



FEED ^{THE} FUTURE

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



FIRST QUARTERLY REPORT (October – December 2017)



USAID
FROM THE AMERICAN PEOPLE

IITA
Transforming African Agriculture

IIAM
Instituto de Investigação Agrária de Moçambique

CIAT
*International Center for Tropical Agriculture
Since 1967 / Science to cultivate change*

ICRISAT
Science with a human face

Contents

Contents.....	2
i. Acronyms and Abbreviations	3
ii. Contributors and Acknowledgements	4
iii. Executive Summary	5
1. Background	6
2. Project Activities and Progress during First Quarter of FY 18 (October - December 2017)	7
2.1 Component 1: Increase the production and supply of breeder, pre-basic, basic, and certified seeds in the major FtF ZOI and strengthen the national seed systems.....	7
2.1.1. Progress on breeder/pre-basic and basic seed production	7
2.1.2. Progress on certified seed production.....	9
2.1.4. Seed Enterprise Development	13
2.2. Component 2: Promotion and scale up the adoption of best crop management practices in the FtF ZOI using participatory approaches	14
2.2.1. On-farm demonstrations	14
2.2.3. Partnerships for seed production, distribution and demand creation.....	17
2.2.5. Field days, exchange visits and meetings	18
3. Communications and farmers' outreach.....	21
3.1. Meetings, fairs and workshops	22
4. Developing Soil Fertility Maps	22
5. Component 3: Enhance national policy dialogue on seed and fertilizer supply	25
6. Outcomes and impacts.....	25
7. Challenges	31
8. Summary and Conclusions	31
9. Activities for the next quarter	32

i. Acronyms and Abbreviations

Appr	Approximately
APROSE	<i>Associação pra a Promoção do Sector de Sementes</i>
AEB	Agriculture Environment and Business
CbSG	Community-based Seed Growers
CGIAR	Consultative Group on International Agricultural Research
COPAZA	<i>Cooperativa de Produtores da Alta-Zambézia</i>
CIAT	<i>Centro Internacional de Agricultura Tropical</i>
CBO	Community-based Organization
CZNdt	<i>Centro Zonal Nordeste</i>
CZNrt	<i>Centro Zonal Noroeste</i>
CZC	<i>Centro Zonal Centro</i>
DINAS	Direcção Nacional de Agricultura e Siviculta
DPA	Direcção Provincial de Agricultura e Segurança Alimentar
FAs	Farmers Associations
FAO	United Nations Food and Agriculture Organization
FtF ZOI	Feed-the-Future Zone of Influence
ICRISAT	International Centre for Research in the Semi-Arid Tropics
IIAM	<i>Instituto de Investigação Agrária de Moçambique</i>
IITA	International Institute of Tropical Agriculture
OYE	<i>Opportunities for Young Entrepreneurs</i>
PAN	<i>Posto Agronómico de Nampula</i>
QDS	Quality Declared Seed
SDAE	<i>Serviço Distrital de Actividades Económicas</i>
SNV	<i>Dutch Development Organization</i>
TnS	TechnoServe Inc.
USAID	United States of America International Development Agency

ii. Contributors and Acknowledgements

Contributors

Malita CJ, Kyei-Boahen S, Wiredu AN, Savala CEN, Couvinhas AF, Belarmino D, Gaudêncio S, Maereka E, Chantiro S and Madzonga, O.

Acknowledgements

There is continued commitment and hard work worth to be acknowledged: to all the technical staff of implementing partners, our Activity Manager Paula Pimentel and our farmers who are the direct beneficiaries of project activities and testimonies of the impacts in their lives.

Thank you very much!

Carlos Malita

Nampula, January 2018

iii. Executive Summary

Major activities conducted during the First Quarter of FY18 included land preparation for early generation seed production, identification of farmers and farmers' associations to host demonstration plots, seed distribution to partners, farmers training and awareness creation activities. SEMEAR consortium partners planted 16 ha breeder/pre-basic and 149 ha basic seed fields of the six crops being promoted: common bean, cowpea, groundnut, pigeon pea, sesame and soybean by the end of the first quarter. The project supported a number of partners to produce certified seed by supplying seeds and providing technical advice. During the quarter, 30.8 tons of basic seed was supplied to partners; most of it was sold to seed companies and community-based seed producers to produce certified seed. As part of awareness creation activities, SEMEAR in collaboration with partners established 664 variety and input demonstration plots across the FtF ZOI by the end of the first quarter. The demonstration plots are to showcase the potential of the technologies; majority of it will be established in the second quarter. Averaged across crops, 39% of the lead farmers hosting demonstration plots are females but female participation is higher with the food legumes. For example, 63% of females are hosting demonstration plots on common bean and this also applies to cowpea which is a food security crop. The project is striving to increase female involvement in project activities through targeted training, demonstration and contribution of limited quantities of improved seeds and other inputs to female hosted demonstration fields. Several in-house training sessions were conducted on all aspects of crop production and seed business including variety selection, crop management, disease and pest control, storage and marketing. For this period, 681 participants (38% females) attended the training. A total of 235 (54% females) participated in four field days for farmers to share information on off-season common bean production during the first quarter. In addition, FY18 first quarter M&E data collection survey was undertaken to assess project performance and impact on the basis of the FtF indicators.

1. Background

Lack of access to good quality seeds of improved and high-yielding varieties, low inputs use, and poor crop management practices are the key constraints to productivity of smallholder farmers in Mozambique. SEMEAR project is a major intervention to improve the productivity of smallholder farmers through increased accessibility to improved seeds, awareness creation and promotion of improved varieties and where to get them, capacity strengthening of farmers and stakeholders in improved crop and seed business management, and policy advocacy to create an enabling environment for the growth of the seed and input sectors. The goal of SEMEAR is to enhance adoption of improved technologies, income, and food security of smallholder farmers in the FtF ZOI in Manica, Nampula, Tete and Zambézia provinces.

The project is being implemented by four consortium partners: IITA, IIAM, CIAT and ICRISAT focusing on six major crops that are essential to smallholder farmers in terms of food consumption and income. The crops include common bean, cowpea, groundnut, pigeon pea, sesame and soybean. Partnership is key to achieving the project objectives; hence SEMEAR has established strong partnerships with relevant organizations including private sector seed and inputs companies and other for-profit companies, public institutions such as the Extension Service and DINAS of the Ministry of Agriculture and Food Security, Technology Transfer Centers and Higher Educational Institutions, NGOs, farmers associations, community-based organizations and other donor-funded projects to effectively reach more beneficiary households from a business perspective. The consortium partners are responsible for the production and supply of adequate quantities of breeder, pre-basic and basic seeds to facilitate the production of certified or quality declared seeds (QDS) by seed companies, community-based seed producers and other seed growers. SEMEAR places emphasis on motivating and encouraging farmers to buy certified seeds and inputs, identification and training farmers who have the necessary resources and skills to engage in profitable seed production enterprises, facilitation of seed field inspection and certification, and linking seed producers to seed buyers among many others. The project is in the third year of implementation and this report provides progress on project activities during the first quarter of FY18 from October – December 2017.

2. Project Activities and Progress during First Quarter of FY 18 (October - December 2017)

2.1 Component 1: Increase the production and supply of breeder, pre-basic, basic, and certified seeds in the major FtF ZOI and strengthen the national seed systems

2.1.1. Progress on breeder/pre-basic and basic seed production

Off-season seed production activities for cowpeas and common beans under irrigation were undertaken during the first quarter in Gurué and Angónia. At the end of the quarter 0.4 ton of cowpea and 2.5 tons of common beans were harvested by November 2017 to supplement the seeds available for planting during the current 2017-2018 growing season. However, the major activity during this quarter was land preparation across project locations. Due to the differences in the optimum planting time for each of the crops being promoted, priority was given to those crops that are planting early such as soybean and groundnut. The initial rainfall at the beginning of the planting season was reliable in terms of timing so most of the crops planted so far were timely. Planting of cowpea and sesame which are late planted will begin during the second quarter.

