PMI | Africa IRS (AIRS) Project

Indoor Residual Spraying (IRS 2) Task Order Six

2015 MADAGASCAR END OF SPRAY REPORT

SOUTH EAST: AUGUST 3-26, 2015
EAST: AUGUST 31-SEPTEMBER 26, 2015

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2015 MADAGASCAR
END OF SPRAY REPORT

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ACRONYMS

AIRS	Africa Indoor Residual Spraying
BCC	Behavior Change Communication
BHC	Basic Health Center
CDC	Center for Disease Control and Prevention
CFV	Control Flow Valve
DCV	Data Collection Verification
DEC	Data Entry Clerk
ECO	Environmental Compliance Officer
HLC	Human Landing Catch
IEC	Information, Education, and Communication
IRS	Indoor Residual Spraying
LLIN	Long-Lasting Insecticide-treated Net
M&E	Monitoring and Evaluation
MEP	Monitoring and Evaluation Plan
MSP	Mobile Soak Pit
NMCP	National Malaria Control Program
PMI	President's Malaria Initiative
PPE	Personal Protective Equipment
PSC	Pyrethrum Spray Catch
PSDQA	Post Spray Data Quality Audit
SEA	Supplemental Environmental Assessment
SM	Sector Manager
SOP	Spray Operator
TO6	Task Order 6
TOT	Training of Trainers
TL	Team Leader
USAID	United States Agency for International Development
USG	United States Government
WHO	World Health Organization

EXECUTIVE SUMMARY

PMI was launched in June 2005 as a five-year, $1.2 billion initiative to rapidly scale up malaria prevention and treatment interventions and reduce malaria-related mortality by 50 percent in 15 high-burden countries in sub-Saharan Africa. PMI has now been extended with the passage of the 2008 Lantos-Hyde Act, with the 2015-2020 objectives to reduce malaria mortality by one-third from 2015 levels in PMI-supported countries and to reduce malaria morbidity in PMI-supported countries by 40 percent from 2015 levels. Madagascar has been identified as one of the African countries to benefit from PMI support. The Africa Indoor Residual Spraying (AIRS) Project is a three year project funded through the United States Agency for International Development's (USAID) President's Malaria Initiative (PMI). AIRS carries out the implementation of indoor residual spraying (IRS) in Madagascar. The objective of the project is to limit exposure to malaria vectors and reduce the incidence and prevalence of malaria. To achieve this objective, AIRS Madagascar conducted IRS in two regions with long lasting organophosphates (Actellic CS 300), the East Coast and the South East. The first campaign began in the South East, where one district was sprayed from August 3 –26, targeting 81,941 structures. Spraying in the East Coast was conducted in three districts from August 31 - September 26, targeting 186,888 structures.

The following are project achievements and key highlights of the spray campaigns in 2015:

- A total of 172,120 structures were sprayed in the East Coast (45,414 in Brickaville, 74,000 in Fenerive Est and 52,706 in Tamatave II) and 75,782 structures were sprayed in the South East (Farafangana district). The spray coverage was 91.9% in the East Coast and 92.5% in the South East. A total of 253,410 structures were mobilized and 435,532 information, education, and communication (IEC) materials were distributed.
- AIRS Madagascar trained 3,302 people (2,229 people in the East Coast and 1,073 in the South East), 1,337 (40.5%) of whom were women, to implement the 2015 IRS campaign.
- AIRS Madagascar used 45,397 bottles of Acetellic CS 300 with a utilization ratio of 5 structures per bottle in the East Coast and 6.6 structures per bottle in the South East. During the first week of the IRS campaigns in the East Coast and the South East, AIRS Madagascar conducted cone bioassay tests to assess the quality of spraying. The results indicated a mortality of 100% for all of the structures sampled.
- AIRS Madagascar utilized mobile soak pits (MSPs) in remote areas to reduce the travel time of spray operators and safely dispose of IRS liquid waste from the field.
- AIRS Madagascar implemented two mobile technologies, a performance management tracking tool to monitor daily operational results, and a tablet-based M&E system was piloted in three communes in Tamatave II district.
- Communalization was successfully implemented as part of the AIRS Madagascar's IRS operations approach.
- Both of the campaigns, in the South East and the East Coast, experienced challenges with spray coverage, although for different reasons. IEC messaging was strenghened during the campaign to increase coverage and the campaign was extended by three additional days in the South East and one additional day in the East Coast.

