1.54 MT/ha, 1.98 MT/ha and 1.48 MT/ha, respectively.
- The three northern regions³ have among the highest poverty rates and lowest per capita incomes in the country: 16 percent and \$4.9/day in the Northern Region; 26 percent and \$3.9/day in Upper East; and 25 percent and \$4.8/day in Upper West.
- Studies quoted in the Seed Gap Analysis indicate an adoption rate of only 10 percent for improved/certified seed of maize, rice and soybean.
- Presence of outdated agriculture practices such as burning to clear fields and low adoption of no-tillage practices⁴
- Low levels of mechanization at any stage of production in all three value chains.

Capitalizing on the expertise that an organization like IFDC embodies, ATT was designed to focus on three key objectives: 1) increase the role and capacity of private sector actors in developing and disseminating improved seed; 2) increase efficiency and transparency of government functions to support seed, fertilizer and ISFM technology development release and dissemination; and, 3) increase the efficiency of targeted agricultural research to develop release and communicate technologies that support sustainable agriculture activity.

3.1 PROJECT INTERVENTIONS AND IMPLEMENTATION STRATEGY:

ATT's project interventions are integrated in a strategy that simultaneously focuses on agriculture's three most vital components: Seed, Soil and Water. The approach consists of identifying scientifically sound and socio-economically appropriate, 'Climate Smart' technologies that improve the quality and utilization of these three elements. Extending from this three-pronged *intervention* approach is an integrated *implementation* strategy aimed at transferring identified technologies and measuring their impacts. This strategy utilizes public and private sector actors and various information delivery mechanisms, e.g. 'Green Day' demonstrations, ICT, Digital Classrooms, etc. to reach the targeted customer or stakeholder and create market demand for

² www.ghanalinks.org, MOFA data 2014, simple average for 3 Northern Regions.

³ Prevalence of Poverty (the poverty threshold in this study refers to International Poverty Line, World Banks 2011, at 1.25 USD/per day PPP 2005); Population Based Survey, Kansas State University 2015.

⁴ Patterns of adoption of improved technologies in Ghana, Ghana Strategy Support Program, IFPRI, 2013.

the technologies, practices or policies being promoted. The figure below depicts ATT's intervention and implementation approach.

The expected outcome of this approach and strategy is farmer adoption of improved certified seed varieties, integrated soil fertility management practices and, in the coming years, water harvesting, storage and irrigation systems that will support the project's 'Doubling Cropping / Dual Income' (DCDI) vision for its farmer beneficiaries. If these outcomes continue to be realized, farming household income will increase and in turn, the livelihoods and food security of farmers, their families and communities will be enhanced.

SEED SOIL WATER: ATT has taken a three-pronged approach to improving the maize, rice and soybean sector by simultaneously improving the quality and utilization of agriculture's most vital components: seed, soil and water. Technologies identified that will help achieve this goal are being introduced and scaled through an integrated technology transfer approach (see figure below).

Figure 1: Project Intervention and Implementation Strategy



3.2 CREATING A COMPETITIVE SEED SECTOR IN NORTHERN GHANA

Northern Ghana's seed sector is facing challenges at every link in the value chain from improved varietal development to parent-line maintenance and seed quality assurance systems to accurate market forecast information to processing, storage and final distribution to farmers. Underlying value-chain constraints are seed policies and regulations that need passed and communicated to stakeholders. The ATT Project is addressing each of these broad challenges through: 1) research, development and technology transfer 2) capacity building, outreach and government regulations and 3) expanding the market demand and supply

3.2.1 RESEARCH, DEVELOPMENT & TECHNOLOGY TRANSFER

Figure 2: Process of Technology Development & Transfer at ATT

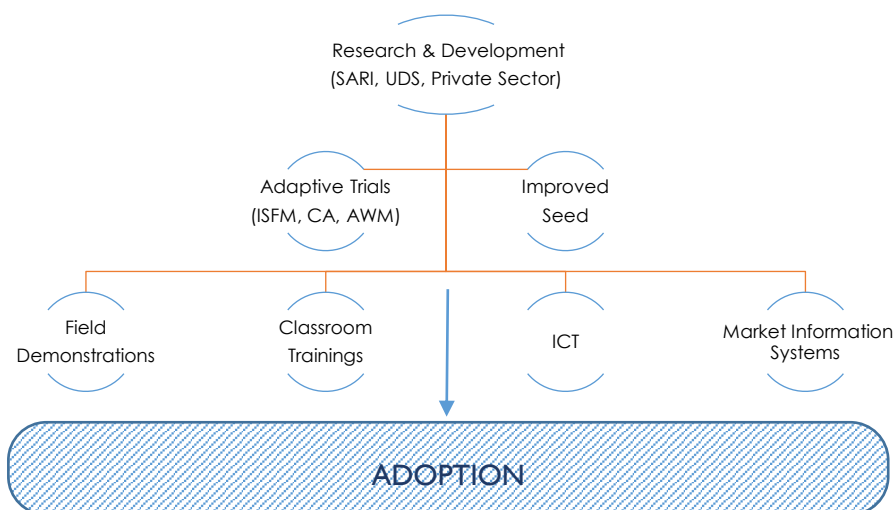


Figure 3 describes the stages involved before an ATT-supported seed, soil, water or labor-saving technology is selected for transfer. ATT first identifies technologies that have proven successful in similar agro-ecologies and social environments. ATT then moves these technologies to locations where adaptive trials are conducted to ensure they are indeed appropriate for the climatic and socio-cultural context. Once these conditions are satisfied, ATT farmers and other stakeholders using an integrated implementation

approach involving its own staff, MoFA, local and international implementing partners and the private sector. The following ATT activities were undertaken during 2015/2016 based on this evidence-based approach.



Variety Release Trials

With guidance from sub-awardee CDI, ATT was active in seed research by supporting SARI with a grant to conduct maize variety trials with the goal of releasing three high-yielding hybrids (MSI, MHI463 and MHI466). Initial trials were lost to bird damage. After reestablishing the trials, SARI's irrigation pumps failed, as did the trial. The final two trials were lost to an armyworm outbreak. ATT is modifying SARI's grant so the Institute can replant in the FY17 dry season with the hopes of inviting the Ghana's National Variety Release Committee (NVRC) to evaluate and release the varieties next year.



New hybrid maize undergoing on-farm trial at Bazua

SARI Core of Excellence

USAID/Ghana Mission, ATT and ATT sub-awardee, Iowa State University (ISU), is building the human and institutional capacity of SARI by creating a Core of Excellence (COE). The COE includes a team of researchers in the maize, rice and soybean value chains, along with communications and business development (revenue generation) leaders. The mission of the COE is to enhance the capacity of SARI staff to develop demand-driven varieties, increase the supply of quality breeder and foundation seed and generate a sustainable revenue stream.

A meeting was held with SARI staff in which ATT and supporting partners encouraged staff to develop short, medium and long term plans for implementing the COE. SARI management was tasked to put these plans together for immediate action towards achieving the objectives of the COE.

The COE will serve as a pilot to determine what operational, managerial and technical program practices work to improve the institutional capacity of SARI. Lessons learned from the pilot will be applied to the institute as a whole with the objective of establishing SARI as a sustainable Center of Excellence for research and development in northern Ghana. The approach is expected to produce immediate improvements in those areas.

Handover of GSIU Seed Testing and Certification Laboratories

During this reporting period, ATT constructed, equipped and handed over three state-of-the-art seed inspection laboratories (one in each of the three northern regions). A ribbon cutting ceremony for the Northern Region lab was held in Tamale during a visit by the US Ambassador to Ghana, Mr. Robert Jackson. Ambassador Jackson toured the lab and ended the ceremony with an encouraging speech thanking those who worked so hard to turn strategic visions into reality and motivated all to continue the good work. The Deputy Minister for Food and Agriculture (Crops), Dr. Yakubu Ahmed, the SARI Director, Dr. Stephen Nutsuga, MOFA District Directors, Heads of the GSIUs, PPRSD, SARI breeders, senior management from other USAID/Ghana FTF projects and ATT staff were also in attendance during the handing over ceremony. The region's three new seed laboratories are all equipped with high-tech seed quality testing equipment and a germination room to the level of the International Seed Testing Association (ISTA) standards.

Installation of modern seed cleaning and bagging equipment for the Northern Region's three leading seed companies

In addition to improvements in public sector infrastructure and seed inspection capacity, ATT recognizes that support of the private sector through transfer of labor-saving equipment is an important step towards mechanizing seed production and processing, increasing overall efficiency and, ultimately, value chain competitiveness. With this in mind, ATT awarded in-kind grants to three leading seed companies in the northern region: Antika Co. Ltd (Upper West), Ariku Co. Ltd. (Upper East) and Heritage Seed Co. Ltd. (Northern Region). These matching grants included modern seed cleaning, processing and bagging equipment, as well as mini-seed quality test kits. Economic analysis of the machine operation indicates that, at current levels of seed production, the full cost of the machine (US\$63,700) can be paid off in approximately eight growing seasons. The machinery, however, has the potential to process 4.8 MT of seed per day and could generate higher returns on investment thereby paying off its cost in a shorter period, provided there were more seed for processing. ATT's 2017 Work Plan includes activities to generate this increased seed production.

The effect of this machinery on the efficiency of the seed value chain has been immediate and substantial: Antika's machine can process 480 maxi (100kg) bags per day with just 10 working staff instead of 12 bags per week requiring as many as 20 staff, as was the situation previously, and at higher cost. According to Mr. Antika, the ATT USAID-funded machinery has reduced his labor costs by 96 percent, and allowed management more time to focus on other company business

3.2.2 CAPACITY, OUTREACH AND GOVERNMENT REGULATIONS

Capacity-building efforts to support seed market development focused on three main topics: 1) seed quality assurance; 2) machine operation and maintenance; and, 3) business and enterprise development. Nearly 130 people from the public and private seed sector received training during this period on one or more of these topics. The expected impact of this training is increased efficiency of business and production operations in the private seed sector, as well as public sector regulatory processes.

Training seed growers on principles and practices of seed production

To meet our seed production targets, we need to engage qualified seed producers/companies and continue to build their capacity. ATT project organized a training session on the agronomy of seed production and seed certification for 65 registered seed producers, 19 participants from MOFA and FTF USAID/Ghana SPRING Project staff, and eight (8) ATT technical staff. Resource persons were drawn from GSIU, CDI, SARI and ATT seed specialists. Seed producers participating in this training have cultivated a combined 1,349 acres of maize, rice and soybean seed fields. This seed will be processed and made available to farmers in the coming season.

Training public and private seed sector actors on seed quality and business practices

A seed quality testing expert from ISU conducted a two-day workshop in Tamale for nine GSIU staff (three from each of northern Ghana's new regional GSIU seed testing laboratories), six private seed company staff members, six private sector seed producers, and two members of the ATT Seed Team. The workshop was designed to ensure participants have a basic understanding of the importance and methods of seed quality testing, and the proper use and maintenance of seed testing equipment. Although aimed mainly at the private sector, all participants received training on how to implement internal seed quality control measures.



A Lab Technician taking part in the Seed Quality Testing Workshop at the Tamale GSIU

ATT organized another workshop in Tamale and Bolgtanga at which the public sector (University for Development Studies and GSIU) presented relevant lectures to private seed producers. The UDS Agronomy Head, and trained entomologist, presented information on pest management principles and practices—specifically maize stalk borer and armyworm, which has caused devastating economic losses for maize seed and grain farmers during the 2016 main cropping season.



Participants observing germination at the training on seed quality and business practices for seed companies

A senior lecturer from the UDS Department of Agribusiness presented a lecture on business plan preparation and challenged the seed producers to approach their jobs as a full-time business. Finally, a senior GSIU staff took the

participants through post-harvest handling and seed certification processes; starting from the crop in the field through the laboratory stages to the final end user. In all, 85 participants benefited from this workshop.

Training seed companies on processing machine operation and maintenance

ATT organized a training for six operations staff from the three seed companies who received seed processing equipment. The training was conducted by Mr. Finias Katiyo from Dinshwe Manufacturing Company, the Zimbabwean manufacturer which produced and supplied the processing machines. Training topics included: 1) principles and practical operation of the respective machine components (cleaning, grading, treatment, packaging and sewing); 2) machine maintenance and spare parts, 3) safe machine operation and avoiding accidents; and, 4) operation efficiencies.

Handover of motorbikes to GSIU seed field inspectors

MoFA/PPRSD, in line with its mandate to provide quality seed to farmers for food production and to ensure quality seed production, sends technical staff from the Seed Inspection Division to inspect seed producers' fields at specific stages of production. In 2016, ATT supported GSIU with nine motorbikes to carry out field inspections and monitoring as part of the certification process and to offer advice to seed producers. This support facilitates continued improvement in the quality of seed produced by the seed producers, and leads to making higher-yielding, quality seeds available to farmers for increased yields. Ultimately, these higher crop yields will translate into increased food security, household income and improved livelihoods. The supply of these motorbikes will also enable GSIU Regional staff to conduct spot-checks of seed vendors in their respective regions to safeguard the quality of seed being sold.

Support SARI in breeder seed maintenance and quality, and accelerate varietal development and release

Availability of true-to-type quality breeder, foundation and certified seed is one of the most critical constraints in northern Ghana. Current standards set by the Ghana National Variety Release Committee (NVRC) require crop varieties intended for release to undergo two-evaluation production cycles. Without adequate irrigation, any potential new varieties can only be tested during the rainy season, making the release process extend over at least two calendar years. To expedite this process, ATT awarded a contract for the rehabilitation of Wambong Dam (8 km from SARI's campus in Nyankpala, Northern Region) and the development of a 10-ha irrigation facility for SARI. This facility is expected to accelerate varietal development and release, reducing varietal release timeline by half, as trials could then be conducted under irrigation during the dry season. These ATT investments are also expected to improve inbred line maintenance and breeder seed quality as regulated irrigation allows for a more controlled growing environment in the dry season when risk of cross-pollination is minimal.



Renovation of Wambang Dam will allow SARI to produce breeder seed also during the dry season under controlled irrigated conditions, thereby reducing the time frame for seed varietal development and release.



Pictures from top down: Picture 1: ATT Ex. COP Mr. Michael Dockrey, JK Technologies Representative Mr. Chauhan, USAID AOR Mr. Samson Konlan and the beneficiary Farmer, at the handing over ceremony of power tillers, in Botanga, Picture 2: Power Tillers, Picture 3: Chief Alhasan's rice field after UPD technology implementation

NEW SEED ANALYSIS LAB INCREASES

“The modern purity board enhances speed and accuracy of purity test results. We spend less time observing germination as the new germinators work correctly. A large number of samples can now be tested at once...”
-Mr. Christopher Akia, Head of the GSIU Tamale Lab



Processing and testing seeds used to be a time-consuming process for the people at the Tamale Seed Laboratory in Ghana – the first round of tests used to take up to three months. Now, thanks to new technology, lab workers can run the same tests in just one month. Technicians at the Tamale Seed Lab of the Ghana Seed Inspection Unit (GSIU) of the Ministry of Food and Agriculture of Ghana have received modern buildings and installation of modern equipment funded by the U.S. Agency for International Development (USAID) through the Feed the Future Ghana Agriculture Technology Transfer (ATT) project. The new facilities and lab technology help them run specialized tests on seeds that get quality seeds to farmers faster. Delays in seed analysis due to

Obsolete equipment, which in turn affected the early release and supply of certified seeds to farmers at the right time. Most smallholder farmers say they prefer to sow on time with their saved seeds and get low yields, rather than wait for certified seeds, which are more expensive and often come late, causing farmers to miss out on the proper planting season. Mr. Christopher Akia, head of the GSIU Tamale Lab, explained that the unit had obsolete seed testing equipment installed in the 1970s during the establishment of the



laboratory. “At the old laboratory we had only one functional non-calibrated seed moisture meter....Other processes, like the purity test, were done on a normal table counter that did not present good seed characteristic features for accurate judgement during the test.” Akia stressed that the new facilities and equipment were only possible through the generous assistance of USAID and the Feed the Future Ghana ATT project. Thanks to USAID-ATT, the Tamale unit now has a new laboratory with modern, state-of-the-art seed testing equipment that has started transforming and enhancing seed testing by making it faster and more accurate.



Picture 1: FTT USAID Ghana constructed Seed Inspection Unit at Inauguration Day, Tamale, Picture 2: Seed Inspection Unit area before reconstruction, Picture 3: Seed Inspection Unit, same area, after reconstruction

3.2.3 EXPANDING SEED MARKET SUPPLY AND DEMAND

The FY16 ATT Seed Sector Gap Analysis found seed producers face a number of challenges, among them: inadequate supply of foundation seed, lack of demand forecast and statistics to inform decision-making, absence of or inadequate marketing and distribution strategies, dependence on public sector for storage facilities, and low levels of mechanization which impede scaling up.

As a result of these problems, the amount of certified maize, rice and soybean seed absorbed by the market accounts for only 10 percent of the overall seed market. This use of inferior quality seed contributes to the low yields and low incomes of farmers of the northern regions.

Advancing the Public Private Partnership between private seed processors and SARI

Under SARI's technical supervision, Antika Co. Ltd and Ariku Co. Ltd bulked up foundation seed for three hybrid maize varieties (MSI, MHI463 and MHI466) expected for release in 2016 by the NVRC. The companies conducted field demonstrations to showcase the high crop performance and to generate demand for these soon-to-be-released hybrids. After the final evaluation and release, Antika and Ariku will receive sole distributor rights for these hybrid varieties through a licensing agreement with SARI. This public-private agreement will serve as a pilot and, when finalized, will mark a new alliance model between public and private actors which benefits both parties and the end consumer.

Harmonize activities in the seed sector: Establishment of the Northern Ghana Seed Platform

Based on extensive inquiry with public and private parties, ATT established the Northern Ghana Seed Platform (NGSP). This platform brings together all seed sector stakeholders for maize, rice and soybean in the three northern regions. The aim is to harmonize demand and supply of quality seed as well as contribute to a conducive business climate for seed production, dissemination and marketing.

The specific objectives of the platform are to:

- Discuss and plan for the required quantities of breeder, foundation and certified seeds of in-demand varieties for the upcoming season.
- Discuss quality assurance and certification systems and recommend possible improvements.
- Discuss implementation issues and opportunities that spring from the National Plant and Fertilizer Act, National Seed Regulations and National Seed Plan.
- Provide guidance and recommendations to the National Seed Council as well as collaborate with projects like ATT, Agriculture Policy Support Project (APSP) and Scaling Seeds and Technologies Partnership (SSTP).
- Serve as a forum for presenting co-financing modalities and soliciting business plans or pilots for improving quality seed production, processing and marketing.