Common beans

Early generation seed production is being conducted in Angonia, Manica and Gurue where production conditions for common beans are optimum. The target area for FY 18 is 9.75 ha for breeder/pre-basic seed and 60 ha for basic seed production (Table 1). Six ha of pre-basic seeds and 38 ha of basic seed have been planted, and we are expecting 6 ha each of pre-basic and basic seeds to be planted by February, 2018. Varieties planted include A222, NUA 45, SUGAR 131, VTTT 923/10-3, AFR703 and CAL 143.

Table 1: SEMEAR FY18 Early generation seed fields established by the end of the first quarter (October-December 2017)

Crop	Breeder/pre-basic (ha)		Basic (ha)	
	Target	Planted	Target	Planted
Soybean	0.60	4	17.5	58
Common bean	9.75	6	60.0	38
Groundnut	5.10	8	46.3	41.4
Pigeon pea	0.05	3	4.3	11.6
Cowpea	0.3	TBP	16.0	TBP
Sesame	0.012	TBP	2.0	TBP
Total	15.81	21.0	141.8	149.0

*TBP = To be planted between Mid-January and February

Cowpea and Sesame

To inject fresh germplasm materials and increase the available pre-basic seed for basic seed production, off-season cowpea seed multiplication of IT-18 and IT-16 was conducted at Namarripe in Gurue district under irrigation during the first quarter of FY 18. A total of 0.4 ton of pre-basic seed was harvested and will be used together with seed available for basic seed production during the current season. For the current production season, 18 ha of land have been prepared for planting cowpea pre-basic and basic seed at Muriaze, Murrupula and Namialo in Nampula province and Sussundenga in Manica province. Similarly, a total of 7 ha of land are already prepared for planting sesame at Muriaze and Namialo in Nampula province. Cowpea and sesame are late planted crops and will be planted between mid-January and February. Early planting of these two crops during the peak of rainfall affects seed yield due to pest and disease problems, as well as high vegetative biomass production at the expense of seed production. The cowpea varieties to be planted are IT-16, IT-18, IT-390-2, IT-1069, and IT-1263 and sesame varieties include Linde, Rama and Nicaragua.

Groundnut and Pigeon pea

Land preparation for groundnut and pigeon pea like the other crops was done in November and December and 8 ha of groundnut and 3 ha of pigeon pea breeder/pre-basic seed, respectively, have been planted in Angonia in Tete province and Malema in Nampula province during the period (Table 1). For basic seed, 10 ha of groundnut and 11.6 ha of pigeon pea fields have been planted in Nampula and Manica provinces by the end of the first quarter. An estimated area of 31.4 ha of groundnut fields that

have been planted by 20 out-grower partners including 3 females who were supplied with pre-basic seeds. The pigeon pea target of 0.05 ha breeder/pre-basic and 4.30 ha basic seed are already achieved. The groundnut breeder/pre-basic seeds target of 5.1 is already met but we are yet to meet the basic seed target of 46 ha; hence the remaining area will be completed during the second quarter. Groundnut varieties planted include CG7, ICGV-SM 99568, Mamane, Nametil and JL 24, whereas pigeon pea varieties include ICEAP 00040, ICEAP 00554 and ICEAP 00557.

Soybeans

Soybean is the first crop to be planted among the six crops being promoted. Planting began during the second week of December in Tete and Zambézia provinces where seed production activities are concentrated. Currently, about 2 ha pre-basic and 27 ha basic seed fields have been established in Angonia district, whereas 2 ha of pre-basic seed and 25 ha of basic seed fields have been planted in Gurué district. In addition, 3 ha each of soybean basic seed fields have been established in Manica and Nampula provinces. Thus, in total 4 ha of pre-basic seed and 58 ha of basic seed fields have been established (Table 1). The soybean fields planted this season are far above the target of 0.6 ha pre-basic and 17.5 ha basic seed fields due primarily to timely rainfall allowing more than adequate time for planting additional fields to meet current basic seed demand from seed producers. Varieties planted include Sana, Wamini, Wima, Zamboane and TGx 1835-10E.

In summary, four crops have been planted on scheduled due to timely onset of rainfall this season remaining cowpea and sesame which are planted late but are likely to be plant as planned. Currently, 21 ha of breeder/pre-basic seeds fields have been established against a target of 15.8 ha, whereas a total of 149 ha of basic seed fields have been planted against a target of 141.8 ha (Table 1). More early generation fields will be established during the second quarter, in particular for cowpea and sesame.

2.1.2. Progress on certified seed production

Certified seed and quality declared seed (QDS) production by project partners are progressing with the timely onset of rains. Activities on soybean are well ahead of all the other crops. It appears many individual farmers and farmers' associations are taking up the production of soybean certified seeds and that calls for efforts to link them to the Seed Inspection Unit for field inspection to assure quality. The project is supporting about 62 individual soybean community seed producers in Zambézia, Tete and Nampula provinces; and more than 15 farmers' associations (Table 2) are receiving support on soybean seed production from SEMEAR. It is estimated that more than 684 ha of soybean seed multiplication fields have been established by project partners at the community level by the end of the first quarter

compared with about 100 ha around the same time last season due in part to the timely onset of rains. More areas are expected to be planted to soybean by Mid-January since some partners purchased basic seeds towards the end of the quarter. Most of the seed growers procured seed directly from SEMEAR or bought from partners who got seeds from SEMEAR last season whilst few seed producers planted from their own saved seeds. More than 95% of the varieties planted are locally released varieties, which is very encouraging as the system gradually weans itself from soybean seed importation.

Table 2 Information on some Farmers' Associations partnering with SEMEAR on soybean certified seed production within the FtF ZOI by the end of the First Quarter of FY18

District	Name of Association	Variety	Gender	Area (ha)
Gurue	Associação de Namurrequele	Wamini	Female	17
Gurue	Associação de Namarripe	Wima	Female	15
Gurue	Associação de Namilasse	Sana	Male and Female	0.5
Gurue	Associação de Enela	Sana	Male and Female	0.5
Gurue	Associação de Muhissa	TGx 1835-10E	Male and Female	25
Gurue	Associação de Murrimo	Wima	Male	10
Malema	Associação Eduardo Mondlane	Wima and Zamboane	Male and Female	18
Malema	Associação Wiwanana wa athiana	Zamboane	Female	2
Malema	Associação de Namahussi		Male and Female	4
Malema	Assoc. de Mulheres de Nanari	Zamboane	Female	1
Alto Moocue	Associação de Produtores de Soares	Wima, Wamini and Zamboane	Male and Female	12
Angonia	Associação de Chigwirizano*	Santa, Safari, Wima, Wamini, Zamboane		120
Tsangano	Associação Tilimbique	Wima, Zamboane		5
Tsangano	Associação Agropecuaria Fonte Boa	Zamboane, TGx 1835-10E		5
Macanga	Associação Agropecuaria Muawathu	Wima, Wamini TGx 1835-10E Zamboane		3
Total				238

*Associação de Chigwirizano made up of many Clubs

Feedback from partners so far indicates that they are satisfied with the soybean seed quality in terms of germination, emergence and seedling establishment as indicated in

“Both fields are being watched in detail by the DG and we have no complaints about the seed, it had excellent physical characteristics (uniformity, varietal cleanliness, free of impurities etc.) and it showed very good germination power” – Dreamers Group, Gurué, Zambézia

the text box and Figure 1.