Table 1 below shows the main results obtained during the IRS 2015 campaign.

TABLE 1: SUMMARY OF 2015 IRS CAMPAIGN RESULTS

Result	South East	East Coast	Total
Number of districts covered by PMI-supported IRS	1	3	4
Insecticide class	Organophosphates	Organophosphates	Organophosphates
Number of structures treated with PMI-supported IRS	75,782	172,120	247,902
Number of structures targeted by IRS, with the support of PMI	81,941	186,888	268,829
Spray coverage	92.5%	91.9%	92.2%
Population protected by the PMI-supported IRS	361,980	654,861	1,016,841
Pregnant women protected by the PMI-supported IRS	14,832	21,409	36,241
Children under five protected by the PMI-supported IRS	65,737	81,945	147,682
Number of people receiving training funded by the US Government (USG) to conduct IRS	1,073	2,229	3,302

1. INTRODUCTION

1.1 BACKGROUND OF IRS IN MADAGASCAR

PMI has been supporting the implementation of IRS in Madagascar since 2008, in line with the National Malaria Control Strategy (2008-2012 and 2013-2017). IRS was initially implemented in 55 districts within the Central Highlands (CHL). Until 2011, all IRS in Madagascar was categorized as blanket spraying, providing IRS to as close to 100% of the eligible structures in targeted districts as possible. This IRS strategy has been successful through collaboration between PMI and the Global Fund, with both donors providing strong support towards IRS spray programs throughout Madagascar.

After the completion of four rounds of blanket spraying in the CHL, IRS shifted to focal spraying in communes that were deemed to have the highest rates of malaria incidence (according to HMIS data). Entomological surveillance continues in the areas in which IRS was discontinued to monitor malaria transmission and vector density. In accordance with the National Strategic Plan, PMI and the National Malaria Control Program (NMCP) agreed to target IRS in three districts in the South East (Brickaville, Fenerive East and Tamatave II) during the 2014 IRS campaign. In 2015, AIRS Madagascar continued to spray in the same three districts and included one district in the South East, Farafangana, based on malaria epidemiology data in the South East.

In 2015, AIRS Madagascar conducted spray operations in the South East from August 3 - 26 and from August 31 - September 26 in the East Coast.