The launching of the first Platform in October 2015 brought together 85 participants, all maize, rice and soybean seed sector stakeholders from the northern regions (research, seed companies, seed producers, agro dealers, farmers, aggregators and consumers). Other participants were drawn from National Crops Services Directorate and PPRSD, GSIU, SeedPAG, NASTAG, representatives from USAID, the North and West African Divisional Directorate of IFDC, and MoFA Directorates of the three northern regions. The ATT Seed Team presented results from the gap analysis survey

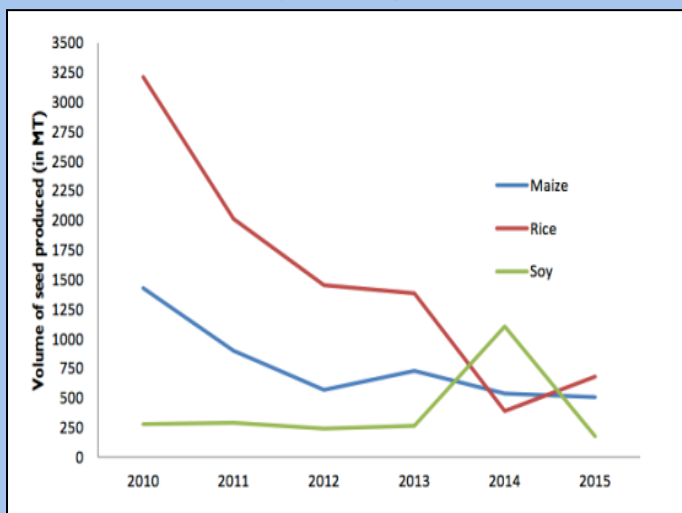
These results were well discussed and approved by the stakeholders as basic data that need to be updated annually as a vital reference for the sector. Based on this data, participants in regional group discussions made forecasts of the various classes of seed (breeder, foundation and certified) that their regions will need for the next planting season. A significant outcome from the meeting was the establishment of Regional Core Groups (RCGs). These groups will continue with Regional level planning and forecasting of seed demand to feed into the overall figure for the zone. The RCG will also help resolve issues on seed variety, demand and availability by providing actors with real time data.

ATT is working on building the capacity of NASTAG to take on full responsibility of organizing and leading the Platform as the main private sector body for seed producers in Ghana. The pre-harvest platform is scheduled for November 15, 2016 where the season's sales data will be presented, discussed and new forecasts made for the next planting season.

Northern Ghana Seed Sector Gap Analysis:

A Steady Decline in Seed Production

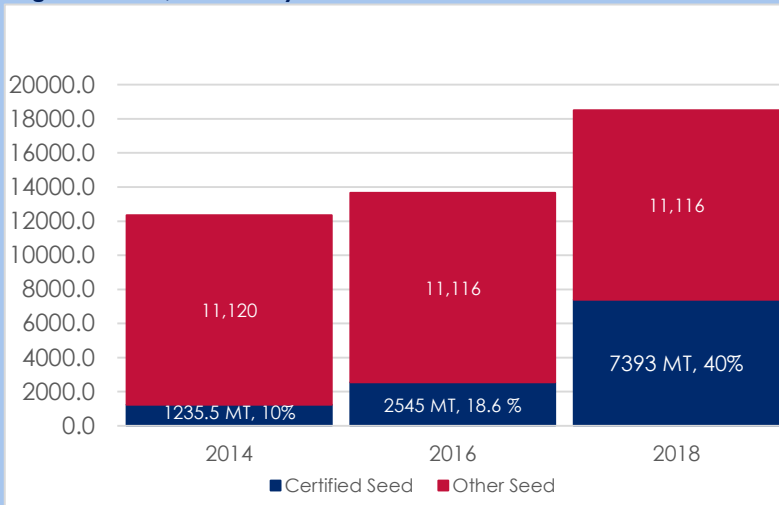
Figure 3: Maize, rice and soybean seed production trend 2010 - 2015



At the beginning of the year, ATT Seed Team and sub-awardee CDI, conducted a seed sector analysis to identify trends in seed production, and determine the gap between seed supply and demand. The team collected all relevant data on breeder, foundation and certified seed production and sales (for maize, rice and soybean) from SARI, CRI and the three GSIU offices. Figure 3 shows the overall decline in seed production since 2010. Certified maize seed production in 2015 accounts for 50 percent of the decrease as compared to 2010 production. Rice seed production is less than 1/10 of the production in 2010, while soybean seed production had been constant apart from a spike in 2014. The overall seed production for the three crops was estimated at 1,235 MT (616 MT maize, 255 MT rice, 364 MT soybean) for the 2014 production cycle and for sale in 2015. This amount accounted for 10 percent of the overall seed supply for these crops.

Seed Sector Gap Analysis: Restoring Seed Production

Figure 4: Maize, rice and soybean certified seed market share 2014 - 2018

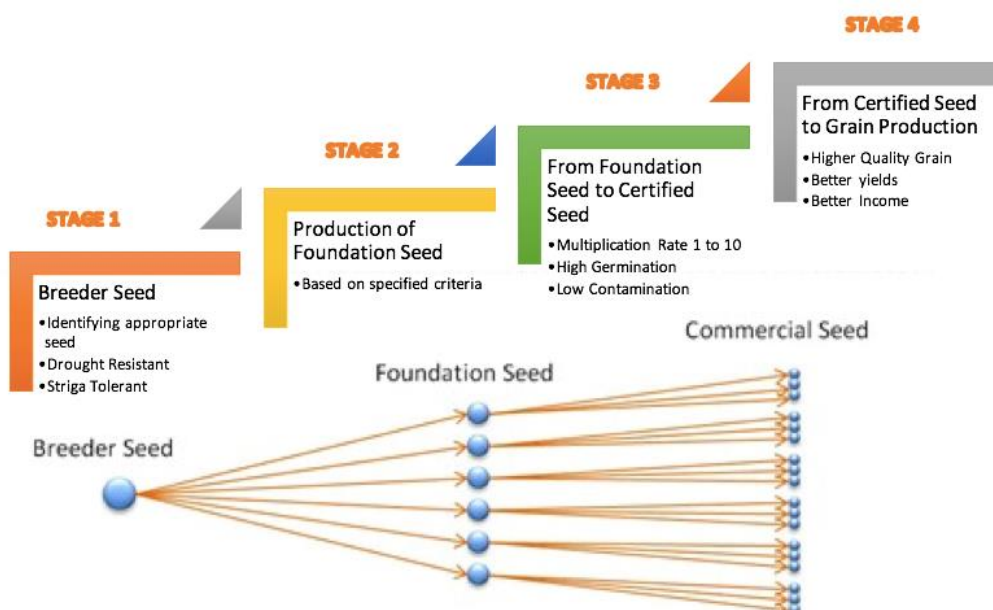


The seed market analysis showed that certified seed sales have been steadily declining since 2010. The supply of certified seed for 2015 was 1235 MT, constituting 10 percent of the overall seed market supply. Due to ATT intervention, an extra 1309 MT of certified seed was produced in 2016, expected to increase the certified seed supply for these 3 crops to 2545 MT, almost doubling the certified seed market share to 18.6 percent.

Supporting seed growers to produce foundation and certified seed for an expanding seed market

To support the goal of increasing certified seed market share from 10 percent to 40 percent, sector actors must understand the basic concept behind certified seed production and the critical importance of quality maintenance starting with breeder seed (Figure 5). This report has already mentioned ATT’s interventions with SARI to address breeder seed purity under section 3.2.2. However, the project also worked with the private sector to produce quality foundation and certified seed for an expanding seed market.

Figure 5: Process of certified seed production



ATT signed an MOU with Integrated Water Management and Agricultural Development (IWAD) Ghana Ltd. to collaborate and bulk-up enough foundation seed of Sanzal-sima for the three northern regions during the 2016 dry season. IWAD received Sanzal-sima breeder seed from SARI and cultivated five hectares (12.5 acres). Seven and three-quarter metric tons (7.74MT) of foundation seed were harvested from IWAD's field and made available to ATT-supported seed producers for the 2016 main cropping season to produce certified seeds.

For the 2016 main cropping season, ATT awarded grants to 55 seed producers. These producers cultivated a total of 1,349 acres of certified seed: 1,067 acres of maize (Sanzal-sima and Wang Dataa varieties); 52 acres of rice (AGRA variety); and, 230 acres of soybean (Afayak variety). Each seed producer supported by the project planted at least one, ¼-acre promotional demonstration plot to stimulate demand for the improved varieties at the community level. As a result of these ATT-supported activities, the estimated volume of seed expected from the three northern regions for the 2017 cropping season will be about 1,309MT (1,067 MT of maize, 104 MT of rice and 138 MT of soybean). The seeds will be marketed in the communities after certification is carried out by the GSIU in FY17. This will increase the certified seed market share to about 20 percent in 2017.

A SPECIAL VISIT..

WELCOME MR. AMBASSADOR!

On his first trip to northern Ghana, newly appointed US Ambassador, Robert F. Jackson, visited a number of US Government supported health, education and agriculture projects. In this one-day visit to the north, the Ambassador visited two ATT sites – a good sign that ATT's positive impacts are being recognized.

Ghana Ambassador Jackson started his visit at the Golinga Irrigation Scheme, where the US delegation team observed the briquetting machine making urea briquette fertilizer, and interacted with ATT-supported dry-season farmers, discussing how the introduction of UDP technology and improved rice seed has significantly increased their yields. This was followed by additional visits to vegetable production fields where farmers have adopted UDP technology. Ambassador Jackson observed women applying urea briquettes to rice fields that were transplanted during Mr. Finnegan's visit. Finally, Ambassador Jackson had the privilege to announce that USAID

would support rehabilitation of the Irrigation Scheme through the collaborative efforts of Ghana Commercial Agriculture Project (GCAP), ATT and Ghana Irrigation Development Authority (GIDA), and encouraged farmers to spread the good news of UDP and support their neighbors in adoption.

The Ambassador's visit to the USAID/ATT-constructed Seed Inspection Laboratory in Tamale marked the official opening of the lab. Two similar labs were constructed in Wa (Upper West) and Bolgatanga (Upper East). The labs are adjacent to MOFA's regional seed warehouses, and managed by GSIU, a unit of MOFA's PPRSD – the government entity whose mandate is to increase the quantity and quality of high-yielding seeds available to Ghanaian farmers. Ambassador, Robert F. Jackson, and the Deputy Minister of Food and Agriculture in Charge of Crops, Dr. Ahmed Yakubu, jointly cut the tape and unveiled a plaque to signify the official inauguration.

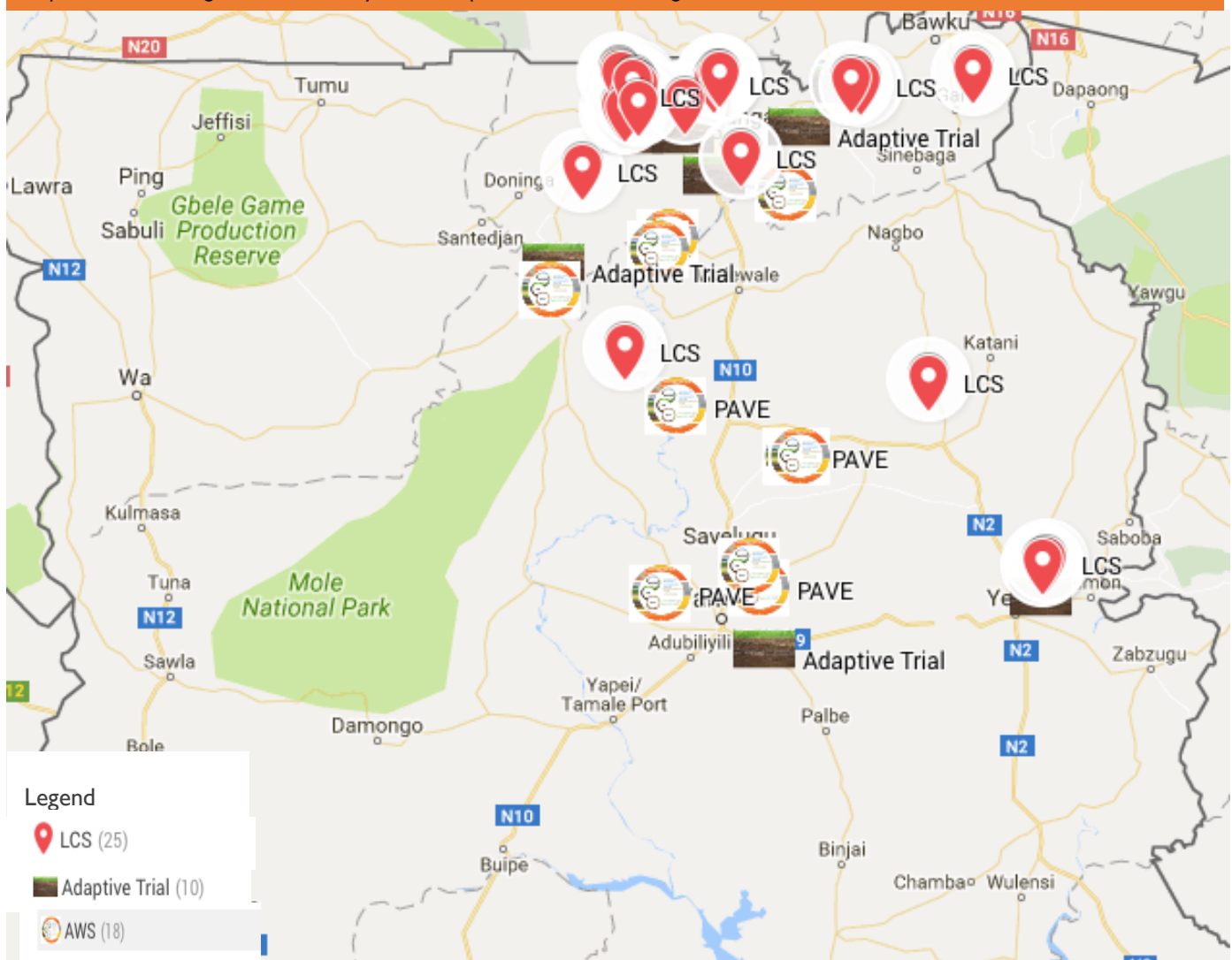


Right to Left: Ambassador Robert Jackson, Mrs. Jackson and Mr. Andy Karas, USAID Mission Director, examining urea fertilizer pellets from briquetting machine

3.3 INTEGRATED SOIL FERTILITY MANAGEMENT

As farmers around the world experience the challenges of a changing climate, scientists are working to identify and transfer technologies that help farmers adapt, as well as technologies that help farmers mitigate the harmful effects of climate change. Using this approach, the ATT Project trials, teaches and implements the principles and practices of Integrated Soil Fertility Management (ISFM), including improved fertilizer blends and delivery methods, Conservation Agriculture (CA) and composting. ATT has also identified the economic and environmental necessity to harvest water as our analyses suggest poverty in the north cannot be broken without having two cropping cycles per annum – a strategy we have coined “Double Cropping Dual Income” (DCDI). As with all of our transferred technologies, our methods of water harvesting are selected based on their potential to be environmentally friendly and socioeconomically appropriate.

Map 2: Location of Agriculture Water Systems, Adaptive Trials and Learning Centers



3.3.1 RESEARCH, DEVELOPMENT & TECHNOLOGY TRANSFER

In the reporting period, ATT furthered its research efforts through trials to identify how technologies proven successful in other similar environments can be adopted/adapted to Ghana's northern regions. ATT conducted adaptive trials to determine the effectiveness of various technologies from an agronomic, as well as economic point of view. Research was also conducted to identify factors influencing adoption of ATT-promoted technologies in the local context. In total, 16 adaptive trials, 13 for soybean and three for rice, were conducted during this fiscal year.

The following provides a brief description of each trial, including the objectives, results and recommendations. Table 2 captures results of economic analyses carried out on select trials, including gross margins and gross margin to cost ratio. Based on production and economic results, ATT will scale up the following practices in the coming seasons: one-time fertilizer application for rice through the application of the 3.4g FDP briquettes and use of organic fertilizer (1.0 to 2.5 MT/ha) for the production of soybean in combination with TSP and inoculum application.

Highlights:

- 130 percent yield increase in soybean when applying inoculum plus organic fertilizer. Addition of organic fertilizer alone yielded 54 percent higher than farmer practices. See Figure 7.
- Compared to soybean plots with no treatments, rhizobial alone increased yields by 33 percent, TSP alone 65 percent, a combination by 76 percent. See Figure 7.
- 54 to 127 percent yield increase in rice when applying organic fertilizer alone at 1.0 MT/ha and 2.5 MT/ha respectively, compared to 155 to 209 percent increase when applying 1.0 MT/ha and 2.5MT/ha organic fertilizer after application of 1.8g USG inorganic fertilizer, respectively. See Figure 6.
- One-time FDP application at 2.4g or 3.4g USG gave better gross margins (3.14 and 3.35 respectively) compared to basal NPK + 1.8g USG or basal NPK + 2.7g USG whose gross margins were 2.3 and 2.5, respectively.

An empirical analysis from Irrigation Rice Farmers in Northern Ghana

*Empirical analysis suggests a strong correlation between the adoption of improved technology and increased crop yields. ATT studied the effect of Urea Deep Placement (UDP) on the farmer's output in irrigated areas. A two-stage treatment effect was deployed to determine the factors that influence the farmer in adopting the technology and to determine the effect of the adoption of UDP technology on the farmer's output. **Significant variables that affected adoption were gender of farmer, land ownership, off-farm activity, extension service, farmer group participation and training. The results also revealed that farm size and the adoption of UDP technology significantly influenced the output of the rice farmers in northern Ghana. This technology also presents an extra employment opportunity for women and youth. For more ask for the full version of the study conducted by ATT....***



One-Time FDP Briquette vs. Basal + USG

Objectives: Compare the efficacy of one-time application of 2.4g FDP Briquette (basal NPK rate briquetted with 1.8g urea) or 3.4g FDP Briquette (basal NPK rate briquetted with 2.7g urea) to two-time fertilizer application consisting of a basal application of NPK and a later application of 1.8g USG or 2.7g USG as compared to farmer practice (broadcasting fertilizer) on adjacent fields for rice production under irrigated conditions.

Results: The gross margins and absolute yields obtained from the treatment with the larger granular size (3.4g FDP Briquette and 2.7g USG) were slightly higher than with the use of smaller granules (2.4g FDP Briquette and 1.8g USG) (Figure 6 and Table 2).

Recommendation: One-time application of the larger, 3.4g FDP Briquette. Following this recommendation gives higher yields relative to the farmer's practice (broadcasting fertilizer) and UDP Technology, and lower fertilizer and labor costs compared to UDP Technology.

Effect of UDP Technology on Adapted SRI

Objectives: Evaluate the efficacy of incorporating UDP (USG) into locally adapted SRI practices (i.e., 25cm x 25cm plant spacing) as compared to farmer practice (broadcasting fertilizer under SRI).