Figure 1. Soybean field of a partner (Domingos Bitone) in Gurue who procured seed from SEMEAR.

Several seed companies including Phoenix Seed Ltd, Oruwera, Companhia Zembe, Agro-Sikadza etc. were supplied with soybean basic seed and have planted or planting is on-going. A short market survey and discussions with seed producers indicated that farmers are now appreciating the difference between seed and grain even in pricing. For instance, at the time of planting of soybean, the price per kilogram of grain was 17 MZN (\$0.28), 10 MZN (\$0.17) and 15 (\$0.25) while that for seed was 95 MZN (\$1.58), 90 MZN (\$1.50) and 95 MZN (\$1.58) for Zambézia, Tete and Manica provinces, respectively. This demonstrates clearly to the enterprising seed producers the profit margin for producing seeds over grain.

A total of 6.6 tons of common beans basic seed were supplied to five partners, namely: iDE, SNV, Klein Karoo, Agro-Sikadza and TechnoServe to produce certified seed (Table 3). About 94 ha would be planted with this quantity of seed. Seed orders are still being received; hence, more seeds are being planted by partners. In addition, 6 farmers were identified to produce common bean certified seed or QDS in Gurue and Angónia districts, and in Bandula and Barue districts in Manica province. Five ha fields have been planted so far but planting continues. Common beans grain price per kg at planting time in Angónia and Gurue was 35 MZN and 75 MZN in Chimoio while the corresponding seed price were 190 and 220 MZN, respectively; thus there is large variation in both grain and seed prices between the high potential growing areas and the medium to low potential growing zones.

SEMEAR supplied 2 tons of groundnut and 1.25 tons pigeon pea basic seed to seed companies and seed producers including Klein Karoo, Agro-Sikadza, TechnoServe, Oruwera Seed Lda and JNB for the production of certified seeds. It is expected that 26 ha of groundnut and 124 ha of pigeon would be planted by these partners.

Through farmers' associations, nearly 300 people including those participating in the community seed bank have been identified to produce certified or QDS of groundnuts and pigeon pea. In general farmers buy seeds from the seed companies who procure their pre-basic seed from SEMEAR whilst others procure their seeds from community seed producers through associations with links to SEMEAR. There exists a big difference between the price of seed and grain at the time of planting these two crops. The price for both crops was 100 MZN for certified seed but the groundnut grain was 30 MZN whilst pigeon pea grain price was 5 MZN. The grain price for pigeon pea last season, in particular was very disappointing since farmers were expecting higher farm gate prices as a result of the much-publicized anticipated demand from India and the subsequent visit by Indian government officials to Mozambique for pigeon pea import deals. The short fall in pigeon pea grain on the Indian market due to drought the previous year created a short-term increase in demand but productivity recovered the following year with good weather. Thus, the anticipated import of pigeon pea from Mozambique did not happen; hence the farm gate price crashed to all time low. This kind of scenario does not motivate farmers to buy certified seeds considering the high cost of the seed and the high possibility of not breaking even due to low grain price.

Planting of cowpea and sesame fields had not begun by the end of the first quarter since the optimum planting window is after mid-January. For cowpea, seven farmers' associations have already prepared 22 ha of land to produce cowpea seeds and for sesame, 23 farmers from six farmers' associations are planning to establish a total of 40 ha of sesame certified or QDS. More information on cowpea and sesame will be available by the end of the second quarter when fields of the crops are established.

SEMEAR has started compiling information on seed production field to be submitted to the Seed Inspection Unit to facilitate the planning and inspection of SEMEAR seed production fields and those of our partners including community-based seed growers, farmers' organizations and selected individual farmers within the communities. In addition, the project is providing technical advice to partners and capacity development services through trainings to support the production of certified seed and QDS.

2.1.3. Seed Distribution and Sales

SEMEAR has so far supplied nearly 30 tons of early generation seeds to partners for planting during FY18 season with more than half of this figure being soybean and limited quantities for cowpea (Table 3). This explains the demand dynamics for crops considered as cash crop in this case soybean and food security crop like cowpea. Cowpea is the most widely grown among the six crops; thus a higher proportion of farmers one way or another grows cowpea on subsistence basis. Only 13% of the cowpea

grains harvested by farmers are sold on the local market and therefore, the use of farmer saved seed is relatively high. Coupled with this was the fact that most of the cowpea seed produced was retained for project activities. The seed supplied to partners would be able to plant 788 ha of certified seed or QDS fields. The seeds were sold to seed companies, community-based seed growers and other seed producers including Phoenix Seeds Lda, Companhia do Zembe, Oruwera Seeds, JNB, Klein Karoo, Agro Insumos, Nzara Yapera, TechnoServe Mozambique, Agro-Sikadza, SNV, iDE and others. The revenues from seed sales will be reported in the next report when all payments and accounts are reconciled. Some quantities of seeds were used for the establishment of demonstration plots and other awareness creation and promotion efforts, contribution to district and provincial government programs, as well as contribution to partnerships activities.

Table 3: Basic seed supplied to partners for certified seed production in the FY18

Crop	Quantity (tons)	Expected coverage (ha)	Partner
Soybean	17.7	354	Agro Sikadza kokha, Assoc. Badza Ndimambo, Associacao de Alto Molocue, Centro T. Tecnologia Bandula, Conpnhia d Zembe, CLUSA, Instituto Politc Nacuxa, Pheonix, SNV, SNV- yong Grupo Maconje, Technoserv
Common bean	6.6	94	Agro-Sikadzakoka, TechnoServe, iDE, SNV, Klein Karoo,
Groundnut	4.4	55	AGINDU, Agro-Sikadzakoka, AKA Comercial, DPA, Farmer association, GNB, Instituto Politc Nacuxa, Oruwera
Pigeon pea	1.4	140	Agroserve, Agro-Sikadzakoka, AKA Comercial, K2, Mussa Aly, Technoserve
Cowpea	0.3	12	Americo Sussece, DPA, Mussa Aly
Sesame	0.4	133	AKA Comercial, Americo Sussece, K2, Instituto Politc Nacuxa, Mussa Aly, SNV,
Total	30.8	788	

2.1.4. Seed Enterprise Development

The seed business sector in Mozambique is still evolving but dominated by community seed producers who are in the learning phase of the seed enterprise. With the exception of few established seed companies, most of the companies are start-ups and lack the skills and experience in the production of early generation seeds which form the base for the production of certified seeds. Hence, SEMEAR is providing support to strengthen partners with entrepreneurial spirit to create enabling environment for sustainable local seed businesses that contribute to increased availability of good quality seeds in the

farming communities. During the first quarter (October-December 2017), the project trained identified individual farmers and farmers' associations in the farming communities in seed production, marketing and awareness creation activities such as demonstration plots establishment, seed multiplication, farmer-field days and exchange visits. For example, 14 seed producers consisting of 9 males and 5 females were trained on 4 December in Namirrequele, Gurué district. Common bean seed producers were also trained on 12 December in Tanga-Tanga, Tsangano district on soybean and bean seed production cost, profit margins, seed marketing including labelling, small packs and identifying seed markets. During this period, the project sold early generation seeds of registered varieties to community seed producers and seed companies to enable them produce certified seeds. IIAM seed production unit is also stepping up activities in early generation seed production to sustain the supply of these categories of seeds. SEMEAR has compiled the list of community seed production partners to facilitate field inspection by the Seed Inspection Unit during the second and third quarters.

The project has engaged a consultant to assist the team to develop a seed business strategy that will guide the implementation of seed business services to promote the development of sustainable seed business enterprises. The document will be ready by the end of the second quarter.