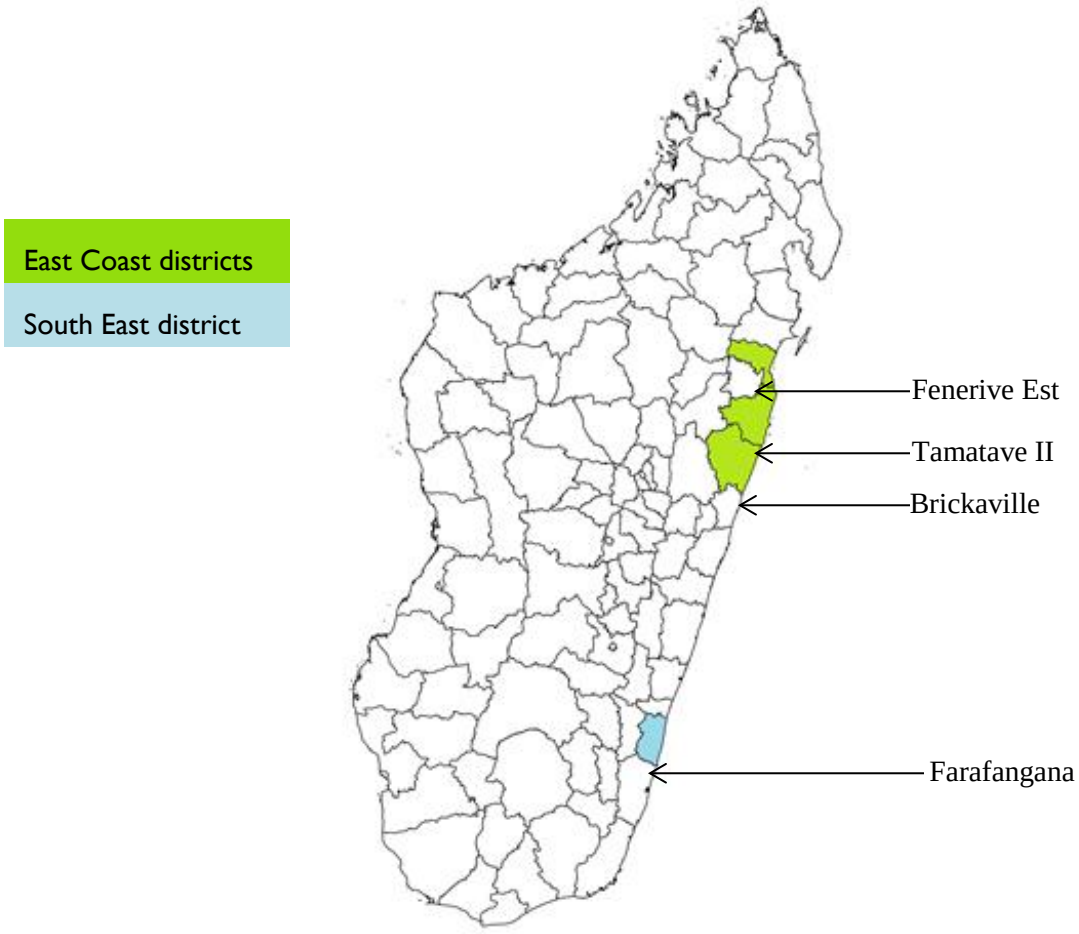
1.2 2015 CAMPAIGN OBJECTIVES

AIRS Madagascar's objectives for the 2015 IRS campaign were as follows:

- Spray at least 85% of eligible structures found by Spray Operators (SOPs) in all communes/districts targeted for spraying.
- Improve the capacity of seasonal spray campaign supervisors and government officials to monitor/supervise IRS campaign activities.
- Ensure that spraying is completed on-time and before the beginning of the peak malaria transmission season.
- Collect entomological data to inform the seasonality and behavior of malaria vectors in Madagascar.
- Collect epidemiological data to assess the impact of IRS on malaria incidence and prevalence.

The following map shows the areas that were sprayed during the 2015 campaign.

FIGURE 1: LOCATION OF SPRAY AREAS COVERED DURING THE 2015 IRS CAMPAIGN



2. PRE-SEASON IRS ACTIVITIES

2.1 IRS CAMPAIGN PLANNING

Listed below are the activities undertaken to plan and organize the 2015 IRS campaign.

2.1.1 DISTRICT AND INSECTICIDE SELECTION

The RBM worked together to select the communes and districts to be sprayed in 2015, in addition, to selecting the insecticide to be used in each district. After reviewing entomological surveillance data from the 2013-2014 IRS campaign, they decided that organophosphates would be the insecticide class used for the 2015 IRS campaign both in the South East and East Coast.

2.1.2 GEOGRAPHICAL RECONNAISSANCE

Geographical reconnaissance was conducted from May 2 - 16, 2015 in Farafangana, since it was a new district, to prepare for the spray campaign. The results provided AIRS with an idea of the zone's accessibility and size, and the nature of structures. This activity helped to establish the final list of intervention communes and to ensure environmental compliance in all activities.

For proper planning of the campaign, AIRS Madagascar conducted a survey of eligible structures to spray in the new spray district in South East. This activity helped to gather information on the types of materials used to construct the structures and the accessibility of each locality. Unfortunately, since the geographical reconnaissance team didn't travel to all areas of the large district, the team didn't realize that the rural structures were significantly smaller than the ones closer to Farafangana town, until implementation began. This affected the utilization rate of insecticides used per structure.