Results: Superior yields were obtained with UDP applied at 1.8g USG compared to SRI treatments. SRI + 2.7g USG gave higher yields (7.6 MT/ha) than SRI + 1.8g USG (7.2MT/ha), but the difference was not significant (Figure 6). The economic returns were highest with UDP +1.8g USG followed by SRI + 1.8g USG with a gross margin cost ratio of 2.64 and 2.08, respectively (Table 2).

Recommendation: Incorporating the UDP onto the locally adapted SRI practice is an innovative practice that could result in higher yields with less fertilizer. However, until the complete SRI package is practiced in northern Ghana, planting at a spacing of 20cm x 20cm with UDP technology is still recommended.

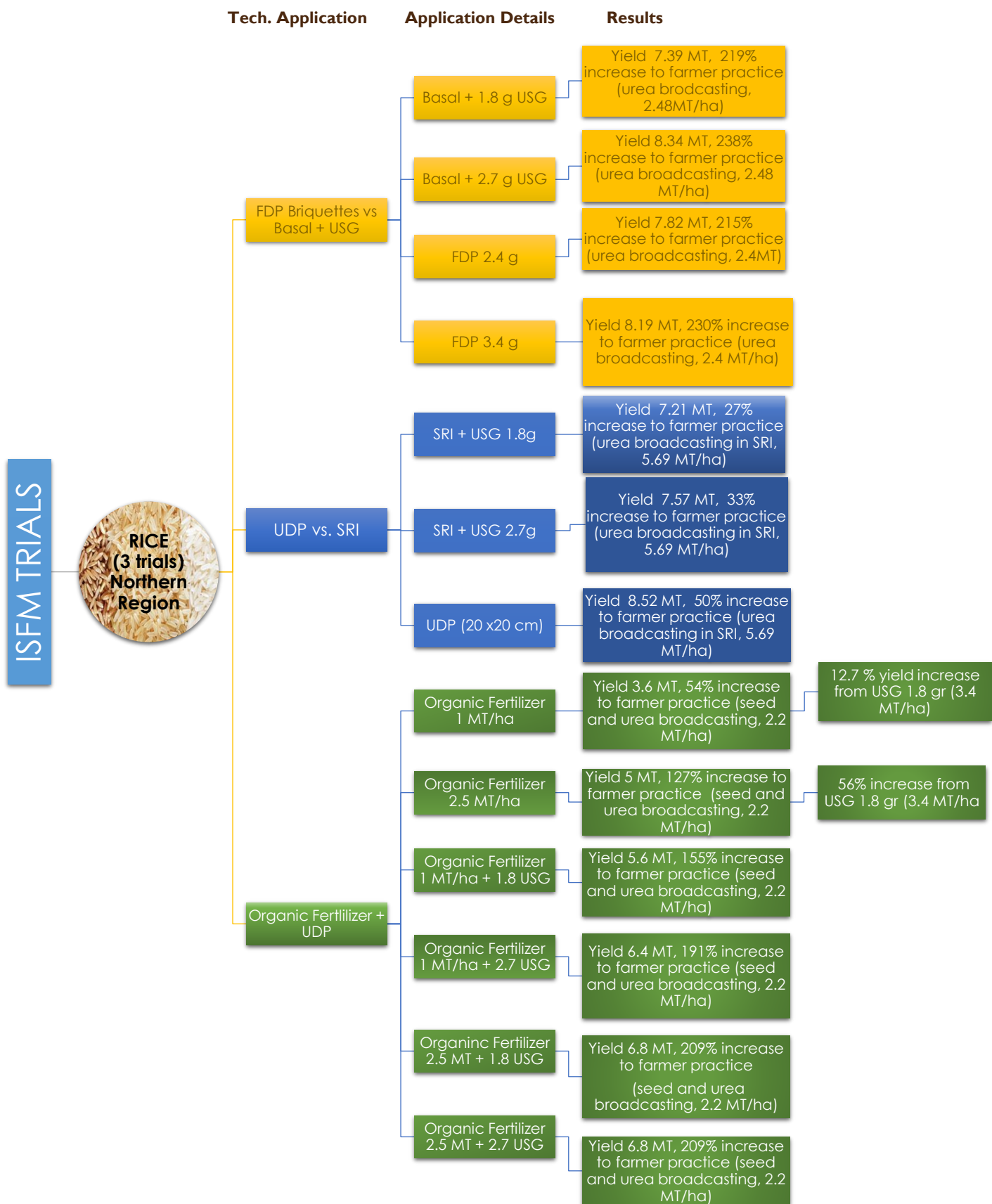
Effect of Organic Fertilizer on UDP Technology

Objective: Evaluate efficacy of one-time organic fertilizer application at two rates (1.0 or 2.5MT/ha) alone or in combination with inorganic fertilizer (1.8g or 2.7g USG) in irrigated rice production as compared to farmer practice (broadcasting seed and fertilizer) on adjacent fields.

Results: Use of organic fertilizer at 1.0 and 2.5MT/ha gave higher yields (3.6 and 5.0MT/ha respectively) than farmer practices (2.2MT/ha). Use of organic fertilizer at 2.5MT/ha with either 1.8g or 2.7g USG gave the same yield of 6.8MT/ha. Use of organic fertilizer at 1.0MT/ha with 1.8g and 2.7g USG gave yields of 5.6 and 6.4MT/ha, respectively (Figure 6).

Recommendation: It is clear that farmers should apply organic fertilizers, such as compost to improve soil health and crop performance. However, specific recommendations depend on the farmer's resources and objectives, as well as cost and availability of organic and inorganic fertilizers. ATT will share these results with farmers after a careful gross margin analysis.

Figure 6: Rice Adaptive Trials during 2016, Technologies Applied and Outcomes





Basal TSP and Rhizobial Inoculant

Objective: Evaluate efficacy of rhizobial inoculation and basal phosphate (TSP) application when combined or applied alone on soybean performance and yield as compared to farmer practice (no inputs).

Results: Both rhizobial inoculation and TSP fertilizer application influenced soybean yield. Compared to soybean plots with no treatments, rhizobial alone increased yields by 33%, TSP alone 65%, a combination by 76% (Figure 7). However, the only treatment in which the farmer breaks even (according to the gross margin analysis – Table 2) is Inoculant + TSP. Farmers lose money when applying Inoculant or TSP alone, but not as much as they would if they did not apply anything.

Recommendation: Based on yield and gross margin analyses farmers should inoculate seed and apply TSP. Resource poor farmers should at least inoculate *if* they want to produce soybean.

Organic Fertilizer and Rhizobial Inoculant

Objective: Evaluate the efficacy of organic fertilizer application at a rate of 2.5MT/ha alone or in combination with Rhizobial Inoculant on the performance and yields of soybean as compared to farmer practices (no inputs).

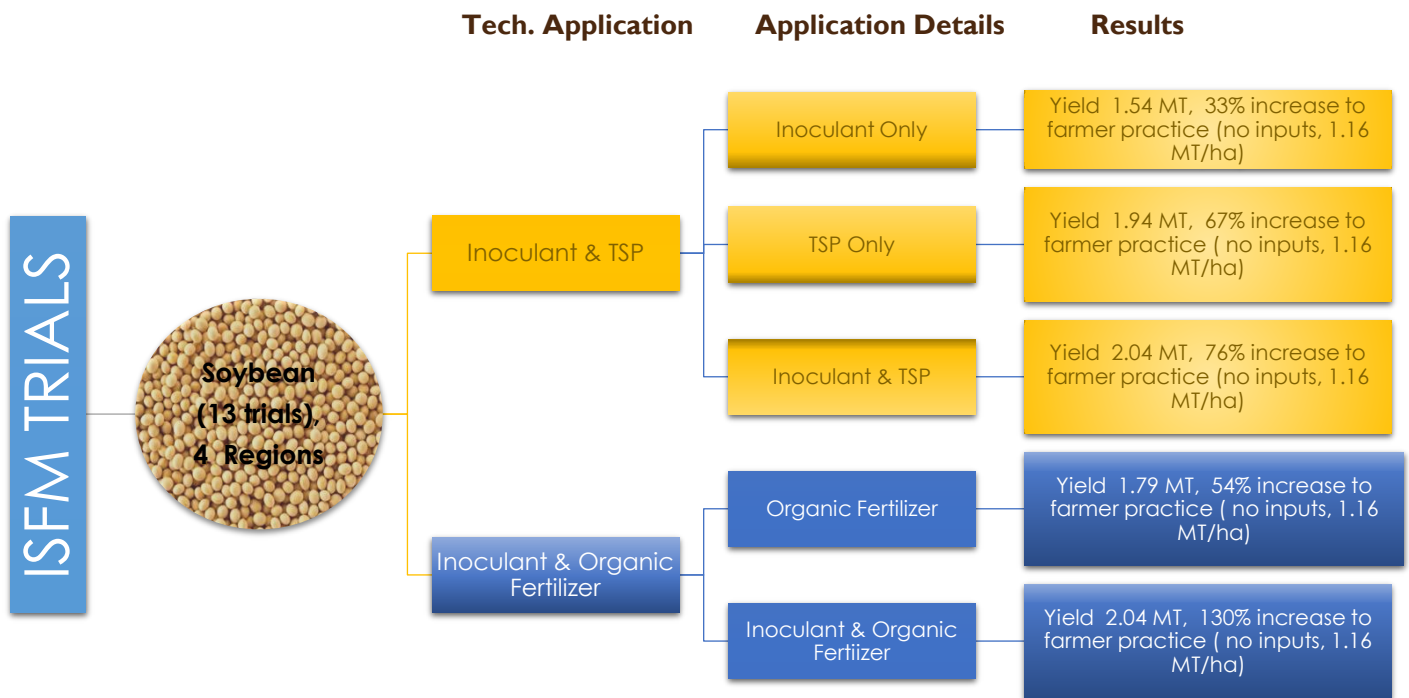
Results: Application of 2.5 MT/ha organic fertilizer alone increased soybean yield by nearly 54% when compared to the control where no organic fertilizer was applied. However, when inoculum plus organic fertilizer were applied, a 130% yield increase was realized.

Recommendation: Farmers should inoculate their seeds and use organic fertilizer at a rate of 2.5MT/ha in soybean production for higher yields.

Table 2: Economic Analysis Results of Adaptive Trials during 2016, by commodity and tech. application

| Application | Application Details | Gross Margin GHS/ha | Yield MT/ha | GM/Cost Ratio |
|-----------------------------------|---------------------------------------|------------------------|----------------|---------------|
| Rice | | | | |
| NPK Briquettes | Farmer Practice | 2667.6 | 2.48 | 2.03 |
| | Basal + 1.8 g USG | 5,547.0 | 7.93 | 2.33 |
| | Basal + 2.7 g USG | 5,998.5 | 8.39 | 2.51 |
| | FDP 2.4 g | 5,428.5 | 7.82 | 3.17 |
| | FDP 3.4 g | 6,308.5 | 8.19 | 3.35 |
| UDP/SRI* | Urea Broadcast - Farmer's Practice | 3,312.5 | 5.69 | 1.39 |
| | SRI + USG 1.8g | 4,872.5 | 7.21 | 2.08 |
| | SRI + USG 2.7g | 5,103.5 | 7.57 | 2.05 |
| | UDP (20 x20 cm) | 6,182.5 | 8.52 | 2.64 |
| Soybean | | | | |
| Inoculant & TSP | Farmer Practice | 618.5 | 1.16 | 0.5 |
| | Inoculant | 1,189.0 | 1.54 | 0.93 |
| | TSP | 1,511.5 | 1.94 | 0.95 |
| | Inoculant + TSP | 1,634.0 | 2.04 | 1 |
| Inoculant & Organic Fertilizer | Farmer Practice | 618.5 | 1.16 | n/a |
| | Organic Fertilizer (2.5 MT/ha) | | 1.79 | n/a |
| | Inoculant + Organic Fertilizer | | 2.67 | n/a |

Figure 7: Maize and Soybean Adaptive Trials during 2016, Technologies Applied and Outcomes



Conservation Agriculture - Participatory Adaptive Trials

Poor crop production practices, misuse of agrochemicals and bush burning have left the soils of northern Ghana deficient in many essential plant nutrients, organic matter and vital biological activity. Conservation Agriculture (CA) is a response and remedy to the dying soils in northern Ghana by reducing soil disturbance (minimum or no-till), retaining crop residues and practicing mixed cropping and crop rotation. These practices restore soil health, conserve soil moisture and reduce agrochemical use by hindering weed growth and breaking pest/disease cycles.

Although the agro-ecological benefits of CA have been demonstrated around the world, sociocultural norms such as burning of fields, and therefore crop residues, in the dry season limit the success of CA in northern

Ghana. Another challenge is the loss of crop residues to cattle when nomadic herdsman move into northern Ghana to graze cattle during the dry season. Finally, the economic benefits of CA often take a few years before they are realized.

Because of these sociocultural challenges, ATT has taken a participatory approach to CA activities. In this, and the previous, annual reporting period, CA consultant, Anne Perinelle, sensitized communities on the principles of CA, and encouraged them to identify ways to conserve crop residues and areas for grazing by working together with herdsman. And, in the field, Ms. Perinelle worked *with* farmers to set up plots trialing and showcasing several cropping systems (intercropping with cover crops) based on what the farmers wanted to observe and evaluate.

The CA fields established in FY15 were harvested and data analyzed in FY16. Results from the trials are quite variable, making general conclusions and recommendations difficult. ATT advised farmers to first decide what their objective is for intercropping with cover crops, and that will help them decide which system to cultivate. If the objective is primarily to remediate degraded soils, then crotalaria is a good choice. This leguminous plant not only improves soil health, but eases residue management as it is not grazed by animals. Farmers interested in edible cover crops, may choose to intercrop maize with pigeon pea. Where nutrition is the objective, Orange Flesh Sweet Potato could be intercropped with Vit-A maize.

The nine adaptive trials established in FY16 are yet to be harvested. Results will be presented next quarter.

Water: PAVE and Secure Water Projects



AWM Systems: PAVE and Secure Water Project

As part of the double cropping dual income strategy, ATT awarded grants for two Agriculture Water Management (AWM) Systems Projects: (1) the PAVE Project, implemented by Conservation Alliance International (CAI), and (2) the Secure Water Project, implemented by International Water Management Institute (IWMI) and CAI. These systems are installed in areas prone to flooding during the rainy season and drought in the dry season. They drain the flood water and store it underground to be pumped out for irrigation during the dry season.

In the reporting period, both projects engaged district/municipal assemblies, research institutes, community based organizations and individual farmers, and conducted hydrogeological surveys to identify scientifically sound and socioeconomically appropriate sites for AWM System installation. The PAVE Project has installed eight of the 10 systems proposed. Installation of irrigation systems is expected on the eight sites in time for cropping during the coming dry season. The Secure Water Project has yet to install the two PAVE and five Bhungroo systems. However, three Bhungroo from a previous IWMI-led project are complete and installation of irrigation is expected for these three systems in time for dry season cropping.

These two AWM Systems Projects will pilot and test the feasibility and returns on investment of PAVE and Bhungroo Irrigation Technology in combination with water lifting and irrigation technologies. These systems have the potential to transform the agricultural sector in northern Ghana. Land that was previously unable to be cultivated is now arable for two cropping seasons—one season being dedicated to seed production or high-valued nutritious vegetables—increasing household incomes and nutrition.

3.3.2 CAPACITY, OUTREACH & TECHNOLOGY TRANSFER

Capacity building efforts in the realm of ISFM have focused on 1) UDP technology in rice and maize grain and seed production; 2) use of inoculation and TSP in soybean grain and seed production; 3) making and use of compost 4) water management; 5) conservation agriculture; 6) soil sampling and analysis; 7) use and maintenance of labor-saving equipment; and 8) crop budget analysis. As a result, 41 Learning Centers were established for maize, rice and soybean and 570 Mini Demonstrations set up by farmers. Over 13,300 people were trained in ISFM and ISFM-related theories, practices and technologies with women making up over 40 percent.

Mechanisms Used for Delivery



What:

Mini Demonstrations: 10m x 10m plots established by farmers on their own farms to try the technologies and make their own conclusions. Farmers who properly establish these mini-demos will clearly see the benefits, and demand will be created for the technologies.

Learning Centers: Often 1-acre plots designed by ATT to demonstrate a particular technology(ies) against the farmers' traditional practices with the goal of increasing adoption. The plots are established by farmers with oversight by ATT, and provide the farmers with hands on training of improved technologies and practices during Field Day events. These sites often serve as sites for certified seed production as well.

Planting (or Transplanting) Field Days: Farmers are invited to receive a training overview of the technology and participate in planting.

UDP Field Days: Farmers are invited to receive a training overview of the technology and participate in the application of USG.

Green Field Days: Farmers are invited to observe benefits of the applied technology with respect to plant growth and features at the end of the vegetation phase.

Brown (Harvest) Field Days: Farmers are invited to observe benefits of the applied technology with respect to yields, as compared to normal practice, just before harvest.

ICT: Community video screenings of technologies introduced, demonstrated and practiced at Learning Centers are shown to further sensitize farmers of theory, use and benefits of the technologies.

Why: To upscale successful technologies identified during the adaptive trial phase

How/Who: ATT in collaboration, with ICOUR and Bontanga Irrigation Schemes, GIDA and Rice Sector Support Project (RSSP) to establish Learning Centers and Mini-Demos at irrigation schemes and rain-fed fields across the three northern regions. AfricaRice was the lead in training the farmers on seed rice production. LIPs and ATT ICT and field staff conducted community video screenings.



Pictures: Upper left: preparation of compost, Upper West, Upper Right: Women Applying UDP in Bongtanga, below Urea Briquettes Application Upper East

UDP Technology in rice production: Average yield for irrigated rice in northern Ghana is 3.0MT/ha. This is substantially lower than potential yield (5.0 – 6.0MT/ha) for varieties promoted by ATT and AfricaRice. ATT continued to scale up UDP technology with irrigated rice farmers this quarter. UDP is a technology that has been effective in rice production around the globe, including most recently in Ghana through introduction by ATT. The technology comes as a “package” and has increased ATT-farmer beneficiaries’ yields up to 300 percent using 25 percent less nitrogen fertilizer. The package includes the use of certified seed, transplanting seedlings in rows using proper spacing, field monitoring, timely and appropriate pest/disease/weed management and proper fertilizer use. Unique to the package is the urea briquettes, which are placed 7-10cm into the soil between four rice seedlings 7-10 days after transplanting. ATT established

31 rice learning centers, and 570 mini demonstrations were established by farmers on their own farm. A total of 8,949 farmers were trained on UDP Technology, out of which 3,941 were female.

Irrigated rice Crop Budget Analysis: Demonstrations allow farmers to physically see the benefits of UDP technology. However, they do not address the deficiency most ATT farmer beneficiaries have in farm management and book keeping that would help their decision making during production planning. To address this, ATT designed two, one-day farmer fora for farmers in the Golinga and Botanga Irrigation Schemes to conduct a cost budget analysis of UDP vs. farmer practices. A total of 328 rice farmers (215 males and 113 females) received training on crop budgeting/seasonal production planning where they observed “on paper” the economic benefits of using the UDP technology. These participants were encouraged to extend their new knowledge to their farmer neighbors. The farmer participants agreed to do this and it is believed that a potential 700 additional farmers will be reached.