2.2. Component 2: Promotion and scale up the adoption of best crop management practices in the FtF ZOI using participatory approaches

2.2.1. On-farm demonstrations

During the period under review, SEMEAR in partnerships with farmers associations, seed companies, agro-dealers, the Technology Transfer Centers and the Extension Service (SDAE) across the FtF ZOI identified male and female farmers to host demonstration plots during the 2017/2018 growing season. The demonstration plots are practical ways for awareness creation and promotion of the technologies through “learning by doing”. As in the previous seasons, the technologies being promoted include improved varieties of all six crops and improved crop management practices consisting of better agronomy such as best planting time, row spacing, planting density, use of *Bradyrhizobium* inoculant and P fertilization, weed control, pest and disease control, and rouging. Model seed multiplication demonstrations were also established for some of the crops like soybean to train seed producers the proper management of their seed production fields. The size of a demonstration plot ranges from 500 m² to about 0.25 ha depending on land availability and the capacity of the host to undertake appropriate day-to-day management the fields. For these demonstrations, the partners provided the land, prepared

the land and some of the needed inputs, whereas SEMEAR supported partners who lack inputs such as seeds, P fertilizers and inoculant with limited quantities of these inputs and worked with them to plant and apply some of the inputs appropriately.

Presently, the targeted soybean demonstration plots have been established across the soybean growing regions within the FtF ZOI using locally released varieties; Olima, Sana, Wamini, Wima and Zamboane, although other varieties released in neighboring countries were sparingly used when partners have those varieties available for planting. A total of 228 soybean demonstrations have been established; about 14% higher than the target of 200 demos (Table 4). Female participation in hosting soybean demonstration plots is 39% with a substantial increase observed among those willing to establish input related field. Many of the soybean input demonstrations involved the use of inoculant which is the cheapest input and at the same time has the highest return on investment. The cost of inoculant used for soybean production on one hectare land this year was about MZM 600 (\$10.00). Inoculation of soybean could easily be taken up by farmers as it doesn't have any additional operational cost to the production of soybean. In addition, the presence of YARA Fertilizer Company and the blending concentrations especially for P have reduced the cost of fertilizer substantially (about 80%). SEMEAR is partnering with YARA to map out effective demand for fertilizer to enhance access by working out effective delivery plans to reach those farmers.

For common bean, 140 demonstration plots have been established, mostly in Tete province with 63% being hosted by female farmers. More demonstration plots will be established in the second quarter in Manica, Nampula and Zambezia where common bean planting season starts later compared with that for Tete province. A typical demonstration kit for each site includes 1kg of seed of each of the four improved bean varieties and 1kg of basal fertilizer (NPK). The pack is sufficient to cover 10 x 10 m for each variety. The recommended spacing is 50 cm between rows and 10 cm between plants. At each site, the four improved bean varieties promoted are one sugar type (Sugar 131), two red-mottled (CAL 143 and NUA 45) and one black type (A222). For comparison, the host farmer plants a variety from his/her own source using improved management practices. Thus, the minimum area for a common bean demo plot is 500 m². In response to previous requests from farmers, 15 additional demonstration plots will be established to showcase the performance of bean varieties in maize-based cropping systems. At each site, four technology arrangements will be demonstrated; one sole maize plot with spacing of 0.75 between rows and 30 cm between plants, one sole bean variety at 50x 10 cm: NUA 45 and two cropping systems: intercropping between plants and intercropping between rows. Short to medium season drought

tolerant open pollinated maize variety ZM 523 will be planted. So far, 6 fields (2 males and 4 females) for intercropping have been planted.

The demo kits for groundnuts and pigeon pea were distributed in December and planting started with the first rains in early December. Four improved groundnut varieties (CG7, ICGV-SM 99568, Mamane, and JL 24 are been compared with Nametil in all provinces. Four pigeon pea varieties; ICEAP 00557, ICEAP 00040, ICEAP 00020, ICEAP 00554 are being demonstrated across all provinces. Management practices being demonstrated are plant density, where single row planting is being compared with double row planting and intercropping of groundnut and pigeon pea. In total, 155 groundnut and 141 pigeon pea demonstration plots have been planted. About 27% and 28% female farmers are hosting groundnut and pigeon pea demonstration plots, respectively. Planting continues into the second quarter and we will make more efforts to increase female participation.

Cowpea and sesame demonstration plots will be planted towards mid-January and continue until end of February 2018. The number of targeted demonstration plots for cowpea and sesame is 200 each with the bulk to be established in Nampula and Manica provinces. Selection of farmers is on-going, and the exact figures will be provided in the next report.

Table 4 Demonstration plots established in the FtF ZOI during the First Quarter of FY18

Crop*	Male Demos	Females Demos	Total No.	Total Area (ha)
Soybean	140	88	228	12.5
Common bean	52	88	140	7.0
Groundnut	113	42	155	5.4
Pigeon pea	102	39	141	4.1
Cowpea	-	-	-	-
Sesame	-	-	-	-
Total	407	257	664	29

*Cowpea and sesame are late planted crops; hence their demonstration plots have not been planted by the end of the first quarter.

2.2.3. Partnerships for seed production, distribution and demand creation

The project is being implemented based on a strategic approach that focuses on developing partnerships with both the informal and formal sectors for seed production, demand creation and seed distribution activities to allow the project reach more farmers. During the first quarter, the project organized training sessions to strengthen the capacities of farmers in seed production, seed business management and marketing. We worked with partners in establishing about 664 demonstrations plots to create awareness about improved and high-yield varieties and the benefits of using inputs. This will help increase demand for the technologies (e.g., seeds) by community farmers. The project supplied basic seed to partners through seed sales, promotional activities or collaborative contribution towards a common goal. About 30.8 tons of basic seed was supplied to partners by the end of the first quarter to produce certified seed in order to increase the access to certified seeds. New partnerships established recently include those with TechnoServe, iDe, RAMA-NC and SNV.

2.2.4. Training and scaling up adoption

Several trainings sessions were organized for farmers, technicians, seed companies and other project partners during the first quarter. The topics covered were tailored to group specific needs including agronomic practices for seed production, calculation of production cost, good legume management practices in the field, inoculant application, legume crop production systems, variety selection and input use, seed field inspection, seed marketing, seed storage and setting up of demonstration plots. Training sessions on handling and safe use of agro-chemicals, fertilizer and other inputs were conducted. The training sessions were conducted between the months of November and December in several districts of Manica, Nampula, Tete and Zambézia provinces in partnership FAO, SNV youth group, cooperatives and farmer associations. In total, 681 people (38% females) participated in the training sessions (Table 5). The districts covered were Gondola, Macate, Manica and Vanduzi (Manica province), Malema, Nampula, Rapale, and Murrupula (Nampula Province), Angónia, Macanga and Tsangano (Tete Province) and Gurué, Alto Molocué and Mocuba (Zambézia Province). The feedback from common bean farmers was that the agronomic practices of spacing, fertilizer application and weed management open opportunities for great improvement in bean productivity, and they would rather focus on production areas which they can managed well. They highlighted that the major driver of current intercropping practice is labor unavailability for separate fields; a research topic that needs to be addressed in system intensification. The trainings in Furancungo and Gandale had participation of two extension agents (2 males). More stakeholders in other districts within the FTF ZOI will be trained in the next quarter.