TABLE 2: LIST OF COMMUNES AND DISTRICTS TARGETED

Region	District	Number of Communes	Class of Insecticide
ATSINANANA (EAST COAST)	BRICKAVILLE	9	ORGANOPHOSPHATE
ANALANJIROFO (EAST COAST)	FENERIVE EST	12	ORGANOPHOSPHATE
ATSINANANA (EAST COAST)	TAMATAVE II	12	ORGANOPHOSPHATE
TOTAL EAST COAST		33	
SOUTH EAST (ATSIMO ATSINANANA REGION)	FARAFANGANA	32	ORGANOPHOSPHATE
GRAND TOTAL		**65**	

2.1.3 MICRO-PLANNING

AIRS Madagascar staff held several internal meetings to plan and organize IRS campaigns in the South East and East Coast. A weekly communication to PMI/Madagascar included the spray progress and spray coverage of the campaign. Renewed and increased collaboration with the Government of Madagascar led to a larger involvement of officials from the NMCP and decentralized services of the Ministry of Public Health. Members were heavily involved throughout the planning and implementation process by providing training and conducting supervision of operations. AIRS Madagascar successfully organized a regional advocacy workshop on July 1, 2015 in Tamatave to share the 2014 IRS campaign results and proceed with the 2015 IRS campaign launching in the South East and East Coast. The workshop made it possible to validate the final list of spray locations, including those that had to be removed due to lack of access.

2.2 LOGISTICS NEEDS AND PROCUREMENT

Prior to the spray campaign, AIRS Madagascar conducted a logistical assessment in the East Coast and South East. The logistics assessment helped to review the following;

- Available stock of materials, consumables, and equipment;
- Transportation arrangements, including vehicle hiring for spray operations and supervision;
- Estimation of insecticides, PPE, and spray equipment required to meet the needs of spraying;
- Mobilization and distribution of equipment, materials, and supplies
- Identification of the main warehouse in the new district, Farafangana.

The results from the assessment were used for international and local procurements. Most of the PPE and spray pumps used during the last campaign remained in acceptable and usable condition and were available for use in all four districts. AIRS Madagascar recorded the quantities of damaged or non-reusable PPE, and developed a list of PPE that AIRS needed to procure in 2016.

Overall, AIRS Madagascar made local and international procurements using an open tender process, collecting bids/quotes on commodities to be purchased. The team also established the number and type of vehicles required for each district's IRS operations based on the intervention approach and accessibility of the areas. AIRS Madagascar conducted a competitive bidding process to acquire vehicles and selected two local companies to supply the transportation.

2.2.1 INTERNATIONAL PROCUREMENT

Please refer to the table in the Annex B for more information on PPE items purchased, used, and remaining in stock after the IRS campaign. The AIRS project procured 40,632 bottles of Actellic CS 300 to cover the needs for campaign based on the information that was available during the time period in which orders needed to be placed.

2.2.2 WAREHOUSES

A central warehouse was identified in Farafangana to accommodate all equipment and commodities. Some equipment and commodities from the central warehouse in Antananarivo were transferred to this new facility. The warehouse keeper in Antananarivo was assigned to Tamatave to provide support to the store keepers in training and the spray campaign logistic management team. The warehouse in Antananarivo was used to support general spray operations both for the East Coast and the South East districts. Since it is no longer needed, it will be closed at the end of the year.

2.3 HUMAN RESOURCE REQUIREMENTS

2.3.1 RECRUITMENT OF PERMANENT STAFF

In 2015, AIRS Madagascar recruited another district coordinator as part of its efforts to better organize and supervise the IRS campaign. The new district coordinator was assigned to Fenerive Est and the District Coordinator who managed Fenerive Est in 2014 was re-assigned to support the new district, Farafangana.