UDP Technology in maize production: The introduction of UDP in maize production was done through establishment of nine Maize Learning Centers (7 in Upper West, 2 in Upper East and 1 in Northern Region). This was done following studies on UDP application in maize that showed yield increases between 15% (Burkina Faso) and 20 percent (Ghana), with 25 percent less fertilizer use. This technology is being tested under farmer management for the first time, and was successful in the dry season. 589 farmers (333 females and 256 males) were training at the maize learning centers during the green and brown field days.

Inoculation + TSP in soybean production: Impressive visual and quantitative results on soybean yield increases have been observed with application of TSP and inoculant through adaptive trials for the past two seasons. ATT took advantage of these visually impressive trials and conducted green and brown field days with farmers so they could see firsthand the benefits of the improved technologies. In addition to the adaptive trials, ATT established a 1-acre Soybean Learning Center in Upper East to showcase the technology to farmers. Together, 1,684 farmers participated in adaptive and learning center field days. Furthermore, 18 farmers carried out soybean seed production on 250 acres where they applied TSP and inoculant.

Conservation Agriculture: As mentioned earlier, nine participatory adaptive trials were established for farmers to observe what cropping systems performed well on their land and most closely met their farming objectives. These trials also served as sites for training farmers on CA principles, practices and technologies. In total, 804 farmers received training on CA, including 18 farmers selected to participate in a three-day training at the Center for No-Till Agriculture near Kumasi in the Ashanti Region. Many lessons (importance of residue, water and weed management) and technologies (e.g., new cover crop varieties) were taken back and adopted by nearly all of the farmers trained.

Also worth mentioning is ATT’s extensive collaboration in terms of CA this reporting period. ATT is supporting SARI to establish a similar Center for Ghana’s northern region. ATT supplied cover crop seeds to the USAID RING Project along with technical backstopping on CA, and distributed 4,000 RING-promoted Orange Flesh Sweet Potato vines to ATT farmers. ATT also incorporated IITA-supported mixed cropping systems into some of its adaptive trials, and will share results with the Institute in the following quarter.

Composting Field Days: ATT sponsored three women (Madam Adisheitu Alhassan, Madam Rebecca Awalinga and Madam Abena Baagiru), one from each region, to attend an IFDC international training on innovative waste management and composting in Accra. The women went back to their communities and, with financial support and technical backstopping from ATT, applied some of what they learned. In total, ATT and these lead women farmers established seven compost pits and seven compost farming learning

centers. Trainings took place at each of these sites where participants were taken through pit construction, arrangement and piling of compost materials through to compost turning, moisture and aeration control.

The seven compost farming learning centers are maize fields in which a portion of the field receives compost as a soil amendment. Green field days (GFD) have so far been organized in the northern region for farmers to observe the effect of compost on crop performance and make informed decision on the use of compost as a soil amendment option. The performance of the combination of compost and inorganic fertilizer was more conspicuous though these sites were characterized by striga infestation that was identified as the main challenge, while the control field showed a poor performance. 639 participants (396 females) attended the compost making trainings. 147 farmers have so far attended the green field days at demonstrations compost use with 43 percent women attendance.

Soil Analysis



To address the need to have crop- and site-specific fertilizer recommendations that address the current soil fertility challenges, ATT carried out a capacity building workshop on soil sampling and analysis for private sector partners. As a follow up, Green-Ef Eco Business Village, in collaboration with seed producers and ATT's field staff conducted soil sampling for seed producers in the three Northern Regions. The HACH SWI mobile soil testing kits were used to analyze the soils. Seed producers were then given specific fertilizer recommendations that were based on the soil analysis results.

A total of 22 officials comprised of eight (8) ATT officers, eleven (11) personnel from Green Ef Eco Business Village Ltd, and staff from Yara Ghana Ltd were trained on soil sampling and analysis. A total of 302 samples from seed growers (214) PAVE and adaptive trials (61) and Conservation agriculture (27) were collected and analyzed combined with fertilizer recommendations.

Transferring Labor-Saving Equipment



Agromite equipment demonstrations: Farmers in five (5) irrigation schemes, Bontanga and Golinga in the Northern Region, and Tono, Veaa and Wiaga in the Upper East Region were introduced to transplanting equipment through demonstrations by Agromite Company Ltd. Transplanting is not only expensive but it is also time consuming and Agromite has agreed to provide these services to farmers at moderate fees. In the Upper West Region, the demonstration was on the use of maize planters across five (5) communities in the region. According to the farmers, the Agromite technology will save them a lot of time and money. 129 farmers (33 female) attended the rice transplanting demonstrations. 222 farmers (78 female) attended the demonstrations on the use of maize planters in Upper West Region.

Agromite multi-crop threshers: As yields in maize, rice and soybean increase through ATT climate smart interventions, farmers struggle to process their yield before pests and disease come in causing significant loss. For this reason, mechanization in post-harvest handling is crucial to fully realizing the benefits of adopting improved production and management practices in the field, and demand for such equipment is rising. In March of this year, an additional 52 multi-crop threshers were handed over to beneficiaries who then received training from Agromite on the use and maintenance of the equipment. One of the beneficiaries, Mr. Samani Abdul Karim thanked USAID for their support and said it would go a long way to improve their farming activities, reduce their post-harvest loss, increase their incomes and enhance their livelihoods.

Supporting University for Development Studies' Student Research

Recognizing the need to support student research to build human capacity and identify solutions to agro-ecological issues in northern Ghana, ATT continued to support University for Development Studies' trials through its ISFM program. One trial was designed to determine the effectiveness of maize-soybean integration in managing Striga. Preliminary results suggest the four maize varieties (Omankwa, Wang Dataa, Bilihifa and Aburohemaa) conferred similar growth and grain yield potential and could equally be found as tolerant to Striga infestation, while the Afayak soybean variety reduced Striga seed bank, and consequentially, could promote long-term Striga seed bank depletion in the Ghana's savannah soils.

Another trial was designed to determine the effectiveness of one-time application of NPK briquettes for maize and chili pepper production in the Guinea Savannah. Preliminary results indicate that a one-time application of two NPK briquettes, equivalent to 8.5 bags NPK (23-10-5), gave superior yields in both maize and chili compared to a split application of the same amount of fertilizer.

Four students were supported in carrying out the trials for a second season at Gore and Tilli in Upper East region and Nyakpala in the Northern Region.

Over 13,300 people were trained in ISFM and ISFM-related theories, practices and technologies with women making up over 40 percent.

More Farmers Cashing in on UDP Technology

“What got me interested in UDP in the first place was the fact that the technology will cut the cost of urea fertilizer by half. All my rice farms since then have been cultivated under UDP.”

-Mr. Clement Kansake, Korania, Lead Farmer

Many rice farmers at the four major irrigation schemes in the Upper East and Northern regions of Ghana have embraced Urea Deep Placement (UDP) fertilizer application technology and continue to make giant strides in their farming business. They are improving their household income level dramatically.

Clement Kansake, a 57-year-old father of 10, is one of the early farmers who learned and applied the technology when it was first introduced at the Irrigation Company of Upper Regions (ICOUR) two years ago. He is always boasting about how UDP has contributed to the success of his farming and



Clement Kansake, UDP rice farmer showing off his yield



Clement Kansake, with new tractor acquired through UDP technology adoption proceeds

seed production business.

“What got me interested in UDP in the first place was the fact that the technology will cut the cost of urea fertilizer by half. All my rice farms since then have been cultivated under UDP.”

“During the major rice season in 2013, I bought 60 bags of urea fertilizer for my field. But since the technology was introduced to me in 2014, I only use 30 bags for the same field. At the end of that season, I bagged GHS120,000 (U.S. \$30,456) worth of rice, because I got an average yield of 28-30 of the 100-kilogram bags from each acre of rice field!” Clement recounted.

Through the savings from Clement’s rice proceeds, he has bought a tractor to help him during land preparation. He has started a business offering land preparatory services to other farmers.

“I save my money at Sinapi Trust Aba, a local bank. I approached the bank when I wanted to buy a tractor from AFGRI-John Deere, and they agreed to finance it. The bank based its judgment on the savings I accumulated with UDP-production proceeds, and another project also paid a portion. I will finish repaying the loan this season because I have harvested 480 sacks of rice.” Clement said.

After witnessing the excellent yields from Clement’s farm, other producers believed that he was using superpowers to farm. But he credited his success to the adoption of the new rice fertilization technology.

3.4 ESTABLISHMENT OF TECHNOLOGY DIALOGUE AND INNOVATIONS / ICT PLATFORMS

ATT continued to utilize different ICT tools to reach project beneficiaries. The major advantage of ICT as opposed to field extension work is that these innovative and behavior changing technologies can reach a much wider audience with dramatically lower costs, and do so in language and cultural approaches that are inclusive and accessible. The three main ICT product-groups can be aligned according to technology deployed: 1) local production of videos, explaining the technologies in local languages, 2) local production of radio programs on improved technologies and practices and 3) Information System Platforms. ICT methods implemented by ATT and partners are explained in the sections below. Keeping an open mind to novel ICT approaches and adjusting innovations based on local contexts enabled formidable results with respect to information dissemination. The project reached 59,250 farmers through digital classroom systems and mobile vans, 1,278,755 through radio programs, 356,000 farmers through television broadcasts.

VIDEO Programs: Bringing Ag. Extension to you



Locally produced and screened videos

Who: ATT, with the support of Local Implementing Partners (LIPs)

What: Screened 25 locally produced videos translated into six local dialects. The videos showcased labor-saving equipment such as bicycle mounted maize shellers, and best practices such as using certified seed, transplanting rice, applying UDP, managing crop residues and improved soybean harvesting technique.

Why: To expose farmers to improved technologies, practices and varieties, and introduce private sector actors who provide and sell these inputs or services.

How: ATT trained LIPs on the operation of the Digital Classroom System (DCS)—a light-weight user-friendly kit comprised of equipment needed to screen videos in an “offline” format where electricity is limited or lacking. LIPs screened videos in each of their communities using this system.

The use of mobile video vans was also utilized by LIPs and extended across 31 rice farming communities around the main irrigation schemes in northern Ghana (Bontanga, Golinga, Tono, Via, Wiaga, Daffiama and Sankana). Video screening events were hosted by lead farmers or community chiefs, who introduced the video screening and special guests to provide live testimonies to the community.

Output/Outcome: Together the two approaches to video dissemination reached 59,250 farmers (28,515 females and 30,735 male) in FY16.

**Broadcasting improved technologies and practices: Radio**

Who: ATT with support of Farm Radio International and other local radio stations

What: Radio broadcasting on improved agriculture technologies and practices.

Why: To promote and inform farmers of improved agriculture technologies and practices.

How: Radio stations in northern Ghana have a broad band of followers/listeners and ATT leveraged this to reach beyond its current beneficiary clientele. In collaboration with Farm Radio International a Radio Intervention Strategy was designed with detailed activities to be carried out during FY16. Core concepts of the Radio Intervention Strategy include:

Program Content: ISFM, conservation agriculture, compost, dry season farming technologies/practices, improved seed, UDP and other improved production and management practices

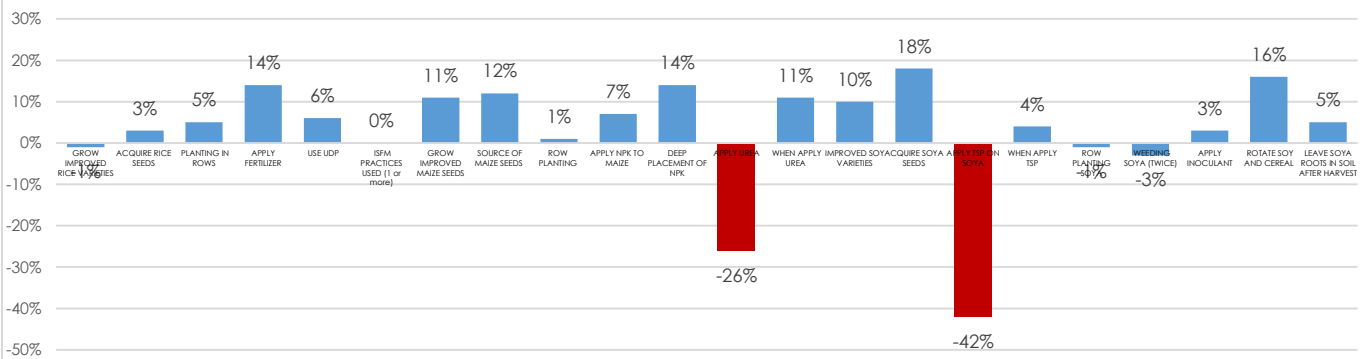
Program Format: Regular Farmer Programs (RFP), an interactive radio magazine series, participatory, farmer centered, collaborative (with involvement of local partners and farm org.), storytelling program.

Participatory Radio Campaign (PRC) feature the voices, stories and perspectives of small-scale farmers through a mix of radio formats, including village debates, phone-in shows and music it unfolds in four phases: Phase 1: introduction to the innovation; Phase 2: discussion of the innovation; Phase 3: encouraging listeners to make a decision either to or not to introduce the innovation, and register this decision with the radio station; and Phase 4: implementation information. Farmers have regular opportunities to provide feedback on the program.

Output/Outcome: 1,278,755 farmers were reached by these Regular Farmer Programs and Participatory Radio Campaigns according to audience statistics provided by FRI. 87 active listener groups comprising around 1,700 farmers as active listeners, were formed. These groups served as the basis for audience feedback polls.

A **baseline study** was conducted and submitted by FRI, benchmarking the level of knowledge about the technologies promoted by ATT such as CA and ISFM across the regions before and after the radio program broadcasts. The baseline and end-line study were based on a sample size of 1,012 and 651 interviews across 18 communities. Listeners and non-listeners were interviewed. As the graph below shows, the level of adoption with respect to most technology messages broadcasted has increased with the exception of the practices of “applying urea” and “applying TSP to soya”. This decrease could be related to the formulation of the message, but further research is needed to identify the cause of this unusual result. As expected, listeners account for higher adoption rates than non-listeners with respect to 18 out of 22 technology messages broadcasted.

Figure 8: Difference in adoption rates of specific technologies of the population captured by the radio programs during FY16, Rate of Adoption Before Program - Rate of Adoption After Program (%)



“59,250 farmers reached through digital classroom systems and mobile vans, 1,278,755 reached through radio programs, 356,000 farmers reached through television broadcasts”



Pictures, From left to right: An Officer heading out for video screening carrying Digital classroom system, Shooting UDP technology video, Dalun Naa, watching videos alongside his subjects, Shooting UDP technology video.

4. CROSSCUTTING

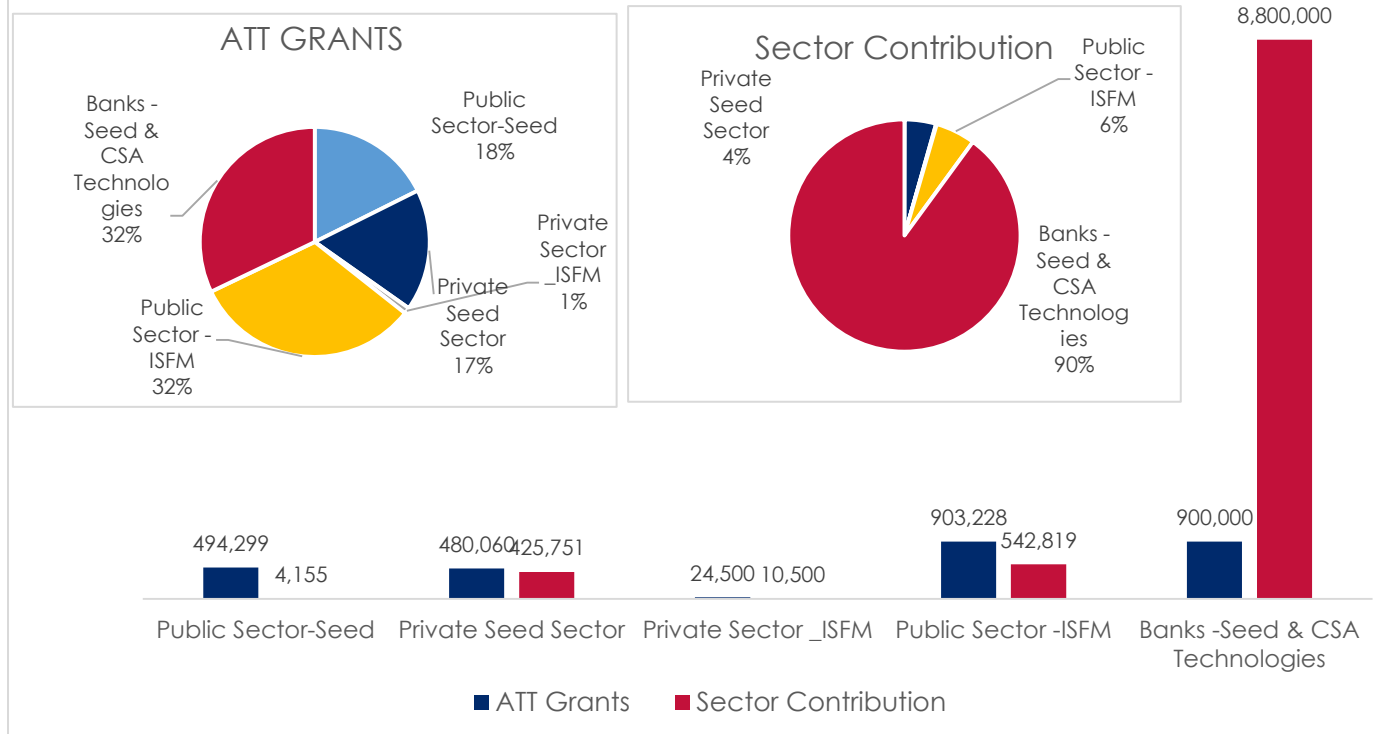
4.1 GRANTS

The ATT Grants Mechanism serves multiple major objectives: (1) build capacities of nascent local organizations to become stronger partners with sector stakeholders, (2) encourage public and private-sector partnerships to expand the availability, acquisition and use of new technologies (improved seed, fertilizers, labor-saving equipment, ICT platforms, conservation agriculture practices, among others), (3) catalyze adaptive research by Ghanaian stakeholders to facilitate the transfer of scientifically sound and socioeconomically appropriate technologies to stakeholders in the maize, rice and soybean value chains, (4) support small-holder farmers to adopt new technologies. ATT's grant program employs a diverse range of funding mechanisms. This includes in-kind matching grants that require the grantee to provide 30% of the sum of the investment. The 70/30 scheme has proven successful for ATT and FY16 achievements has exceeded expectations. The project has also initiated a mechanism referred to as the ATT loan support program, which leverages \$900,000 of ATT grant funds set aside to attract up to \$9 million in private commercial bank and borrower investment in the seed value chain.