Table 5 Training sessions conducted across crops during the First Quarter of FY18

Province	Male	Females	Total No.
Manica	94	59	153
Nampula	51	35	86
Tete	193	108	301
Zambezia	82	59	141
Total	420	261	681

M&E Training for farmers and association leaders

Improving the quality and timeliness of data generated from project activities is essential to measure project performance. Most of the project beneficiaries are, however, widespread which makes routine quality data collection a challenging task. To overcome this challenge, the project equipped farmers' association leaders with skills to be able to collect the right data at the right time. For the first quarter of FY18, 34 association leaders were trained between November and December 2017. The M&E team will continue with this exercise to ensure effective and efficient delivery of quality data. In addition to the lead farmer trainings, 24 field technicians (including 6 females) and extension officers working on the project were trained in the fundamentals of database management and reporting. The training was also used as a refresher for project staff and partners on the required data to be collected. The two categories of trainings are expected to translate to quality and timelines of project reports

2.2.5. Field days, exchange visits and meetings

Field days and exchanges are typically conducted in the second and third quarters since this is the period the fields are at the appropriate growth stages to showcase, discuss, learn and share information about the technologies being promoted. However, for this first quarter, the availability of common bean off-season plots allowed SEMEAR to conduct four field days in Angónia and Tsangano (Table 6). The field days offered host farmers an opportunity to showcase their achievements; field demonstrations and good management practices for sustainable agriculture. Furthermore, the field days offered the farmers an opportunity to visualize the concept which was broadcast through radio programs, encouraging farmers to plant beans under irrigation for better incomes and stabilizing food availability between the dry season and the onset of the rainy season. The host farmers shared information and farming practices with participants and engaged in discussions to learn from each other (Figure 2). In total, 235 people

participated in the field days with 54% being females due to the importance females attach to food legumes.

Table 6 Information on field days conducted on common bean plots during the first Quarter of FY 18

District	No. Male	No. Female	Total No.	Date	Location
Angonia	23	21	44	14 Nov 2017	Madeia
Tsangano	24	32	56	17 Nov 2017	Ntengo Wabalane
Angonia	33	28	61	21 Nov 2017	Domue
Angonia	28	46	74	23 Nov, 2017	Macuacuala
Total	108	127	235		



Figure 2: Demonstration host farmer talking to others (left) and farmers having discussions with a field technician

2.2.6. Gender Issues in SEMEAR Implementation

During the first quarter, the project conducted female targeted training sessions in Mocuba district and female targeted common bean field days in Angónia and Tsangano districts. In Mocuba district, training on soybean introduction, production system and nutritional properties were conducted after prior discussions with partners on suitable time for women participants. Three separate training sessions were conducted at Selemene, Lissava and Namutu in Mocuba district with a total participation of 69 male and female farmers of which 71% were females. The nutrition component of the training attracted more female participants as soybean is a new crop in that agro-ecology. In Angónia and Tsangano, common bean appeals to females since it a food security crop. Fifty-four percent of the 235 participants were females (Table 6). The project made major efforts to reach more female seed producers and farmers' associations in seed supply and provision of technical backstopping. For example, SEMEAR assisted Associação de Namurrequele and Associação de Namarripe, two female associations to procure seed to plant 17 and 15 ha of soybean for certified seed, respectively (Table 2). SEMEAR is also supporting other female seed producers having up to 6 ha of soybean fields with seeds and technical advice. Our target is to have at least 15% of seed distributed to go to female and women association seed producers and this will be estimated after the planting season.

In terms of increasing the number of women hosting demonstration plots, 63% and 39% of common bean and soybean demos, respectively are hosted by women (Table 4). For soybean where almost all the demos have been established we saw an increase from 35% for FY16, 38% for FY17 and 39% for FY18. Although women participation overall was 39%, the contribution of limited quantities of seeds and inputs such as P fertilizer and inoculant for female managed demonstration plots increased the proportion of females hosting inputs demos to 43%. More females farmers and associations have been targeted for cowpea and sesame seed multiplication and demonstration plots. Progress on this will be reported in the next quarter. Women participation in groundnut and pigeon pea activities is low so deliberate efforts were made to involve more women in the seed production through associations and seed bank.

2.2.7. Environmental Monitoring and Mitigation Plan (EMMP) Compliance

During the first quarter, SEMEAR staff and farmers were trained in safe use and handling of pesticides and fertilizer including the use of standard protective clothing and equipment such as gloves, safety glasses and dust mask, using the right concentration and limited frequency of pesticide use. The project emphasized on IPM with limited use of pesticides. All pesticide products procured during the first quarter are registered by EPA and less toxic formulations are intended to be used. The insecticides

procured include Cypermethrin, Imidacloprid, Chlorpyrifos and *Lambda Cyhalomethrin* to control aphids, thrips, pod borers, army worms and other insects in the field. For fungicides, the chemicals procured for use in the second and subsequent quarters include Triazoles, Strobilurin, Difenconazole, and Thiram to control fungi and bacterial diseases. To comply with the EMMP, the project used and promoted the use of the right quantity (40 kg/ha) of P fertilizer among partners. Phosphorous is the major fertilizer the project uses and this quantity is low and less probable to leave high residual P in the soil that could be carried away in run-off.

3. Communications and farmers' outreach

During the first quarter of the third implementation year, SEMEAR produced five (5) scripts for educational radio programs on promoted seeds and related practices. A program on improved groundnut seeds was broadcasted in Tete province.

With regards to printed handouts for farmers, 75 copies of simple fliers on cowpea and groundnut seed characteristics were distributed, 400 copies of the Protocol for Demonstrations were offered, and four (4) copies of the Manual about Seed Business were delivered in Pheone, Mutequelesse, Maconge and Ntanga-tanga (one per community). Updated fliers on seed prices were made available as well. For project stakeholders and the public, eight (8) posters on the project were produced and presented in well-known conferences and USAID workshops, and 200 SEMEAR branded agendas/planners were printed and soon will be distributed.

SEMEAR continued to provide support to CLUSA for the creation of on-demand mobile voice and text messages. In fact, 24 messages about groundnuts and 16 messages about pigeon pea were finalized and made available to the Vodacom 321 platform. Moreover, SEMEAR negotiated with CLUSA to obtain a specific section at the Vodacom 321 platform for promotional purposes, and it will be operative in early 2018. Currently, the Vodacom 321 video platform is sharing with farmers and extension officers the six (6) video tutorials created by SEMEAR during the second implementation year. Also, SEMEAR provided broad support to CLUSA on the creation of a video about improved seed varieties that will be broadcasted soon at the Vodacom 321 video platform.

International audiences had access to SEMEAR information as well through two (2) success stories shared on Agrilinks platform during the "Agrilinks Gender Special Week". Afterwards, USAID featured one of these stories on their Facebook Channel. To identify and share more success stories, six

SEMEAR beneficiaries were interviewed. The outcome of the interviews will be presented during the second quarter.

The communication materials under development during the relevant quarter are the SEMEAR branded long sleeve shirts, the seed production manual, and the new SEMEAR website. It is important to mention that numerous people have been using the website e-mail tool to contact us; however, we noticed that the website layout is not intuitive and people struggle to find relevant information about improved seeds and related agricultural practices. So, currently a new website layout is being developed based on user interface (UI) and user experience (UX) research & design methodologies. Some approaches applied were user observations, think aloud protocol, semi-structured interviews, affinity walls, and heuristic evaluations.

3.1. Meetings, fairs and workshops

During the period under review, the project participated in 2 Provincial Coordination and Portfolio Reviews meetings organized by USAID under the leadership of MMEMS in Nampula and Zambézia provinces. These coordination meetings were aimed at promoting discussions within USAID portfolio of projects to map synergetic activities to strengthened coordination and increased impacts of the interventions. In the Nampula and Zambézia meetings, SEMEAR presentation were ranked high on the basis of level of impact it already had and the increased expectations of USAID towards project implementation.