2.3.2 HIRING OF SEASONAL STAFF

AIRS Madagascar hired 3,237 seasonal workers (1,074 seasonal workers in the South East, including 636 men and 438 women, and 2,163 seasonal workers in the East Coast, including 1,268 men and 895 women) for the 2015 IRS campaigns..

Table 3 shows the distribution of seasonal workers hired for each position, broken down by gender and spray zone.

TABLE 3A: NUMBER OF SEASONAL WORKERS HIRED, BY GENDER

Position	South East		East Coast		Total
	Male	Female	Male	Female	
Central Logistics Assistant	1	0	0	0	1
Central Financial Assistants	1	1	0	0	2
District Financial Assistants	0	1	0	3	4
Environmental Compliance Assistant	1	0	0	0	1
M&E Assistant	0	1	1	2	4
Data Entry Clerks (DECs)	2	12	8	13	35
Sector Manager	22	6	23	14	65
Warehouse Keepers	9	26	9	27	71
Guardians	37	0	46	2	85
Team Leaders	32	48	67	51	198
Spray Operators	324	77	439	120	960
mSpray assistant	0	0	0	1	1
Moto courier	10	0	16	1	27
Washers	1	35	0	53	89
Mobilizers	112	195	354	556	1,217
Supervisor of IEC Mobilizers	15	23	38	46	122
Porters	31	11	218	0	260
Spray Pump Technicians	38	2	49	6	95
Total	636	438 (40.8%)	1268	895 (41.4%)	3,237
Percentage of women	**40.8%**		**41.4%**		**41.2%**
TOTAL	**1,074**		**2,163**		**3,237**

2.3.3 PAYMENT OF SEASONAL WORKERS

AIRS Madagascar paid all seasonal staff through a mobile banking system. All seasonal workers, whether they owned a mobile phone or not, were able to use a SIM card represented as "Orange cash points". These cards enabled staff to receive cash in the amount credited to their SIM cards, across Madagascar. There are several advantages to using the mobile banking system over cash payments including:

- decreased risk of theft and fraudulent activity
- time savings (staff did not have to travel to distribute the money)
- increased transparency; all payments are recorded and tracked electronically.

Table 3B contains AIRS Madagascar's cost analysis showing the amount of savings achieved through the mobile banking system.

TABLE 3B: COST SAVING ACHIEVED THROUGH THE MOBILE BANKING SYSTEM

	Expenditures for Cash Payment (2012)	Cash Out fees for Mobile Banking (2013)	Cash Out fees for Mobile Banking (2014)	Cash Out fees for Mobile Banking (2015)
Amount (US$)	14,810.55	2,793.44	5,665.63	3,864.76
Cost percentage	5.6%	1.2%	1.2%	1.5%
Cost saving	0	11,524.14	9,144.91	10,945.79

The mobile banking system costs less than 2% of the amount of funds transferred compared to 5.6% for cash payments. AIRS Madagascar estimates a cost savings every year. With mobile banking, the savings were about $11,000 in 2015.

2.4 TRAINING OF SEASONAL STAFF

AIRS Madagascar organized and hosted 21 training sessions (10 in the South East, and 11 in the East Coast, including one for mSpray team leaders) for its seasonal staff. The training sessions were designed to ensure that all seasonal workers were trained in their roles and had a solid understanding of how to implement all campaign activities. The training sessions also included occupational precautions and emergency measures (such as in case of poisoning with insecticide). All training sessions were conducted by AIRS Madagascar's staff in collaboration with representatives from the Ministry of Health at the national, regional, and district levels. The training sessions in the South East took place from July 9 - August 2, 2015. In the East Coast, the training sessions were held from August 4 - 29, 2015. AIRS Madagascar trained a total of 3,302 people (1,073 in the South East and 2,229 in the East). Table 4 below shows the number of people trained, disaggregated by spray zone.