Grants awarded by ATT during this year can be disaggregated by sector and technology applied. In total, 1.404 million USD were awarded to the private sector (seed businesses and banks) for the application of improved seed, ISFM or CA practices or technologies. However, with the take-off of its loan support program, ATT expects additional investment from the private sector amounting to 8.8 million USD during the next fiscal year, as shown in the chart below.

Public sector activities received 1.397 million USD for improved seed practices, quality assurance, research and ISFM technologies. For its part, the public sector contributed 546,900 USD in kind (land, labor, equipment, etc.) amounting to a 39 percent contribution.

Figure 9: ATT Grants and Sector Contribution during FY 2015-2017 by Category



4.2 GENDER

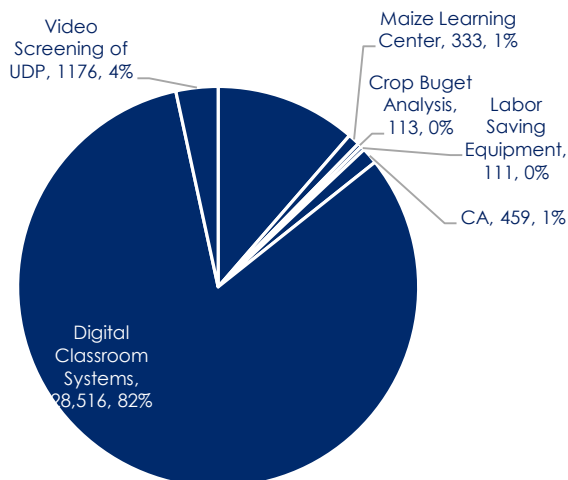
While sub-Saharan African women contribute between 60 to 80 percent of the labor for food production⁵, they face persistent economic and social constraints. According to the Women Empowerment Index in Agriculture, part of the Population-Based Survey, conducted by Kansas State University in 2015, in the Northern Region only 33.7 percent of women have control over household income as compared to 80.7 percent of men. Only 18.4 percent have access to credit and they fall behind men in most of the five domains of empowerment: production, resources, income, leadership and time.

Therefore, women’s empowerment is a main focus of Feed the Future in order to achieve its objectives of inclusive agriculture sector growth and improved nutritional status. ATT is also fully aware of the critical role women play in development and continues to implement activities that foster empowerment of women in the Northern Region. Some of them are captured below as well as in the first issue of “ATT Focus on...”—the project’s publication to tell the impactful success stories of project beneficiaries (featured hereunder).

In this reporting period, ATT trained a total of 34,264 women on several topics ranging from applications of new technologies, to use of labor-saving equipment and crop budget analysis, as shown in the graph above. As a result of our approaches a total of 4,957 women were trained in ISFM practices while 459 in conservation agriculture practices. The crop budget analysis training also received high women participation (111 farmers). 28,516 women were trained using the Digital Classroom System.

⁵ Women in Agriculture, IFDC, 2016

Figure 10: Women trained by type of activity, FY 2016



PRODUCTION OF CERTIFIED VIT-A MAIZE SEED FOR WOMEN FARMERS: SPRING AND ATT COME TOGETHER FOR WOMEN FARMERS

Vit-A maize was developed to reduce the prevalence of Vitamin A deficiency (a serious health concern that can lead to blindness, anemia and a weakened immune system) in susceptible population. Although, ATT has no health or nutrition mandates within its agreement, in the spirit of collaboration and cooperation, ATT partnered with the SPRING Project who has a strong health and nutrition focus. ATT supported Ariku Co. Ltd. to

produce 5 acres of certified Vit-A maize seed and supplied to the women farmers under the SPRING project in two districts (Tatale and Bawku West). The ATT project offered training on best agronomic practices in maize production to nine (9) MOFA AEAs and 10 SPRING staff to give technical backstopping to these women farmers in terms of production and management of the crop, as well as post-harvest assistance. Over 200 women farmers benefited from these Vit ‘A’ certified seeds.

WOMEN EMBRACING CLIMATE SMART TECHNOLOGIES:

ATT has and continues to train women in rice seedling transplanting and UDP application, and encourages these women’s groups to establish a business where these services are provided for a fee. Women have also embraced composting practices, taking a leading role in this process.

During this year, ATT sponsored three women (Adisheitu Alhassan, Rebecca Awalinga, Abena Baagiru) to attend an international IFDC compost training held in Accra. These women, with assistance from ATT field staff, expanded their composting production, which they began in December 2015. It is extremely positive to see these women proudly implementing what they learned and sharing with their neighbors and nearby communities (including schools). It has become clear from visits to their composting sites and field days that they have become “Ambassadors” of the composting cause. In fact, the three women have already made an impact in their communities by, together, introducing and training around 800 farmers (~58 percent women) on the principles and practices of composting during Composting Field Days and on Compost Farming Learning Centers (highlighted on page 33).

COLLABORATION WITH MEDA TO IDENTIFY WOMEN ENTREPRENEURS AS SEED PRODUCERS

ATT Upper West Regional Technical Manager, Mr. Atia Ayamga, was invited to speak at a soybean seed production training conducted by the Soybean Innovation Lab and sponsored by MEDA. MEDA has been working with women groups through their key facilitating partners to promote the soybean value chain. MEDA realized that one key challenge facing soybean farmers is lack of quality seed. Sixty farmers (90 percent women) participated in the training, and MEDA identified 92 women as potential seed producers. In addition to contributing to the technical information on seed production, Atia took the opportunity to discuss ATT’s grant mechanism designed to support qualified seed producers. All of these efforts are to increase women’s participation in seed production and ensure the availability and accessibility of quality seed.

THE MULTIPLE IMPACTS OF THE POWER TILLER

"I did not have money to pay for the 30 percent, so I procured a loan from Builsa Community Bank to honor my obligation fee of GHS 5,400 (\$1,381). I paid back the loan using the profit of GHS 4,960 (\$1,269) that I generated from my rotovating services. Now, the rest of my savings has taken care of my daughter's school fees at the University for Development Studies."

Madame Janet Nyabasey, Farmer & Entrepreneur

How Janet paid back a bank loan by providing land preparation services...

Janet, who is the leader of the Atinvabe Cooperative (a farmer-based organization) and mother of four, has become an entrepreneur, providing affordable land preparation services to her group members, as well as other farmers at the scheme. Janet is one of the 19 rice farmers who received a power tiller machine under ATT's Small Equipment Grant Scheme. Currently, she has employed two men and trained them to provide land preparation services to farmers. "I was privileged to have represented my group in observing an ATT demonstration field from land preparation to harvest in the 2014 dry season. The yield from the improved practice field was very encouraging due to the use of urea deep placement [UDP] technology, while our traditional practice was poor. The lesson I took home was how to achieve proper leveling. This is where I formed the idea to provide such services. With the tractor plowing and harrowing service, a farmer pays GHS 150 [U.S. \$38] for an acre of land and hires additional labor for GHS 130 [\$33] to do the manual leveling. However, with my power tiller service, a farmer pays GHS 160 [\$41] for the same piece of land expertly prepared," Janet reported. Mr. Paul Annabi, a farmer and operator of the power tiller, now has a new job earning income to take care of household expenses. Ataata Apaanya, a female client of Janet, said with a broad smile, "I am spending less money and getting a very well rotovated field required for my UDP."



This effort was supported by the Feed the Future Ghana Agriculture Technology Project, being implemented by the International Fertilizer Development Center (IFDC) and funded by the U.S. Agency for International Development (USAID).

As one of the conditions of ATT's matching grant program, Janet paid GHS 5,400 (\$1,381), 30 percent of the total cost of the power tiller as her commitment fee. USAID, through the project, paid 70 percent, representing GHS 13,500 (\$3,457).

"I did not have money to pay for the 30 percent, so I procured a loan from Builsa Community Bank to honor my obligation fee of GHS 5,400 (\$1,381). I paid back the loan using the profit of GHS 4,960 (\$1,269) that I generated from my rotovating services. Now, the rest of my savings has taken care of my daughter's school fees at the University for Development Studies."

4.3 COMMUNICATIONS

Hosting of Deputy Assistant to USAID's BFS Administrator

A delegation from Washington D.C., including the Deputy Assistant to the Administrator in USAID's Bureau for Food Security, Mr. Justin Finnegan, conducted a country visit to observe the progress and impacts of FTF in Ghana. As a notable contributor to the success of FTF Ghana, ATT was proudly highlighted during this visit. USAID/Ghana, led the delegation to Golinga Irrigation Scheme and the Tamale



Mr. Justin Finnegan, Deputy Assistant to the Administrator USAID's Bureau for Food Security, exchanging pleasantries with Golinga lead farmer, Mr. Saibu Yamale

GSIU Seed Inspection Laboratory. At Golinga the team observed the briquetting machine producing briquetted fertilizer, and interacted with ATT-supported dry-season farmers, discussing how the introduction of UDP technology and improved rice seed has significantly increased their yields. The team had the opportunity to observe rice transplanting by women's groups trained by ATT field staff. Mr. Saibu Yamale, Lead Farmer at Golinga, welcomed the delegation and briefed them on day-to-day farming activities, some of the improved technologies and practices they have adopted, as well as benefits they have derived from the UDP technology. Saibu reported yields of 5.7MT/ha – a

near three-fold increase over average rice yields in northern Ghana. The USAID team also visited one of the three new GSIU Seed Inspection Laboratories built by the project with funding from USAID. Mr. Christopher Akai, Head of GSIU in Tamale, led the team on a tour of both the old and new Seed Inspection Laboratories and explained the work of the GSIU and its relevance to ensuring supply of quality certified seed to farmers in northern Ghana.

USAID Ghana Mission Director Visits Antika, GSIU

Owner of one of the largest farming equipment, inputs and crop protection product company (Antika Agro Chemicals) in the Upper West Region, and a beneficiary of the ATT Project, Alhaji Abdulai Antika, welcomed a team from the USAID Ghana Mission led by Mr. Andy Karas, Mission Director, to his new seed processing center. Alhaji Antika gave the delegation a tour of the new facility, and explained the seed cleaning, grading, treatment, packaging and sales point operations.

Currently the company serves 63 agro-input dealers across all Upper West Regional District and plans are in place to expand seed sales through nucleus farmers in the communities. During a brief interaction, Alhaji Antika noted that turnover of the company for 2014 season was about GHC 8.7 million. The processing machinery, which was generously funded by USAID Ghana through the ATT Project, has reduced the seed processing period from three months to less than a month, allowing him to process over 325MT, all of which was sold this year because of its timely availability. He added that the years ahead look promising. Present at the event were ATT Chief of Party, Dr. Gary R. Mullins, USAID Program Management Specialist, Madam Grace Sebugah, and other staff from USAID. In honor of his visit, the lady workers of Antika bestowed ceremonial smocks on the Mission Director.



From Left: Seed Processor and entrepreneur, Alhaji Antika followed by Mission Director Mr. Andy Karas, together with other delegation members at the Antika retail shop.

The mission delegation moved to the Upper East to visit the newly built, USAID-funded Seed Inspection Laboratory in Bolgatanga. There, the Mission Director interacted with officials and technical staff of the unit and emphasized the importance of agriculture to Ghana's economy. He indicated that USAID will continue to support the sector to grow, especially stressing farmer's improved access to certified seeds to increase yields and improve rural livelihoods. After Mr. Patrick Yensintengate, Head of the Seed Unit, took the delegation on a tour, Dr. Gary Mullins, ATT COP, and Mr. Musa Taylor, ATT Technical Director, took turns to explain to the Mission Director the different steps in seed certification and the activities ATT is undertaking to improve the efficiency of the seed value chain (see pictures below).



Mr. Musa Taylor, ATT Project Technical Leader, explaining a point to USAID Mission Director, Mr. Andy Karas, during their visit to USAID-funded Ghana Seed Inspection Laboratory in Upper East Region.



Second from left: Alhaji Antika explaining a point to the delegation (Mission Director on his immediate right, ATT Project COP, Dr. Gary Mullins, at the extreme right).

Broadcasting two episodes of Kuapa Television

ATT worked with Modern Africa Production (MAP) to record and telecasted segments for two episodes of the Kuapa Television on-farm reality show. "Kuapa" (meaning "good farming" in the Akan language) TV programs reach over one million smallholder farmer viewers of Ghana's most-watched GTV network. Episodes featured ATT farmers (including Chief of Dalung, Alhassan Amidu), SARI scientists and a soybean processor, Hapep Fingers. Topics highlighted included: (1) access to quality certified seed (availability and cost); (2) fertilizer technologies and application methods (UDP); and (3) challenges and solutions to crop production and management.



Chief Amidu (left) sharing testimony on UDP Technology with IFDC Senior Soil Scientist on KUAPAI GTV

National Farmers' Day

To honor Farmers and Fishermen who play a critical role in Ghana's socioeconomic development, ATT under the guidance of the Communication and ICT Team, joined MOFA and other GOG partners in celebrating the annual Farmers' Day event at the three northern regional capitals. Some of the participating farmers had been supported by ATT

with production equipment, including Mr. Kasim Badakia who was adjudged the "Best Farmer" for the Upper West. The exhibition of the hand and bicycle-powered maize shellers, and the UDP Technology attracted the attention of



In the shot is a maize sheller donated by ATT Project

many farmers who expressed interest in procuring the equipment. The Northern and Upper East Regional Ministers and the Directors of MOFA recognized contributions for the American people through the Feed the Future USAID/Ghana Agriculture Technology Transfer Project. ATT donated 20 mounted maize shellers as awards to the best regional farmers, best female farmers, best maize farmers and best women seed producers.



Northern Regional Minister, Alhaji Limuna visited the stand of ATT Project



A Certificate of Merit given to IFDC-ATT Project

Supporting SARI to produce communication materials on biotechnology research

ATT supported the SARI Communication Unit in the development, design and production of communication materials including its second edition of internal and external newsletters, and the production of a documentary on BT Cotton introduced by SARI to Ghana's cotton growers. SARI's Communication Unit also coordinated the coverage of Open Day on GMO cotton trials so media personnel could gain a better understanding of key issues and processes in biotechnology and its reportage. The event was covered by both the print and electronic media including: TV3, Daily Graphic, Ghana News Agency, Fiila FM and Radio Ghana.

Crop Variety Licensing System Workshop

In preparation of the action plan to ensure the implementation of the Plant Breeders Rights Act, which is pending passage by Ghana's Parliament, the project participated in a two-day workshop on Crop Variety Licensing. The Act, when passed, will protect crop varietal breeders and also enable them to gain revenue as royalties for the licensing, use and development of their varieties. The representative of ATT Project, Senior Seed Advisor, Cletus Achaab, joined SARI to develop a draft agreement to be included in the action plan. The workshop was organized by FTF-USAID Agriculture Policy Support Project (APSP).

SADA Research and Development Fair

ATT participated and contributed to the first Savannah Accelerated Development Authority (SADA)

Research, Policy and Practice Knowledge Fair cohosted by IWMI. The fair sought to promote synergy among research projects in the SADA zone by bringing together research-for-development projects. Technical staff from these projects shared experiences and knowledge on current research, and identified strategies for moving research through policy and into action with the aim of ensuring holistic, equitable and sustainable development.



A group picture of participants at the Knowledge Fair

Mr. Michael Dockrey, ATT COP, in his remarks to the gathering, explained that most of the interventions being reviewed, such as CA, drip irrigation and water harvesting through the BIT and PIT technologies, will be used during the dry season for cropping, and each promote sustainable agriculture. The Chief Executive Officer of SADA, Mr. Charles Abugri, praised USAID for its many interventions in the area.

Pre-Season Event

Nearly 1,000 actors in the agriculture value chain participated in the 6th Annual Northern Ghana Pre-season Planning and Networking Forum, hosted by the National Seed Trade Association of Ghana (NASTAG) with support from ATT. Under the theme: “Improving Agriculture Productivity in Northern Ghana – The Role of Quality Seeds,” the forum served as a platform for actors in the agriculture sector to meet and network with key sector stakeholders promoting new technologies such as higher-yielding certified seeds, crop-specific fertilizers, and mechanized equipment among others.



A section of participant at the Pre Season



Cutting of ribbon at the Pre-Season by dignitaries



Barclays presents dummy check

The success of this year’s event was the private sector interest to sponsor the event. About 85 percent of the cost of the event was covered through private sector sponsorship. The End of Event Evaluation revealed that 70 percent of participants were farmers, followed by NGO officials, input dealers, buyers, aggregators, technical service providers, tractor service providers and financial service providers. Respondents gave

indication of business deals made during the previous forums, some were concluded while others were still pending. The quantities and amounts were not properly reported by the respondents. The business deals had values ranging from GHC 25.00 to GHC 130,000.00, with a total of GHC 377,292.00 representing 33 transactions. The main benefits Exhibitors derived from the forums were awareness creation of their businesses and services as well as linkage to many organizations, FBOs and other businesses resulting in increased transactions. At this year's forum 71.9 percent of the exhibitors and 74.7 percent of the participants said they did business with other participants.

Media Reports On Att Activities

Throughout the year, ATT facilitated media (print, online and television) publications on its agricultural development activities that further enhanced the image of USAID. A sampling of media coverage for the project activities in this reporting period are listed or shown below.

Media coverage on progress, accomplishments and impacts activities are listed below:

- <http://www.youtube.com/watch?v=iSX7CPTDgM0>
- <http://www.ghananewsagency.org/social/ifdc-heads-visit-rice-fields-at-botanga--97189> ○ <http://graphic.com.gh/news/general-news/50395-usaid-supports-tono-farmers.html> ○ <http://www.graphic.com.gh/news/general-news/60293-usaid-provides-52-farmers-with-maize>
- <http://www.graphic.com.gh/news/general-news/60293-usaid-provides-52-farmers-with-maize-shellshellers.html>
- <https://www.ghanabusinessnews.com/2016/04/01/usaid-inaugurates-seed-inspection-unit-at>
- <https://www.ghanabusinessnews.com/2016/04/01/usaid-inaugurates-seed-inspection-unit-at-tamale/tamale/>
- <http://www.ghananewsagency.org/social/it-s-not-demeaning-when-served-with-local-food-dce--102000>
- <http://www.graphic.com.gh/features/opinion/61587-experts-root-for-research-in-water-land-and>
- <http://www.graphic.com.gh/features/opinion/61587-experts-root-for-research-in-water-land-and-ecosystems-for-sada-zone.html>

Video links:

- <https://www.youtube.com/watch?v=PbVjEjsZTNI&feature=youtu.be>
- https://www.youtube.com/watch?v=_WNzLeHjVdU&feature=youtu.be
- <https://www.youtube.com/watch?v=v98G6pP9ZX0&feature=youtu.be>
- <http://thebftonline.com/business/agribusiness/18295/launch-of-seed-inspection-unit-to-improve>
- <http://thebftonline.com/business/agribusiness/18295/launch-of-seed-inspection-unit-to-improve-agricultural-productivity.html>

Bi-weekly bullets/ Newsletter

During the reporting period, informational bi-weekly bullets were submitted to USAID. The bullets outlined the project's key activities, results, and when possible, impact. The project submitted newsletters and a special semi-annual impact publication called the "ATT Focus on...". The first edition delved into the achievement of women who have benefited from the projects intervention.