4. Developing Soil Fertility Maps

SEMEAR soil mapping activity is aimed at documenting the legume potential and capability of the FTF ZOI of Mozambique. The maps and report will provide information to better allocate land use and environmental management by farmers and develop strategies to improve the current regional status of soil quality per province (Table 7) as well as district. For instance, the properties of soils from Manica Province show that the SEMEAR team is targeting the legumes in areas that fall within the acceptable pH. Therefore, there is the need to develop technologies that will address the nutrient requirement such as phosphorus application recommendations for each of the six legumes. In addition, during this quarter, SEMEAR team collected additional 150 soil samples from the new joining farmer's field. Several specific soil properties thematic maps (Figure 2) have been developed from the data, and

currently the GIS unit of IIAM in Maputo is working on soil types maps that will provide information for nutrient suitability content tables and crop specific nutrient application recommendation on province and/or district level within the FTF ZOI of Mozambique. The data and information generated will be built into the national policy development and outline suitable technologies for seed production of SEMEAR target crops.

Table 7 Properties of soils sampled from legume growing regions in Manica province.

Texture proportion (%)	pH	EC (uS/cm)	P (Olsen ppm)	K (ppm)	CEC (meq/100g)	OC %	% Total N
Clay (30)	5.7-7.2	44.9	14.5	218.4	10.6	3.8	0.2
Clay loam (2)	4.8-6.0	41	7.4	189	14	4	0.14
loamy sand (2)	6.3-6.9	26.3	8.8	90.6	5.2	2.8	0.12
Sandy (1)	6.0-6.4	23.5	3.5	42.9	3.5	2.9	0.11
Sandy clay (20)	4.7-6.9	62.1	7.9	143.7	8.3	2.9	0.13
Sandy clay loam (34)	4.9-7.4	84	11.1	162.5	9.8	2.9	0.14
Sandy loam (12)	5.7-7.0	31.8	14.5	128	7	2.4	0.11

EC= Electrical Conductivity; P=Phosphorus; K=Potassium; CEC=Cation Exchange Capacity; OC=Organic Carbon; Total N= Total Nitrogen

Most of the soils analyzed for this activity are brown to reddish brown with a medium texture. Inferring to the laboratory chemical properties, most of the soils fall within three types namely Acrisols, Ferrosols and Lixisols. Acrisols are generally acidic with low base saturation status, often associated with P-sorption as a result of Aluminum toxicity and highly leached soils. Since these soils are inherently infertile, they become degraded chemically and organically very quickly when utilized. However, the soils have very low resilience to degradation and moderate sensitivity to observable crop yield decline. The deficiency in nutrients due to the acidic nature, require substantial applications of fertilizers for improved crop yields. Similarly, Ferralsols are generally classic red soils of the tropics with high iron content. The soils have low plant nutrients content, strong acidity, low levels of available phosphorus and are prone to loss of topsoil organic matter. Ferrosols are strongly leached soils dominated by stable elements such as aluminum and iron which intensively retain phosphorous (P-fixation). P retention reduces the availability of the nutrient important for legume seed production. As a result, application of P-fertilizer to these soils is needed to increase crop yields. The third soil type that dominates our project areas are Lixisols. These are slightly acid soils that show distinct increase in nutrient binding clay content. Lixisols seldom retain organic matter and lack a well-developed soil structure making them prone to erosion of topsoil which is the most fertile part. However, the chemical properties of Lixisols are generally better than that of Ferralsols and Acrisols due to their elevated base saturation and low Al-toxicity that impact on soil pH. Root penetration is good with Lixisols. Therefore, pigeon pea production is well suited for these soils as observed in the areas around Mutuali and Malema.

The project is encountering delays in the GIS Lab but we expect to have the maps drawn by the end of the four quarter of FY18.

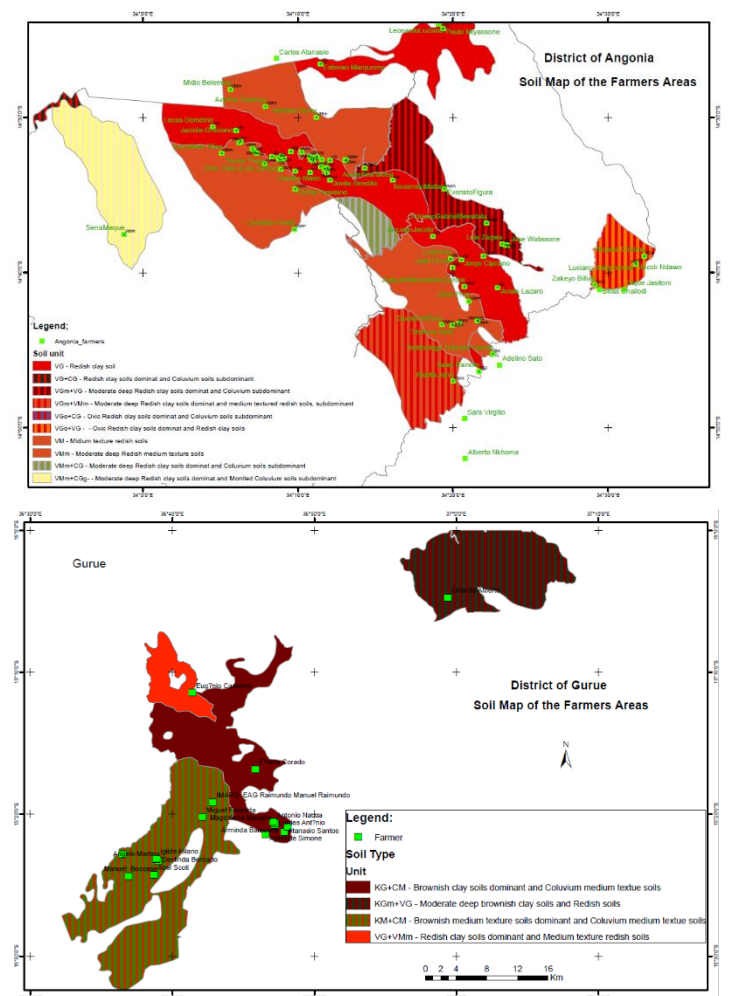


Figure 2. Example of soil textural maps within the SEMEAR FtF ZOI of Mozambique

5. Component 3: Enhance national policy dialogue on seed and fertilizer supply

During the first quarter of FY18, SEMEAR was involved in seed policy discussions to address seed issues:

1. October, 7 2017 – revitalization of USEBA in Maputo
2. October 14, 2017 – Seed value chain meeting in Manica

Under these meetings, major policy issues discussed were the fact that some seed companies are not registered; seed companies must embark on advertising of their products to create demand for certified seeds; Regional Seed Laboratories have no resources to meet the increasing seed field inspection and certification; hence the need for accreditation of independent inspectors. The discussions that emerged included the issue of seed pricing. It was noted that seed being distributed do not follow standardized pricing system and that include seeds produced by IIAM/USEBA.

SEMEAR will consider some of the issues that emerged from the meetings in planning activities.

6. Outcomes and impacts

One of the primary outputs of the activities of the project in the first quarter of FY18 is the number of individuals who have received USG supported short-term training. During the period about 1,941 individuals (45% females) were trained, about 3% below the target (Table 8). This includes in-house trainings (Table 5) and field trainings. As indicated earlier the training activities were largely intended to build capacities of project staff, partners and beneficiaries to set out for the season. The timing and contents of the trainings are designed to ensure that the beneficiaries can carry through with their activities for effective delivery of expected results. Documentation of project results and outcomes is important to tell the story of the project. As such leaders of farmers' associations and field staff were also trained in database management and reporting. With the improvement in capacities, the project team is would produce reliable and accurate data on activities on timely basis. This will also ensure that project management are able to produce good reports on the performance of the project.