TABLE 4A: NUMBER OF PEOPLE TRAINED, DISAGGREGATED BY SPRAY ZONE

Training	South East		East Coast		Total
	Male	Female	Male	Female	
Training of Spray Operators	356	125	506	171	1,158
Training of Trainers	23	6	23	14	66
Training of DECs and M&E Assistants	2	13	9	15	39
Training of Warehouse Keepers	10	26	9	27	72
Training of Maintenance of spray pumps technicians	38	2	49	6	95
Training of IEC Trainers	15	23	38	46	122
Training of IEC mobilizers	112	195	354	556	1,217
Training of Washers	1	35	0	53	89
Training of transporters	31	11	218	0	260
Training of security officers	37	0	46	2	85
Training of health workers for poisoning case management	4	7	38	46	95
Training of Financial Assistants	0	1	0	3	4
Total M/F	**629**	**444**	**1,290**	**939**	**3,302**
Percentage of women	**41.3%**		**42.1%**		
Total	**1,073**		**2,229**		**3,302**

It should be noted that in addition to the seasonal staff recruited, public health workers participated in the various trainings. This accounts for the difference between the total number of seasonal staff recruited and the total number of people trained.

The trainings covered the following key topics:

- Introduction to malaria control;
- IRS planning and logistics management;
- Spray techniques and processes;
- Environmental compliance and personal safety;
- Advocacy and social mobilization;
- IRS monitoring and evaluation;
- Supervision of IRS activities;
- Gender awareness

The following is a short description of the trainings which took place in 2015:

Training of trainers (July 20 - 25, 2015 in the South East; August 17 - 22, 2015 in the East Coast): AIRS Madagascar staff trained seasonal workers in managerial positions (including Sector Managers and M&E Assistants) and trainers from the health system on the following topics: the importance of IRS campaigns in malaria control; spraying techniques; importance of environmental compliance during IRS campaigns; filling in data collection forms; collection of data through mHealth

SMS; supervision of spray teams; IEC message communication; and preparation of homes for spray. The NMCP led the 2015 training of trainers (TOT) and made an important contribution to the TOT.

Training of SOPs (July 27 - August 1, 2015 in the South East; August 24 - 29, 2015 in the East Coast): SOPs were trained on the following topics: the importance of the IRS campaign in malaria control; methods for proper mixing of insecticide; best practices in indoor spraying of eligible structures; correct use of PPE; cleaning spray pumps and waste disposal; filling operator's forms; and communication of IEC messages. In addition, all SOPs received practical training on how to set up and use a soak pit and clean it after use. Focus was put on the use of control flow valves (CFVs) and the importance of moving belongings from the rooms of structures before spraying.

Training of M&E Assistants/DEC (July 14 - 18, 2015 in South East and August 10 - 13 in the East Coast): The M&E Assistants and data entry clerks (DECs) worked with the IRS campaign data entry forms, and the system used by AIRS Madagascar to enter spray campaign data in the database. M&E Assistants were also told how to use M&E supervision forms (data collection verification tools, data entry verification tools and error elimination tools).

Training of warehouse keepers (July 23 - 24, 2015 in the South East; August 14 and 15, 2015 in the East Coast): Warehouse keepers were trained on the management of inventories; the importance of filling and maintaining stock cards; and the proper procedures for the storage of PPE and insecticides. The two central warehouse managers were involved in the training in order to share their best stock management practices with the seasonal store keepers.

Training in maintenance of spray pumps (July 30 and August 1, 2015 in the East Coast; August 28 and 29, 2015 in the East Coast): All spray pump maintenance technicians learned to identify the various parts of spray pumps and to ensure the maintenance and repair of pumps. They were also familiarized with the CFVs and ceramic nozzles.

Training of washers (August 1, 2015 in the South East; August 29, 2015 in the East Coast): Washers were trained on the proper techniques to wash PPE.

Training of public health workers in management of poisoning with insecticide (July 25 in the South East; August 28, 2015 in the East Coast): AIRS Madagascar's staff was able to provide training on poison management to physicians at public health centers in intervention districts.

Training of Drivers (August 2, 2015 in the South East; August 29, 2015 in the East Coast): Drivers were advised on their duties and role in helping spray teams perform their work. Drivers learned how to transport mobile soak pits. They were also trained on the management of insecticide spills.