Success Stories

Seven (7) success stories were produced during FY16, two of which, "New Seed Lab Increases Efficiency" and "More Farmers cashing in on UDP Technology" are found in the featured sections in page 23 and 36.



USAID | GHANA

FROM THE AMERICAN PEOPLE

SUCCESS STORY

80 MT of Certified Seeds Ready for Farmers to Access



Photo Courtesy: ATT Project

Martin Arikku sitting on his certified maize seed stored in his newly constructed warehouse.

"I started this seed production in 2009 after a vendor sold grain to me as seed. In the beginning I cultivated only 10 acres of maize and soybean, which together yielded as low as three tons but now with the support from ATT, my production is over 200 percent higher"



Photo Courtesy: ATT Project

It is an open secret in Ghana, especially in the three northern regions, that due to the unavailability, comparatively high cost and market inaccessibility of certified seed, many farmers sow grains bought from local markets while others use their saved seeds. During this reporting period, the Feed the Future USAID/Ghana Agriculture Technology Transfer Project has supported three major seed producers in FTF's zone of influence with good agricultural practices, seed production, processing equipment and farm business training, while providing them technical seed quality assurance training. ATT has also engaged the companies in producer-to-producer mentoring of international best practices. As a result, in its first year of improved seed production, private seed producers supported by ATT have grown about 80MT of certified seeds for use in the 2016 cropping season to sow about 3,390ha to improved varieties of rice and maize. Through the project's support, one of these private seed producers, Mr. Martin Arikku Akudugu, whose farm is located in Bazua, Bawku Municipality of the Upper East Region, has produced 20MT of two maize varieties, Sanzal-sima and Wang Dataa, worth GHC 40,000 (11,000 USD) in the 2015 production season. Martin is ready to serve clients comprised of 937 out-grower businesses and over 675 smallholder farmers scattered within Binduri and its environs.

Martin, who is highly motivated, explained that through the exposure to companies such as Pioneer and Seedco, he has come to appreciate the need to advertise his products through radio advertisements and field demonstrations to attract more farmers. *"One of the new things I've learned, which I am implementing, is how to establish demonstrations for farmers to see the performance and yield of grain from my seed. In addition, I give farmers a kilo of high-yielding varieties to test on their farms,"* he said. Aspiring to be one of the best seed companies operating in northern Ghana, he has started setting up vendor outlets in Upper East Region communities to enable farmers to have access to certified seeds at the right time. *"I also observed that I don't need to wait for farmers to come to me. I need to make the seeds easily available to farmers at their various communities because most farmers reside in the hinterland,"* he said. With the boost of a modern seed cleaning, processing and bagging machine, made available through the ATT's matching grant program, and with his familiarity and adoption of the good agricultural practices, Martin has targeted an upscale in production of the two maize varieties from 20 to 100 acres in the 2016 cropping season.

Telling Our Story

U.S. Agency for International Development Washington, DC 20523-1000

<http://stories.usaid.gov>

Supporting the Drive for Agricultural Mechanization Adoption in Northern Ghana



Mr. Kasim Badakia, awarded "Best Farmer" in the Upper West Region, Photo Courtesy: ATT

"To be truthful, the equipment has contributed to my success as a farmer. Harvesting is supposed to be a joyful period for every farmer, but with me it was a mixed feeling because I couldn't get clean grain. My sheller was unable to separate the maize grains from the chaff. But now the B4 equipment is doing that work for me" – Mr. Kasim Badakia



ATT beneficiary, standing next to his multi-crop thresher, Upper West Region, Photo Courtesy: ATT

Telling Our Story

**U.S. Agency for International Development
Washington, DC 20523-1000**

<http://stories.usaid.gov>

One of the major constraints to consistently increasing grain yields in Ghana is the perception that farming is a subsistence operation...not a business. The use of hand-wielded cutlasses and hoes for farming is still deeply rooted. Steadily, the Feed the Future USAID/Ghana Agriculture Technology Transfer Project is reversing this trend through the introduction of powered labor-saving equipment such as power tillers, soy-milk processors, manual planters, powered shellers, multi-crop threshers, rippers and no-till planters to more than 280 farmers. One of the many beneficiaries of labor saving equipment, Kassim Badakia, a 34-year-old farmer who was recently judged the best farmer in the Upper West Region, attests that the multi-crop sheller helped him increase his production from 3,470 bags of maize in 2014 to 4,760 bags at the end of the 2015 cropping season.

Mr. Issahaku Muhammad Alhassan, a lead farmer at the Bontanga Irrigation Scheme in the Kumbungu district of the Northern Region, was a beneficiary of one of the 59 power tillers purchased through ATT's matching grant program where beneficiaries pay 30 percent of the equipment's total cost in advance of delivery. He experienced a savings of GHC 1,256, which would have gone into renting a tractor for land preparation and labor cost for harvesting his three-acre rice farm.

"I am investing the money in the education of my last two children, who are in the tertiary level. In addition to the savings, I am able to take my time to do good land preparation to make certain that my land is level to ensure proper water management," he proudly stated.

Normally, he would have spent GHC 356 to hire a tractor during land preparation and GHC 900 to pay laborers to harvest his 3-acre rice field. *"With the power tiller I am able to do everything very timely. Because I have the equipment, I prepare my land on time and still have time to support other farmers. Also, when it's time to harvest, I do it at the right time to avoid post-harvest losses. I am most grateful to the American People and the ATT,"* he said.



SUCCESS STORY

Teacher Leads Pupils Towards Reclamation of Barren Land



ATT, Deputy Chief of Party, Dr. Tara Wood, praising Madame Abena for her composting efforts, Mr. Titus and students, to carry on the activity. Photo Courtesy: ATT

“The students are very interested now and some want me to go to supervise them as they begin filling in pits at their various homes. They want to use the opportunity to also teach their parents,” -Mr. Titus Baleve Nihortu, a science teacher at Suke Basic School

Telling Our Story

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Burning crop residues after harvest, overuse of chemical fertilizers and failing to rotate crops are all norms that have rendered some, once-fertile lands, barren. Now, some youth in Ghana are leading a crusade to reclaim the land through the adoption of organic compost. It's ten minutes past three on a Tuesday afternoon, but students of Suke Basic School in the Lambussie District willingly stayed back to work on their composting pits, which will be used to fertilize their school farm in the 2016 planting season. While one group was busily turning residue in two separate compost pits, others were filling in a second layer with cow dung in a third pit. The school decided to prepare organic composting for their farm after observing a compost field day hosted by Mrs. Abena Baagirow, a beneficiary of a compost training sponsored and conducted by IFDC, and supported by the Feed the Future USAID/Ghana Agriculture Technology Transfer (ATT) Project. Madam Abena's Field Day not only attracted students, but 244 farmers (38 men and 206 women) from Suke, Tum, Sena, Kongo and Dindo in the Lambussie District of the Upper West Region.

Mr. Titus Baleve Nihortu, a science teacher at Suke school, said although he had knowledge about composting, he did not know it was so easy to implement. *“I remember learning about composting at college, but it was just theory. I know its benefits, so when I saw the women's group doing it, I got closer with my students to also learn and apply it on our school farm. We currently have four pits, and we will add another next week.”* Mr. Titus continued by saying, *“the students are very interested now, and some want me to supervise them as they begin filling in pits at their various homes. They want to use the opportunity to also teach their parents.”*

Madam Abena is one of three women farmer participants supported by USAID through the ATT project to learn about composting, and she is already making great impact by reaching over hundreds of farmers in the Upper West Region. *“I am ready to give further guidance to other individuals and groups on composting so that together we can reclaim our barren lands.”*



SUCCESS STORY

Model Farmers Competition for 12



Madam Adishetu Abdullah, a contestant of the Model Farmer Competition, Photo Courtesy: ATT

“...we were spending so much money on labor and inputs but we were getting low yields. Four of my friends have already requested that I teach them next season. This is good and I am happy I single-handedly did it and can mentor any farmer to also do it”, she affirmed as she peels a maize comb to support her claim”
Madam Adishetu Abdullah, a contestant farmer

Most farmers believe that the solution to increasing yields is expanding the area of cultivation, and, as a result, ploughing many acres of land. But these beliefs are changing. The farmer model competition, an initiative championed by Mr. Michael Asutami, a seed producer, is correcting such erroneous beliefs by teaching farmers the need to focus on improved farming practices such as the use of certified seeds, planting methods to achieve good plant population and efficient use of fertilizer.

“Interestingly, I am using this to solve another business problem, which is the high default rate of payment for my tractor services due to low yields. Farmers are often unable to pay for the service after harvest because they get low yield,” confessed Asutami.

Asutami, supported 12 young farmers in communities around Yendi Municipality. As part of the competition, Mr. Asutami has ploughed an acre of land for each contestant, provided certified seeds and technical backstopping as well as other agricultural inputs. Although the farmers see the initiative as a competition, he is using the initiative to demonstrate to the farmers that they can get good yields if they follow improved farming practices on a small plot size.

With a broad smile, 38-year-old Madam Adishetu Abdullah, mother of six and a contestant, says the traditional maize farming practice is capital- and labor-intensive and not as rewarding. Maize cob in hand, she affirms what she’s learned, *“This is good and I am happy I single-handedly did it and can mentor any farmer to also do it.”* Asutami is one of the 55 seed producers in Upper East, West and Northern regions who is being supported by the Feed the Future USAID/Ghana Agriculture Technology Transfer Project’s small grants scheme to produce certified seeds to be sold to farmers next season.

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SUCCESS STORY

Radio Get Results



Adompoka Felicia Abaane stands in her rice paddy in the ICOUR Irrigation Fields, Photo Courtesy: ATT

“At first, whatever I was doing I was not getting good yield. Listening to the program, I realized the things that I was doing were bringing down my farm.”

Telling Our Story

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Aside the success recorded by community video shows and demonstration plots the Feed the Future USAID/Ghana Agriculture Technology Transfer Project, through its local implementing partners and Farm Radio International, has made great impact among farmers with the use of radio to disseminate various improved agricultural technology messages to farmers in northern Ghana. One of such beneficiaries who could not hide her testimony is Adompoka Felicia Abaane, a resident of Yorogo in the Upper East Region of Ghana. Felicia has been farming rice for 10 years, but up until recently, her fields were not very successful. When she heard the USAID funded radio program broadcast on URA Radio, Felicia saw an opportunity.

“At first, whatever I was doing I was not getting good yield. Listening to the program, I realized the things that I was doing were bringing down my farm.” Felicia quickly changed what she was doing, and started following the practices suggested by the radio program.

Felicia began to use improved seeds. At the nursery she was impressed with the way the seeds germinated. When she brought them to the field to transplant, she used the new methods of planting the seedlings in line one by one. Watching them grow, she saw how less seeds could produce more yield.

As Felicia continued to listen to the radio program, she learned how to properly apply weedicide and clear what was left by hand. The results were encouraging for Felicia. *“Now I can better feed myself and my children,”* she exclaims. Felicia’s farming improved so much that she has been able to farm three times over the course of the year. Normally farmers are only able to achieve two in the same amount of time. Felicia has been so successful, other organizations are considering supporting her and her rice production to grow seeds for other farmers.

VOX POP from Farmers/ Story One

Having realized that the use of more than two information dissemination strategies leads to increased farmers application of introduced technologies. One of this strategies is the use of radio. Farm Radio International (FRI), in partnership with ATT, used local and community radio stations with the guidance of the Feed the Future USAID/Ghana ATT Project, to disseminate messages on improved farming production and management practices. The following are testimonies gathered from some of ATT's beneficiary farmers.



Nabugu Havenu has a lot of knowledge behind her 92 years. She's seen many farming practices come and go throughout the years. Most recently, she's seen farmers using chemicals and expensive fertilizers to improve crop performance. But she says, since listening to Radford FM, she's seen a change back towards the old ways. *"When I started farming, we would put manure in the sun*

and make a mound so that we could sow it later. But then we started to ignore these ways and practice what have you. Now we are going back to the first ways." The program has also helped Nabugu learn new techniques as well. The method of composting is different (placed in a hole instead of a mound), and she has also learned about minimum or zero tillage.

Nabugu has extended this knowledge to her children and grandchildren which sometimes help her with composting activities after school. She hopes to learn more about composting as the program continues. Nabugu also leads songs for the broadcasters to record to use in the program.

"The program is life, because everything comes from the earth. If you don't eat you can't live, so the program is bringing life to the farmers."

Story two

Azara Zackaria, 50, grows soybeans on her farm. Until recently, the yield from her fields wasn't very high. Azara credits a number of sources for helping her improve her yield, but listening to the USAID, ATT-



funded radio program has helped her with a number of tasks. She has learned to prevent bush fire on her fields, use tarpaulins for threshing to avoid mixing debris with the seed/grain harvest and avoid waterlogged areas when planting her soybean. These skills have helped Azara grow her yields from 1.5 bags/acre to over 8 bags/acre.

“Before, I didn’t think much of new farming practices,” she admits. “But I didn’t stop farming, and now I see I am gaining much more.”

In the past, while low yields gave Azara enough to help with her household needs, she was never able to pay her children’s school fees, or have extra money for emergencies. Now, Azara says she has enough to keep her children in school without relying on her husband or family members. Still though, Azara would like to see her income grow further. She says that currently, farmers are not happy with the prices they get for their produce. In the future, she hopes to learn more about marketing, and how to find good buyers.

Story Three



Awitsika Wisdom Atuah has been farming since he was a child, but admits he believes there is more to learn. The 37-year-old farmer from Dubila, in the Upper East Region, has enjoyed listening to how to improve his farm on Radio URA.

While this business-oriented farmer produces many different crops (e.g., groundnut to pepper to the traditional millet crops), he is interested in the program

because it aids him with his rice, maize and soybean fields. He has listened to all the USAID, ATT-funded radio programs and says that while bush fires and erosion are often a problem for farmers in the area, the program is starting to help with that. He’s learned techniques to prevent bush fire, such as fire belts, as well as how to properly plow and clear his land. Awitsika likes the program so much, he thinks it should run longer. While he thinks that sometimes callers take up too much time with unimportant topics, he enjoys hearing about what other farmers in the area are doing.

“When you listen to the radio you are listening to farmers who have already done this in the field, so you know it works,” he says. He hopes that more farmers will be invited onto the shows, and that they will also be shown places where others have successfully used the new techniques. “Learning together helps. If I don’t understand something from the radio, I can ask someone else who has listened or who are practicing it and they will teach me,” he says. Awitsika also tries to make sure that other people are benefitting from the USAID funded program.

“I learn how to use the new technologies and then I go to other farmers to inform them,” he says. “I teach them how to adopt the new technologies because the old ways use a lot of land and we would not get anything good.”

Press Cuttings

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MoFA inaugurates seed inspection lab in Tamale

By Samuel Duodu.

The seed laboratory before the inauguration. (Left) The Minister of Foreign Affairs, Mr. Ametey Mensah, and the Minister of Agriculture, Mr. Nana Akufo-Addo, at the inauguration ceremony.

The seed laboratory, constructed with funds from the United States Agency for International Development (USAID), is a state-of-the-art facility designed to inspect and certify seeds for export. The lab is equipped with modern machinery and staffed by trained personnel. It is the first of its kind in Ghana and will significantly enhance the country's capacity to export high-quality seeds to international markets.

The inauguration ceremony was held in Tamale, the capital of the Northern Region. The Minister of Foreign Affairs, Mr. Ametey Mensah, and the Minister of Agriculture, Mr. Nana Akufo-Addo, were present. They were joined by other government officials and representatives from the USAID mission.

The USAID mission in Ghana, led by Deputy Mission Director Mr. Robert Jackson, also attended the ceremony. He expressed his gratitude to the Ghanaian government for the support in the region and the high quality of the seeds produced in the laboratory.

The lab will be used to inspect and certify seeds for export. It will also provide technical assistance to farmers and seed producers in the region. The USAID mission is committed to supporting the growth of the agricultural sector in Ghana and to improving the livelihoods of farmers.

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USAID provides 52 farmers with maize shellers

By Samuel Duodu, TAMALE

The United States Agency for International Development (USAID) has provided 52 farmers in the three northern regions with maize shellers to assist them in their farming activities.

The project, supported by the USAID, aims to improve the livelihoods of farmers in the northern regions by providing them with modern farming equipment. The maize shellers will help farmers to process their harvest more efficiently and to reduce their losses.

The USAID mission in Ghana, led by Deputy Mission Director Mr. Robert Jackson, expressed his appreciation to the Ghanaian government for the support in the region and the high quality of the seeds produced in the laboratory.

The USAID mission is committed to supporting the growth of the agricultural sector in Ghana and to improving the livelihoods of farmers.

IFDC supports farmers in northern sector

By Samuel Duodu, BONTANGA

The International Fertiliser Development Corporation (IFDC), Ghana, will continue to support farmers in the Savanna Ecological Zone to adopt new agricultural technologies to increase yields, reduce poverty and also ensure food security in the country.

Dr Scott Angle, the Chief Executive Officer of the corporation, said his outfit, in collaboration with others, has introduced about 500 rice farmers at the Bontanga Irrigation Scheme to a new method of fertiliser application on their rice farms to increase their yields and also reduce the cost of fertiliser application.

Mr. Angle gave the assurance when he paid a working visit to the Bontanga Irrigation Scheme in the Kumbungu District in the Northern Region, where some farmers are benefiting from a fertiliser technology transfer application project.

The collaboration between the United States Agency for International Development, Agricultural Transfer Technology (USAID-ATT) project and the Africa Rice Centre (AfricaRice).

The new method, the Urea Deep Placement (UDP) or briquette fertiliser technology, will not only help to boost the yields of farmers but also encourage dry season farming.

Support to farmers

Dr Angle, who recently took over from Dr Amit Roy, told the beneficiary farmers that the corporation would continue to collaborate with the government, the private sector and farmer-based organisations to support the growth of the agriculture sector in the country.

Apart from the provision of "I could only harvest 30 bags of max rice from my three acres of land, but now with the new technology I am able to harvest 100 max bags of rice from the same three-acre land."

power tillers to the farmers, the ATT project is also supporting farmers with highly improved rice seeds and modern agronomic practices to help increase yields.

Other beneficiaries include four women groups from Saakoba, Gbugli, Kuku and Yilegu who have also acquired skills in the UDP technology and line transplanting of rice in the catchment area of the Bontanga Irrigation Scheme.