Table 8: Number of individuals trained (in-house and field trainings) in Q1, FY18

Disaggregates	Target	Results	Deviation
<u>Category of beneficiary</u>			
Producer	1,870	1,908	-3
Extension agents	30	33	10
<u>Gender</u>			
Female	876	863	-2
Male	1,024	1,078	-4
Total	1,900	1,941	-3

Compared to the same period in FY16 and FY17, there has been significant improvement in the performance of the project in terms of the number of beneficiaries trained at the beginning of the season (Figure 3). While the number of trainees in the two periods remained below 1,000 individuals, the number of trainees for this quarter is nearly 2,000 individuals. Training the farmers early enough allows them ample time to focus on their farm operations with minimal interference. With enhanced capacities at the onset of the season the beneficiaries will be better equipped to apply the technologies of the project to improve their productivity.

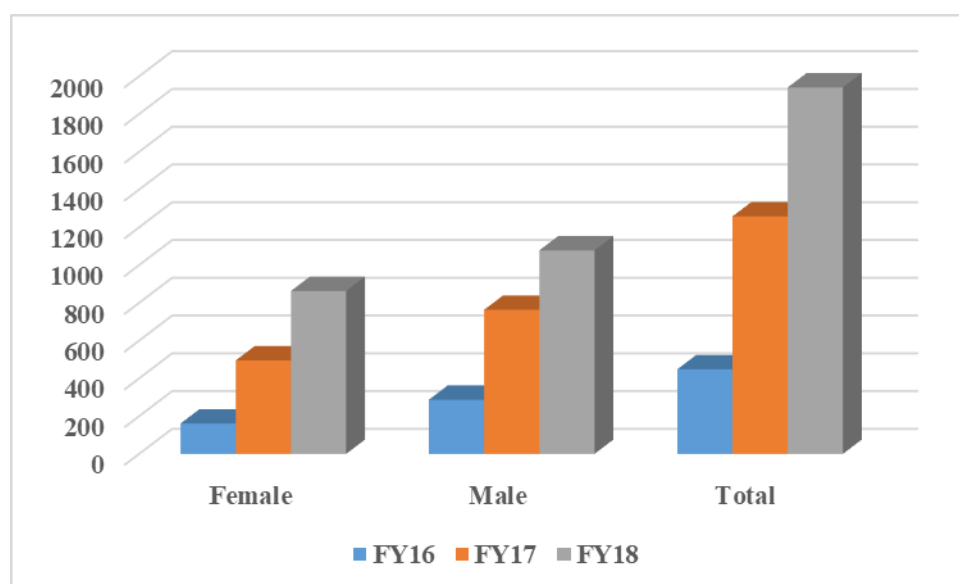


Figure 3: First quarter training beneficiaries, FY16-FY18

In addition to the trainings sessions conducted during the reporting period, the project team also facilitated access to improved seeds of the six commodities. Overall a total of 12,153 households benefited from the project activities (Table 9), which indicates over 60,765 individual beneficiaries in

the first quarter of FY18. Majority of these households were participants who continued from the previous seasons, unlike FY17 where all the households engaged in the first quarter were new (Figure 4). This indicates that the households that the project worked with are motivated to strengthen their relationship with the project to gain more knowledge and linkages. Certainly, the project has gradually become an important channel for legume producing farm households in the FTF ZOI to access proven production technologies and related information for increased production and sales. The number of new beneficiary households is also higher than the same period in the previous seasons. This shows the significant effort is being made by the project team to meet its target. The new beneficiary households are also to benefit from seeds and training offered by the project which will reflect in their farm performance and wellbeing.

Table 9: Number of beneficiary households

Disaggregates	Target	Results	Deviation
<u>Time of participation</u>			
New	4,559	5,024	10
Continuing	7,000	7,129	2
Total	11,559	12,153	5

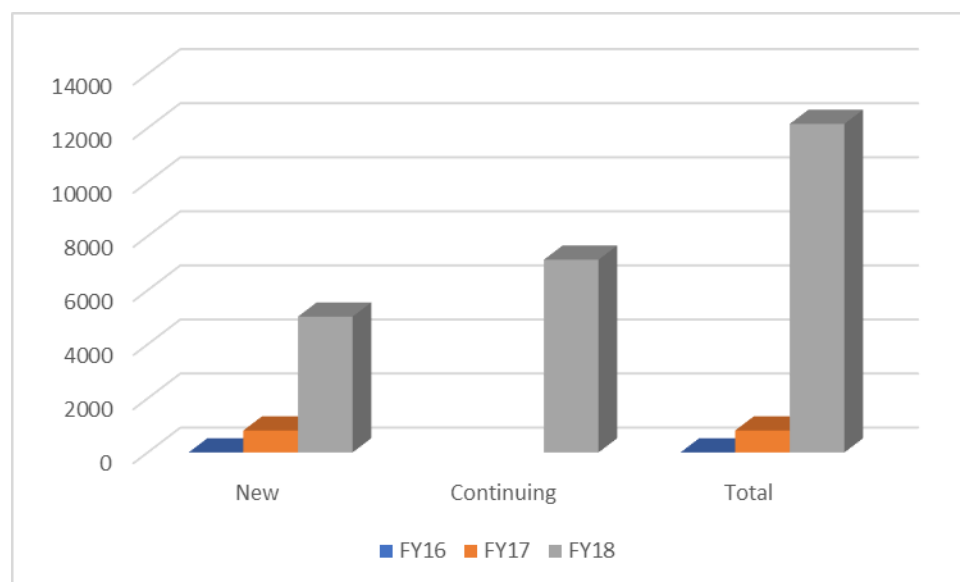


Figure 4: First quarter results of beneficiary households, FY16-FY18

Building sustainable seed systems require strong institutions to drive the activities of the system. SEMEAR therefore continues to build capacities of local/informal organizations and institutions to

improve their organizational efficiencies. In the first quarter of FY18, the project built the capacities of 32 of such organizations (Table 10). As with the beneficiary households, the majority of the organizations engaged in the first quarter of FY18 are continuing from previous seasons. This confirms earlier assertion that the project is becoming a formidable entity in the legume seed system of Mozambique. As such any organization or individual that realised the benefits derived from associating with the project will like to pursue the relationship and collaboration further. There were five new organizations which will also be taken through specific trainings to build their organizational competencies. However, the target number of “for-profit-organization” was short by one but we expect to achieve the biannual target next quarter. These organizations are expected to carry on with activities initiated by the project.

Table 10: Beneficiary organizations for the First Quarter, FY18

	Target	Results	Deviation
New	4	5	25
Continuing	26	27	4
Category of beneficiary			
For-profit organization	5	4	-20
Producer	25	28	12
Total	30	32	7

During the first quarter of FY18 the number of farmers who have applied technologies and the area under those technologies were important measurable outcomes of the project. Overall, 12,149 farmers (including about 33% females) applied the technologies promoted by the project on 25,206 ha of land (Table 11). This suggests that on average, the farmers cultivated about 2 ha of any of the promoted crops. In terms of the type of technologies, nearly the same proportion of land area is under improved crop varieties and management practices. This seems to be the trend in the previous seasons, although there has been significant improvement in the quarterly performances (Figure 5).