Appreciation

The Chief of Dalung, Dalung-Lanaa Ahaji Mahama Amidu, who is a rice farmer and a beneficiary of the programme, expressed his gratitude to the benefactors and indicated that the support to farmers in the area had translated into increased production.

According to him, "before the project, I could only harvest 30 bags of max rice from my three acres of land, but now with the new technology I am able to harvest 100 max bags of rice from the same three-acre land. It has also reduced the cost of production and fertiliser application."

The chief, however, appealed for the provision of combine harvesters since its shortage was a major hindrance to their farming activities, especially during the harvest period.

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Friday 25th March, 2016

It's not demeaning when served with local food-DCE

Tamale, March 25, GNA – Mr. Alhassan Mohammed Sorogodoo, the Sangnerigu District Chief Executive (DCE) has appealed to Ghanaians to have strong taste for the local foods, especially, locally-produced rice, at social functions.

He said they should not consider it demeaning when served with these, pointing out that, the high preference by many for foreign cuisines had been making it almost impossible for organizers of programmes

including state ones, to serve some local dishes, something that was unhelpful to the growth of the economy.

Mr. Sorogodoo, who made the appeal in Tamale during the handing over of a soy processing machine to the 'Hapee Fingers' for soy beverage processing underlined the need for increased consumption of the local rice and other made-in-Ghana goods to reduce the nation's import bill.

Hapee Fingers is an indigenous beverage processing company in Tamale, engaged in the production of soy products using soy beans. It is owned by Hajia Hajara Ibrahim Taimako, a female entrepreneur.

The United States Agency for International Development (USAID) under its Feed the Future-Ghana Agriculture Technology Transfer project (ATTP) handed over the machine and a building to the company at the ceremony.

Mr. Sorogodoo said, "We are all advocating for the consumption of local rice but when we are served with locally produced rice at functions some of us consider it as either demeaning or lack of funds to purchase and cook foreign rice, which must stop".

He commended USAID for its numerous projects in Tamale and said these were complementing the government's efforts at transforming the lives of the people.

He pledged that the Metropolitan Assembly would continue to work closely with development partners to bring the needed development.

Mr. Mike Dockery, the Ghana Agriculture Technology Transfer (ATT) Chief of Party, said the US government would provide support towards the improvement food security and gave the assurance that it would embark on projects that had the potential to change lives.

Hajia Taimako said her company had been working with female farmers to cultivate soy beans - to be processed into various beverages for local consumption.

Hapee Fingers started working with just five women but the number had now increased to more than 40 and she expressed gratitude to the ATTP and US government for the support.

She spoke of the determination of the company to involve more female farmers as its contribution to the fight to reduce poverty and improve nutrition of the people in the Northern Region.

GNA

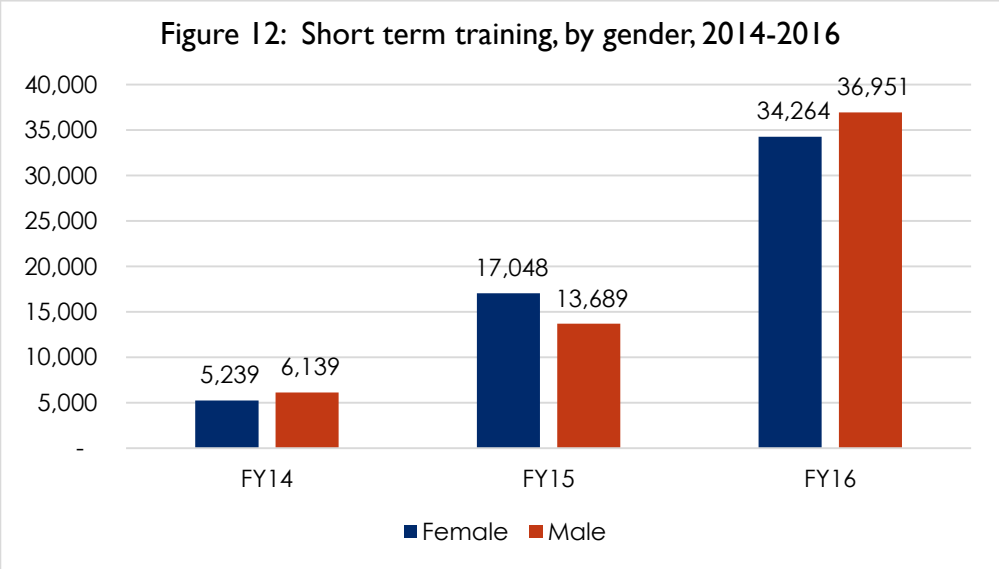
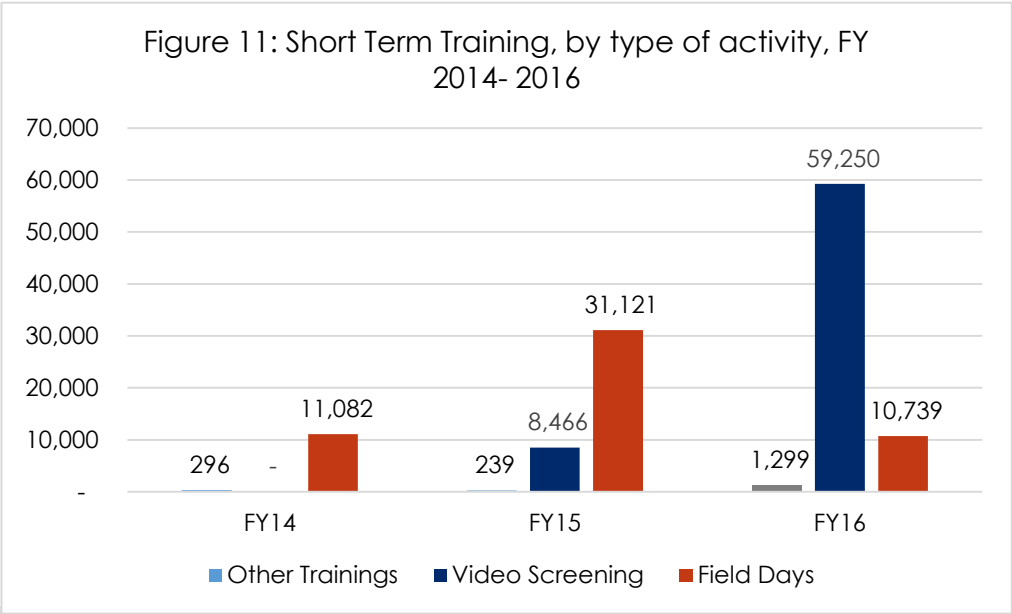
5. MONITORING & EVALUATION

ATT has 25 indicators (10 FTF Indicators and 15 Custom Indicators) used to measure its performance. A signal tracker was developed (Table 1, page 12) to show progress towards the achievement of the indicator targets for FY16 and the Life of Project (LOP). Given that the project is about 60 percent through its lifespan, any indicator that achieves above 60 percent is green, signaling that it is on track. Yellow is achievement between 40 percent and 60 percent, while red shows achievement below 40 percent.

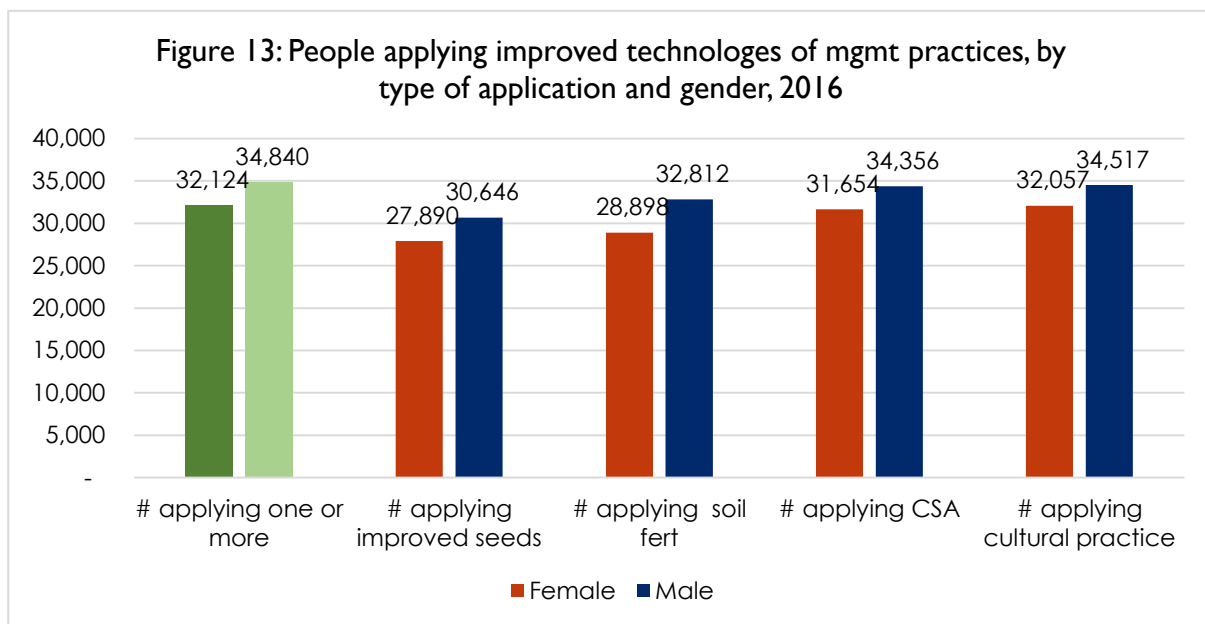
The analysis shows that out of the 10 FTF indicators, Eight (8) of them are on track towards achieving the LoP target, representing 80 percent. Meanwhile, for the custom indicators, out of the 15 indicators, eleven (11) of them are on track (73.3 percent) towards achieving the LoP target, while another 2 (two) with the signal yellow are moderately on track.

Number of people trained (Ind 1.3 {EG.3.2-1}): As described in Sections 2.2.2 and 2.3.2, ATT continued to provide training on a variety of principles and practices related to seed/grain production, post-harvest management, certification, climate smart agriculture, conservation agriculture, as well as farm business management. The long-term impacts for these trainings are a functioning and stable maize, rice and soybean sector, increased production and productivity. The beneficiaries included farmers, government personnel, private sector firms, and civil society.

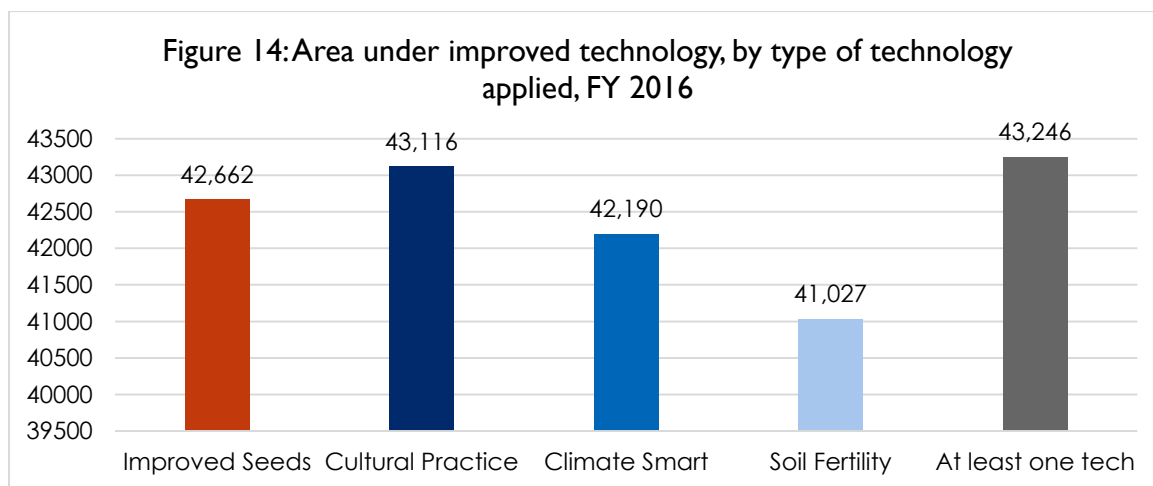
ATT used different strategies to conduct trainings (Figure 11) and impart improved production technologies and practices. The main strategy was Field Days. In FY16, the project expanded its use and application of video vans and digital classroom devices to screen GAPs to the farmers. Other short-term trainings were conducted for government, civil society and private sector stakeholders. A total of 71,215 people benefited from these trainings in FY16 (Field Days: 10,739; Videos: 59,250; Other: 1,299) with few participating in one or more (figure 11). Almost 48 percent of the people trained were women, as depicted in figure 12. A total of 113,330 people have been trained since project inception, representing 80.95 percent of the LoP target.



Number of hectares under improved technologies and people applying the technologies (Ind. 2 & 3 {EG.3.2-18 and EG.3.2-17}): Adoption rates of new technologies and practices has been quite low amongst farmers in Northern Ghana. ATT is addressing this and contributing strongly in the increase of improved technology applied by farmers and areas under improved technology. A survey conducted between August and September 2016 to assess the extent of application of these technologies, using USAID’s recommended procedures and protocols, showed that 66,964 farmers applied one or more of the technologies and management practices they were exposed to i.e. crop genetics (improved seeds), soil fertility management, climate smart agriculture and cultural practices. Figure 13 shows the number of people applying by type of technology and management practices and gender.



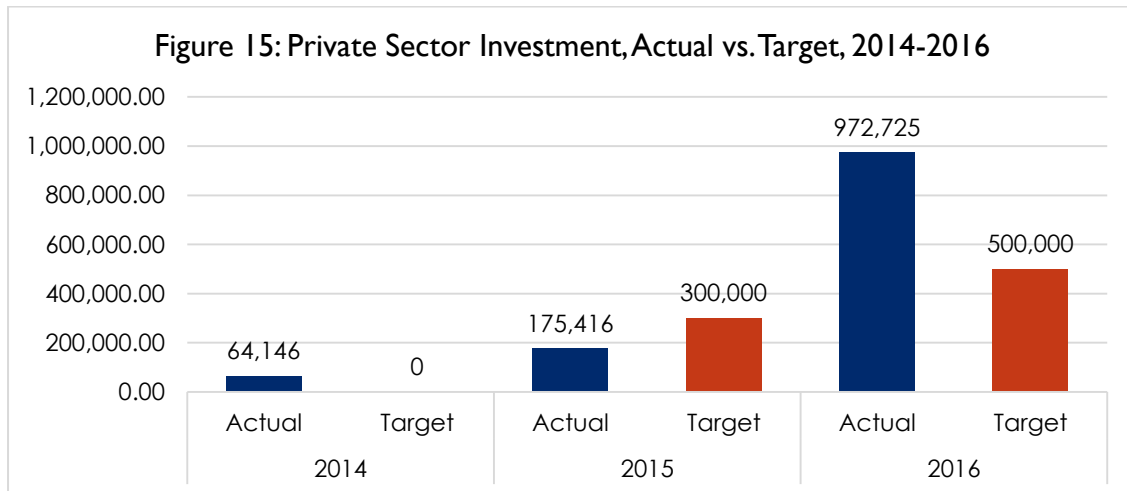
Also, the survey results and routine data collection from other actors such as the private seed producers, including farmer-led demonstration fields and learning centers showed that 43,246Ha were put under at least one of these technologies and management practices, as shown in figure 14. This has more than doubled the target for FY16 (20,000Ha).



Value of new private sector investment in the agriculture sector or food chain leveraged by FTF implementation (Ind. 1.2 {EG.3.2-22 })

Increased investment is the predominant source of economic growth in the agricultural and other economic sectors. Private sector investment is critical because it indicates that the investment is perceived by private agents to provide a positive financial return and therefore is likely to lead to sustainable increases in agricultural production. Agricultural growth is critical to achieving the FTF goal to “Sustainably Reduce Global Poverty and Hunger”.

The ATT Project used in-kind grant agreements to stimulate \$972,725.31 into the agricultural sector in northern Ghana in FY16, which represents 194.55 percent of the FY16 target. Cumulatively, \$1,212,286.91 has been invested by the private sector actors in the agricultural sector – primarily in production, seed processing, water harvesting and post-harvest processing equipment. This represents 101.02 percent of the LoP target. The project will continue to use its grants mechanism cum the leveraged loan program signed with a number of banks to inject more investments into the agriculture sector in FY17.



| USAID-FTF-ATT Objective, Results and Indicators | Baseline Value | LoP Target | FY16 Target | FY16 Achievement (Oct2015-Sept2016) | % Achieved for FY16 | Cumulative Achieved to Date | % of LoP Target Achieved | Deviation Narrative |
|---|----------------|------------|-------------|-------------------------------------|---------------------|-----------------------------|--------------------------|---|
| Goal: Ind. 1 – Increased competitiveness of rice, maize and soy value chains to foster | | | | | | | | |
| Goal Level Indicator(s) | | | | | | | | |
| Ind. 1 – Yield per hectare of targeted commodity (maize, rice and soy) | | | | | | | | |
| Yields for Maize (Mt/Ha) | 1.7 | 3.4 | 2.38 | 3.31 | 139.08% | 3.31 | 97.35% | A survey was conducted during the 2015 cropping season to determine yields of ATT's targeted crops cultivated by its beneficiaries. The yield data shows that within the last two years, yields amongst ATT target farmers have, on average, almost doubled. As a result of the overlap of the cropping season with USAID's reporting period, yield data for 2015 is collected and reported within the FY16 reporting period. This is an annual survey, and the FY16 yield data collection will be undertaken during the harvesting period (September – November 2016) and reported in the first quarter of FY17. |
| Yields for Rice (Mt/Ha) | 1.8 | 3.6 | 2.52 | 2.90 | 115.08% | 2.90 | 80.56% | |
| Yields for Soybean (Mt/Ha) | 1 | 2 | 1.4 | 1.97 | 140.71% | 1.97 | 98.50% | |
| SO: Increased availability and use of agricultural technologies to increase and sustain productivity in Northern Ghana | | | | | | | | |
| SO Level Indicator (s) | | | | | | | | |
| Ind. 2 – Number of hectares under improved technologies or management practices as a result of USG assistance (FTF Indicator # EG.3.2-18) | 0 | 100,000 | 20,000 | 43,245.62 | 216.2% | 62,881.62 | 62.88% | A survey was conducted to determine the level of achievement of this target. The results were extrapolated using the number of producers trained within FY16. The survey results including routine data collection from private seed producers and demonstration fields showed that 43,245.62Ha have been put under one or more of the four categories of improved technologies and management practices that the project is promoting i.e. crop genetics, soil fertility management, climate smart agriculture and cultural practices. The project intensified its training activities to ensure more farmers apply the technologies being introduced. This strategy helped the team to over achieve its target for this indicator. In FY15, 19,636 of the farmers trained applied improved technologies based on a similar survey. Hence, cumulatively 62,881.62Ha are under improved technologies. |
| Ind. 3 – Number of farmers and others who have applied improved technologies or management practices as a result of USG assistance (FTF Indicator # EG.3.2-17) | 0 | 100,000 | 20,000 | 66,964 | 334.82% | 96,986 | 96.99% | A survey was conducted to determine the level of achievement of this target. The results were extrapolated using the number of producers trained within FY16. The survey results showed that 66,964 farmers are applying one or more of the four categories of technologies that the project is promoting i.e. crop genetics, soil fertility management, climate smart agriculture, and cultural practices. The project intensified its training activities to ensure more farmers apply the technologies being introduced. This strategy helped the team to over achieve its target for this indicator. In FY15, 30,022 of the farmers trained applied improved technologies based on a similar survey. Hence, cumulatively 96,986 farmers are applying these technologies. |

Ind. 4 – 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 (FTF Indicator # EG.3.2-20)

0

800

200

263

131.50%

476

59.50%

In FY16, 263 private sector actors and farmer based organizations are applied and continue to apply improved technologies as a result of the USG assistance. This represented 131.50% of the target for the period and 59.5% of the LoP target.