Table 11: Information on farmers who applied improved technologies and the area under improved technologies

	Farmers			Area (ha)		
	Target	Results	Deviation	Target	Results	Deviation
Gender						
Male	8,000	8,100	1	21,000.00	21,538.07	2.56
Female	4,000	4,049	1	4,000.00	3,667.66	-8.31
Technology type						
Varieties	5,800	6,072	5	12,000.00	12,598.11	4.98
Cultural practices	6,200	6,077	2	13,000.00	12,607.61	-3.02
Total	12,000	12,149	1	25,000.00	25,206	7

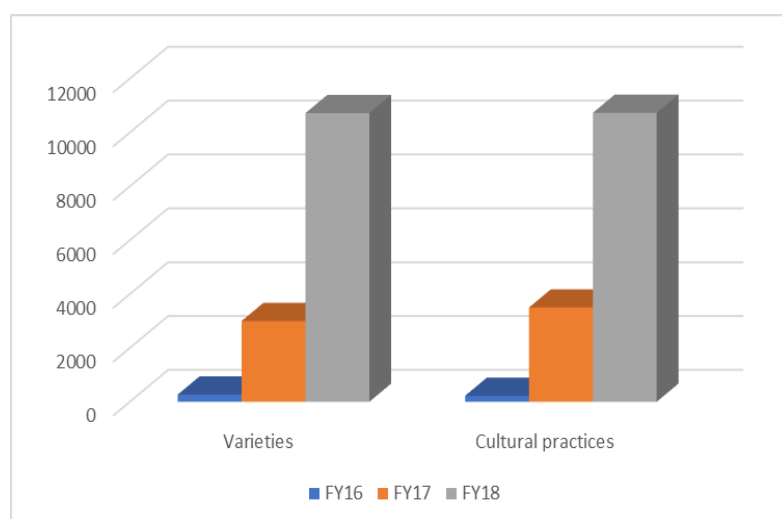


Figure 5: Area under technologies and cultural practices in the first quarters of FY16-FY18

Disaggregating the results by crop shows that soybean and pigeon pea dominate in terms of number of farmers and area cultivated (Figure 6 and 7). Soybean for instance is a high value crop with significant returns to investment so it is more attractive. Pigeon pea is also a cash crop which is cultivated on relatively large area but the recent fall in price would likely reduce the production area in upcoming seasons. Regardless of these likely external factors, the technologies of SEMEAR still have significant effects on the reported number of farmers who apply technologies, and the related area cultivated.

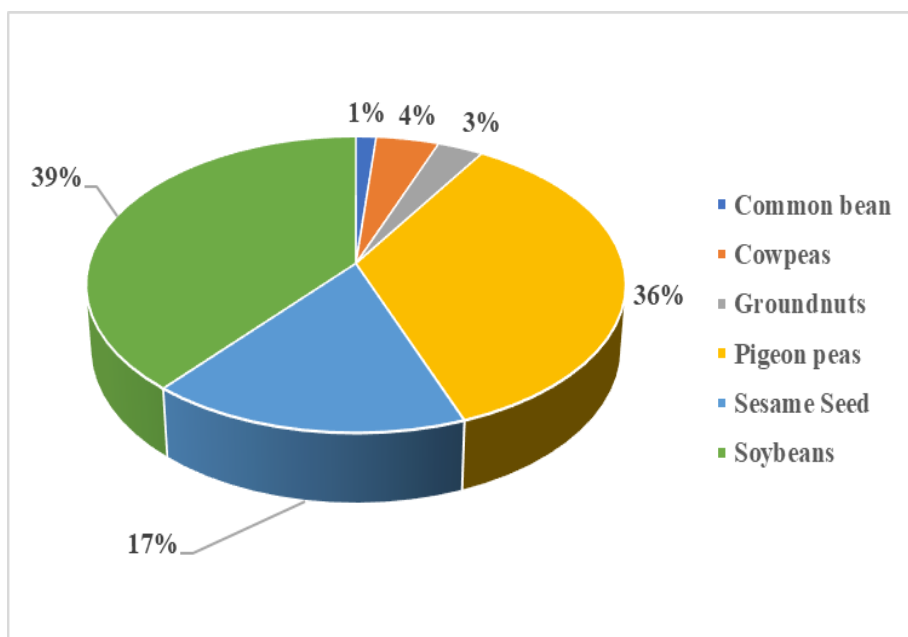


Figure 6: Distribution of number of users by crops

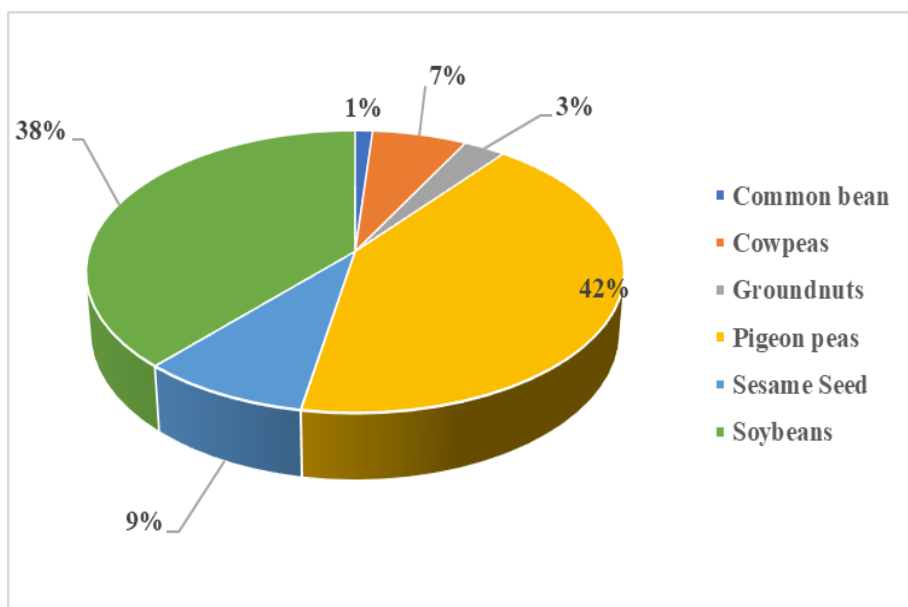


Figure 7: Distribution of area under improved technologies by crop

7. Challenges

Major challenges encountered during the first quarter include:

1. Difficulty accessing land to establish 60 ha common bean basic seed production field at IIAM Research Stations
2. Although there was timely onset of rains, dry spells occurred at some locations which slowed down the establishment of demonstration plots and seed production fields
3. Limited access and availability of machinery (tractors and planters) for farmers with relatively large farm land.
4. Frequent tractor breakdowns delay planned activities

8. Summary and Conclusions

Field activities for the first quarter of FY18 began with land preparation, and planting in large part started on time at the onset of the rains. Dry spells occurred in some locations which slowed down planting activities but this did not have any significant effect on emergence and seedling establishment. Nearly 150 ha of early generation seeds were planted by the end of the first quarter by the consortium partners. The project was supported partners to produce certified seed or QDS with seeds and technical advice. About 30.8 tons of basic seeds were supplied to partners by the end of the first quarter to produce certified seed or QDS. Whilst it is too early to have estimates of the area planted, since planting is on-going, it is estimated that for soybean, at least 684 ha of certified seed have been planted by the end of the first quarter. In collaboration with partners, SEMEAR embarked on awareness creation and promotional activities which included the establishment of 664 variety and inputs demonstration plots hosted by both male and females (39%) farmers. Several efforts were made to increase female participation in project activities including targeted training and demonstration. Field days were organized to share information on off-season common bean production and were attended by 235 people of which 54% were females. Training on all aspects of seed business including variety selection, field management, disease and pest control, storage and marketing were conducted during the quarter. In addition, M&E survey data collection was undertaken during the first quarter to obtain information on some of the FtF indicators. In conclusion, project activities are progressing on schedule and we expect to achieve the targets for FY18 if the rain continues without major drought spells.

9. Activities for the next quarter

1. Continue activities on early generation seed production
2. Establish more demonstration plots
3. Engage and support more partners for seed production
4. Link seed producer to the Seed Inspection Units for inspection and certification of seeds
5. Organize field days
6. Organize joint field visits with USAID Team
7. Conduct farmer and extension training sessions
8. Data collection and entry into database
9. Monitor field activities

APPENDIX



Copy of SEMEAR ME
Results FY18 Q1.xlsx