Intermediate Results and Indicators

IR 1: Increased private sector actors role and capacity in developing and disseminating improved seed and ISFM technologies

Ind. 1.1 – Value of incremental sales of targeted ATT’s commodities (seed, fertilizers and other soil amendments) attributed to FTF implementation

N/A

1,000,000

\$200,000.00

\$1,021,639.02

510.82%

\$1,307,640.00

130.76%

The Project M&E and Seed Teams collected data from 100 input dealers in September 2016 on the volume and value of seeds (maize, soy and rice) sold within the FY16 reporting period. Data collection for fertilizer and other commodities being undertaken by GAABIC are still ongoing and will be reported in the next quarter. The seed sales increased drastically in FY16 because of the huge investments the project has made over the years to ensure that quality seeds are produced, certified and made available to farmers. A Seed Gap Analysis conducted in the last quarter showed that almost all the seeds produced by the seed companies were sold to farmers for use. Again, many more private sector actors have joined in the production and marketing of seeds. These efforts have helped to exceed the LoP target, and this is likely to double next year.

Ind. 1.2 – Value of new private sector investment in the agriculture sector or food chain leveraged by FTF implementation (FTF Indicator # EG.3.2-22)

0

1,200,000

\$500,000

\$972,725.31

194.55%

\$1,212,286.91

101.02%

ATT used in-kind grant agreements to stimulate \$972,725.31 into the agricultural sector in northern Ghana in FY16, which represents 194.55% of the FY16 target. Cumulatively, \$1,212,286.91 has been invested by the private sector actors in the agricultural sector – primarily in production, seed processing, water harvesting and post-harvest processing equipment. This represents 101.02% of the LoP target. The project will continue to use its grants mechanism cum the leveraged loan program signed with a number of banks to inject more investments into the agric. sector in FY17.

| | | | | | | | | |
|--|---|---------|--------|--------|---------|---------|--------|---|
| <p>Ind. 1.3 – Number of individuals who have received USG-supported short-term agricultural sector productivity and food security training (FTF Indicator # EG.3.2-1)</p> | 0 | 140,000 | 40,000 | 71,215 | 178.04% | 113,330 | 80.95% | <p>ATT trained various categories of people using different strategies. The main strategies used were Field Days at demonstration sites and videos vans & Pico projectors to screen GAPs to farmers. A total of 71,215 people have so far benefited from these trainings in FY16, with the video screening by the local implementing partners as the predominant training strategy - 59,250 representing about 83%. This has resulted in a grand total of 113,330 people trained since ATT's inception. This represents 80.95% of the LoP target. However, this represents 161.90% the cumulative target expected to be achieved by the end of FY16 (70,000).</p> |
| <p>Ind. 1.4 – Number of individuals who have received USG supported long-term agricultural sector productivity or food security training (FTF Indicator # EG.3.2-2)</p> | 0 | 50 | 15 | 4 | 26.67% | 6 | 12.00% | <p>ATT could not achieve the target for this indicator because of the high requirement for the indicator ("long term support"). ATT has so far supported two researchers to undertake PhD studies in the USA. The team is looking at other innovative ways of achieving this deliverable which include support to BSc and MSc Student Research on Seed, ISFM, CA or Agriculture Engineering Technologies. In view of this, four MSc Research Students received support to conduct research. Eight candidates have also been identified to take an online Seed Certification course through Iowa State University, as part of the ATT's strategy of providing long term support to the seed industry.</p> |
| <p>Ind. 1.5 – 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</p> | 0 | 800 | 200 | 194 | 97.00% | 764 | 95.50% | <p>In FY16, 194 actors have received USG assistance. These included new seed growers, FBOs and private sector actors involved in the fabrication of farm implements. The project's grant mechanism is being used to assist these actors to produce seeds, trained FBOs through the LIPs and fabricate multi-crop threshers. This has resulted in a cumulative achievement of over 95% for the LoP target. The private companies continue to receive support to ensure quality seed production and marketing. The others received labour saving equipment such as planters, power tillers, multi-crop threshers; capacity building trainings etc.</p> |
| <p>IR 2: Increased efficiency and transparency of government functions to support seed, fertilizer and ISFM technology development, release and dissemination</p> | | | | | | | | |
| <p>Ind. 2.1 – Number of public-private partnerships formed as a result of FTF (FTF Indicator # EG.3.2-5)</p> | 0 | 25 | 10 | 42 | 420.0% | 80 | 320.0% | <p>Counting of this indicator previously focused more on agreements with international private companies and a few local companies, mainly because of the targets set. However, a review of the indicator definition shows that all private sector actors like equipment manufacturers, fertilizer companies, seed companies, other projects and local partners (NGOs/CBOs/FBOs) can be counted once there is a clear and written agreement to work together to achieve a common objective. ATT has established strong relationships with the various actors and signed 19 new contracts in FY15. Also, 15 contracts that were signed in FY14 (but not counted) were renewed in FY15 resulting a total of 34 PPPs formed in FY15. In FY16 similar partnerships have been formed with Conservation Alliance Int'l, Int'l Water Management Institute, Farm Radio International, Green-Ef and 32 new Seed Companies / Growers to help achieve ATT project goals.</p> |

| | | | | | | | | |
|--|---|----|---|---|-------|----|--------|--|
| 2.2 Number of technical publications made available for public dissemination | 0 | 44 | 9 | 7 | 77.8% | 41 | 93.18% | ATT exceeded this target in its first two years due to the wide range of training materials it developed. In FY14 ATT produced 20 training guidelines for use and also facilitated the drafting of the National Seed Plan and The Seed Guide. In FY15, ATT finalized the National Seed Plan and the Seed Guide and also developed 3 Fieldbooks, 3 Handbooks, 3 Flipsheets and 3 Posters on maize, rice and soybean. These materials were finalized for maize and soybean, but the rice training materials are yet to be finalized. A Senior Soil Scientist on the project (Sampson Agyin-Birikorang, PhD) also published a paper titled: "Understanding the Scientific Basis for the Urea Deep Placement (UDP) Technology," while the ATT's Communications Specialist embedded in SARI had scientific articles including 'Basic steps in seed inoculation' in a Soil Health Newsletter. Six (6) additional technical papers have been produced by Sampson and Shaibu Azuma, including a power thresher operation manual in FY16, resulting in a cumulative achievement of 41, representing 93.18% of the LoP target. |
| | | | | | | | | |

IR 3: Increased efficiency of targeted agricultural research to develop, release and communicate technologies that support sustainable agricultural productivity

Sub- Intermediate Results and Indicators

SIRI.1 – Increased capacity and competitiveness of Ghana’s seed sector capable to produce or access from outside Ghana high-quality certified seed

| | | | | | | | | |
|--|------------|---------|----------|------------|---------|--------------|--------|--|
| Ind. 1.1.1 – Volume and value of seed (rice, soy bean, maize) available for Northern Ghana, as a result of USG assistance | | 5,760.6 | 1,196.56 | 1235.54 | 103.3% | 2323.32 | 40.33% | In 2014, 1,087.78MT of seed was produced, mobilized, processed by GSIU/MOFA and made available for the 2015 production season. The volume of seed produced in FY15 for use in FY16 is 1,235.54 MT (Maize: 616.02MT; Soy: 255.51MT; Rice: 364.01 MT) which represents 103.3% of the target for the year. These data were compiled by the ATT Seed Team as part of the Seed Gap Analysis. The harvesting of the FY16 seed fields will be done in the first quarter of FY17 and processed in the second quarter for use. (Seed produced and reported under “Expanding Market Supply & Demand” Section of this Annual Report will be reported in the next Annual Report) |
| Maize (MT) | 381.4M | | 384.65 | 616.02 | 160.2% | 1036.5 | | |
| Maize (\$) | 262,184.10 | | | 636,713.18 | | 1,080,806.78 | | |
| Soy (MT) | 278.56 | | 280.58 | 255.51 | 91.1% | 510.58 | | |
| Soy (\$) | 191,496.20 | | | 349,923.26 | | 673,862.16 | | |
| Rice (MT) | 589.63 | | 531.33 | 364.01 | 68.5% | 847.04 | | |
| Rice (\$) | 368,526.90 | | | 282,178.29 | | 861,814.29 | | |
| Ind. 1.1.2 – Number of MSMEs, and others registered and are producing seeds (certified and foundation) | 0 | 116 | 25 | 85 | 340.00% | 108 | 93.10% | |

SIR 1.2 – Increased demand for market and technology information on seed and ISFM through ICT mechanism

| | | | | | | | | |
|--|---|---------|--------|---------|----------|-----------|----------|--|
| Ind. 1.2.1 – Number of farmers, and others accessing market and technology information on seed, ISFM and general agricultural practices through ICT mechanisms | 0 | 100,000 | 20,000 | 59,250 | 296.25% | 67,716 | 67.72% | <p>The ATT Project has employed various strategies to ensure that farmers have access to information on improved technologies. These strategies include the use of Video and Digital Class Room devices to disseminate information to farmers. This has resulted in a cumulative achievement of 67.72%. The project also supported Modern African Productions (MAP) to produce and broadcast a television series (KUAPA I) targeting smallholder farmers. Broadcasting of the series started in the first quarter and research by Geopoll (http://blog.geopoll.com/november-tv-audience-size-ghana) shows that GTV has an average of 356,000 viewers per half hour. Radio talk shows being organized reached out to 1,278,775 listenership resulting in a total of 1,634,775.</p> |
| | | | | 356,000 | 1780.00% | 1,634,775 | 1634.78% | |
| Ind. 1.2.2 – Number of field trials implemented by privately owned/operated seed companies and other partners receiving USG assistance | 0 | 100 | 20 | 103 | 515.00% | 189 | 189.00% | <p>Due to ATT's commitment to aggressively test and make available improved technologies that are suitable to the savannah ecological zone, it has undertaken and/or supported a number of field trials in collaboration with SARI, UDS, IPA/IFPRI, IITA, seed companies, etc. These included crop varietal testing, UDP/FDP, ISFM, Rhizobial inoculation, intercropping, minimum-tillage, amongst others. In FY16, the project assisted over 50 seed companies / growers to produce certified seeds. As part of the grant agreement, the seed companies were required to establish demonstration plots (0.25 acre) for every 10 acre seed farm to showcase the potential and viability of the seed to community members. As a result, 103 of such fields were established across the three regions by these private companies leading to an over achievement of both the FY16 and LoP targets.</p> |
| SIR 1.3 – Effective advocacy by a well-organized seed and fertilizer Industries | | | | | | | | |
| Ind. 1.3.1 – Number of Policies/Regulations/Administrative Procedures in each of the following stages of development as a result of USG assistance (FTF Indicator EG.3.1-12) in each case: Stage 1: Analysed Stage 2: Drafted and presented for public/stakeholder consultation Stage 3: Presented for legislation/decreed Stage 4: Passed/approved | 0 | 5 | 1 | 1 | 100.00% | 3 | 60.00% | <p>ATT, in collaboration with the Directorate of Crop Services, the Scaling Seed and Technologies Partnership (SSTP) and the Agricultural Policy Support Project (APSP), facilitated the development of a National Seed Plan. The plan, which has an objective to formulate actionable items from the National Seed Policy document that passed through Parliament in 2013 and officially launched in June 2014, has been finalized and approved for implementation by MOFA. ATT is also working to draft protocols on variety registration. In addition, ATT is collaborating with the Agricultural Policy Support Project (APSP) to build the technical capacity of the National Agriculture Research Organizations (NAROs) and seed companies to enhance the process of releasing materials for expanding availability of improved seeds, including implementation of crop variety licensing agreement.</p> |
| | | | | | | | 2 | |

| | | | | | | | | |
|---|-----------|-----------|-----------|-----------|---------|-----|---------|--|
| Stage 5: Passed for which implementation has begun | | | | | | 1 | | |
| SIR 1.4 – Increased dissemination of ISFM technologies | | | | | | | | |
| Ind. 1.4.1 – Number of private enterprises, NGOs, sector actors, etc. promoting new technologies | 0 | 250 | 60 | 101 | 168.33% | 200 | 80.00% | The 85 seed growers who are currently being supported to produce maize, soybean and rice seeds across the three regions serve as the focal points for the production and marketing of seeds within their communities and districts. Also, the project in collaboration with Catholic Relief Services (CRS) and Soybean Innovation Lab (SIL) trained 12 implement fabricators to produce and promote less expensive and labour saving equipment such as threshers in Ghana. As part of the training, the fabricators designed and fabricated their own equipment, and mass production will soon commence. Four (4) banks have also joined the project's Grant Supported Loan Program to assist acquire improved farm inputs to enable them increase their production and productivity, besides facilitating the injection of about \$10m into the agriculture sector. |
| Ind. 1.4.2 – Number of links between international and local companies that result in accessing new technologies | 0 | 25 | 5 | 9 | 180.00% | 13 | 52.00% | The ATT Project has been sponsoring the participation of the National Seed Trade Association of Ghana (NASTAG) members in the Africa Seed Trade Association (AFSTA) Congress every year. In 2014 and 2015, the congress was held in Tunisia and Zimbabwe respectively. These fora have provided the NASTAG members the opportunity to establish links with their international counterparts and they have begun exchanging information, goods and services. The next congress will be held in Senegal in 2017, which will consolidate and enhance these links and partnerships. |
| SIR 2.1 Improved control mechanisms for seed certification and varietal release processes functional | | | | | | | | |
| Ind. 2.1.1 – Number of months that the research takes to complete the process for variety release | 24 months | 12 months | 12 months | 24 months | 0 | 0 | 0 | Activities are underway to enable SARI to conduct seed varietal trials twice a year. These include the rehabilitation of the Wambong Dam for dry season research activities, establishment of seed laboratories for testing of seeds, etc. Such support will ensure that the number of months used to complete the variety release process is reduced substantially. Until the Wambong Dam rehabilitation and establishment of the irrigation systems are complete and in use, the situation still remains the same |
| Ind. 2.1.2 – Number of Seed Testing Laboratories set up to facilitate seed testing and certification | 0 | 3 | 3 | 3 | 100.00% | 3 | 100.00% | Within the quarter, the three regional Seed Laboratories were equipped and technicians trained on how to use and manage the facilities. The facilities, which were completed in FY16 Q1, were commissioned within FY16 Q2 by the new US Ambassador to Ghana, Robert Jackson at a ceremony in Tamale. Hence the LoP target has been achieved. |
| Ind. 2.1.3 – Number of Seed Processing Plants established to enhance seed quality | 0 | 3 | 3 | 3 | 100.00% | 3 | 100.00% | During this reporting period, three seed processing machines purchased through the Grant Program's matching grant mechanism were delivered to three private seed companies – one in each of the three northern regions. These machines have been installed and are being used to process seeds for the upcoming season. Hence the LoP target has been achieved. |

SIR 3.1 Increased number of seed and ISFM technologies developed and released

| Indicator | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | Notes |
|--|------|------|------|------|--------|------|--------|------|------|--|
| Ind. 3.1.1 – Number of technologies or management practices in one of the following phases of development (FTF Indicator # EG.3.2-7): | | | | | | | | | | |
| In Phase I: Under research as a result of USG assistance | 0 | 7 | 2 | 0 | 0 | 0 | 0.00% | | | In FY14, ATT collaborated with the SARI to test maize and rice varieties from Brazil, China and India. In FY15, ATT focused on only 8 varieties – 3 studied in FY14 and 5 new ones. In FY16 three (MSI, MHI463 and MHI466) of these eight varieties were selected and planted for the final round of testing required in the release process. However, due to harsh weather conditions, the fields could not be used for the release process. SARI has agreed to re-plant the seeds for possible release this main season by Ghana's National Variety Release Committee. The strategy to focus on only a few select varieties for release resulted in the team's inability to achieve the expected target. ATT will focus more project resources on scaling of released seed varieties for regional markets. |
| In Phase II: Under field testing as a result of USG assistance | 0 | 44 | 10 | 3 | 30.00% | 27 | 61.36% | | | |
| In Phase III: Made available for transfer as a results of USG assistance | 0 | 15 | 5 | 0 | 0 | 0 | 0.00% | | | |

SIR 3.2 Improved technology communication for dissemination capacities

| | | | | | | | | | | |
|--|---|----|---|---|--------|----|--------|--|--|---|
| Ind. 3.2.1 - Number of conferences, forums etc. attended by project partners with USG assistance. | 0 | 20 | 7 | 7 | 100.0% | 14 | 70.00% | | | The ATT Team has provided support to various actors to participate in a number of conferences and forums to increase knowledge sharing, exchange and learning. Notable amongst them are the Pre- Season and Pre-Harvest events it organizes annually in collaboration with ADVANCE and other stakeholders. These provide opportunities for producers, private sector actors, Civil Societies and government agencies to share information and establish linkages. Others include assistance to staff of these agencies to attend both local and international conferences. The project achieved its target for FY16, and 70% of the LoP target. |
|--|---|----|---|---|--------|----|--------|--|--|---|

SIR 3.3 Increased knowledge and capacities on plant biotechnology development and biosafety guidelines

| | | | | | | | | | | |
|---|---|-------|-------|---|---|---|--------|--|--|--|
| Ind. 3.3.1 – Number of communication messages on plant biotechnology produced | 0 | 9 | 2 | 0 | 0 | 3 | 33.33% | | | Three media practitioners who participated in a biotechnology workshop facilitated by Iowa State University in FY15 produced communication messages and shared via radio, newspaper reports, emails, etc. These included: (1) The relevance of Biotech and Biosafety-Cowpea Production, (2) Relevance of Genetic Engineering in Agriculture, and (3) National Biosafety and Institutional Biosafety Committee Collaboration in Biotech Research. |
| Ind. 3.3.2 – Number of farmers, processors or others who received information on biotechnology | 0 | 4,075 | 1,000 | 0 | 0 | | | | | These messages were aired on community and national radios such as the Ghana Broadcasting Corporation (Ghana Today News) which has a listenership of about 6,000,000. Hence the target for this indicator has to be reviewed. |