Training of IEC Trainers (July 9 and 10, 2015 in the South East; August 4 and 5, 2015 in the East Coast): IEC supervisors were trained on appropriate messages to be communicated; best practices in conducting door-to-door mobilization; filling data collection forms on the mobilization; and identification of structures eligible for the spray campaign. They also reviewed the methods used to supervise IEC activities and to ensure that data collection for the identification of eligible structures was performed correctly.

Training of IEC Mobilizers (July 13 - 17, 2015 in the South East; August 10 - 15, 2015 in the East Coast): IEC Mobilizers were trained on how to effectively communicate messages and implement best practices for door-to-door mobilization. They were also trained on how to complete mobilization data collection forms and how to properly mark structures.

3. GENDER

AIRS Madagascar made an effort to increase the number of women hired, especially in supervisory roles and as spray operators. The team met and spoke with local authorities about the key role of women for the project and communities. During the recruitment process, women candidates were prioritized if they met the job requirements. All permanent staff were trained on gender awareness and sexual harassment by the gender focal point before the campaign began. The same training was given during the training of trainers for seasonal staff.

The project conducted a survey on a group of seasonal staff before the start of the campaign and then again at the end. This was done in compliance with Institutional Review Board requirements in order to measure the effects of altering the work place with messages to employees regarding gender equality.

During the campaign, gender awareness and sexual harassment guidelines (see Annex) were posted in each warehouse. In addition, the project sent a daily SMS reminder to each team leader and sector manager on gender awareness and sexual harassment. To date, there have not been complaints regarding sexual harassment reported to the project gender focal point.

FIGURE 2: BRICKAVILLE M&E ASSISTANT WITH SPRAY TEAM (SECTOR MANAGER, TEAM LEADER, SPRAY OPERATOR) TRYING TO CONVINCE A MOTHER TO ACCEPT IRS (ALL ARE WOMEN)

TABLE 4B: COMPARISON OF PROPORTIONS IN SUPERVISORY ROLE BETWEEN IRS CAMPAIGNS IN 2014 AND 2015, BY GENDER (PERCENTAGE OF WOMEN)

Position	IRS Campaign 2014	Proportion	IRS Campaign 2015	Proportion
M&E Assistant	0/8	0.0%	3/4	75.0%
Finance Assistant	8/8	100.0%	4/4	100.0%
Sector Manager	3/46	6.5%	20/65	30.7%
Team Leader	22/111	19.8%	99/198	50.0%
IEC Supervisor	148/301	49.1%	69/122	56.6%
TOTAL	**181/474**	**38.1%**	**195/393**	**49.6%**

TABLE 4C: COMPARISON OF PROPORTIONS IN SPRAY TEAM BETWEEN IRS CAMPAIGNS IN 2014 AND 2015, BY GENDER (PERCENTAGE OF WOMEN)

Position	IRS Campaign 2014	Proportion	IRS Campaign 2015	Proportion
Sector Manager	3/46	6.5%	20/65	32.3%
Team Leader	22/111	19.8%	99/198	50.0%
Spray Operators	25/559	4.4%	197/960	20.5%
TOTAL	**50/716**	**6.9%**	**316/1223**	**25.8%**

The following are lessons learned with regards to gender awareness in 2015:

- Female SOPs have the same performance per day as male SOPs:
    - In the South East, SOP performance was 11 structures sprayed per day for men and 12 for women
    - In the East Coast, SOP performance was 15 structures per day for men and 14 for women
- Local authorities have played in instrumental role in recruiting more women
- Poor fitting PPE (overalls and boots were too large) for many women. This will be corrected in 2016.

4. IEC MOBILIZATION

4.1 MOBILIZATION METHODOLOGY

AIRS Madagascar organized awareness-raising events before and during the IRS campaigns, working with media channels, producing and distributing various IRS promotional materials, and directly contacting beneficiaries through door-to-door mobilization to inform them of the IRS campaign schedule and its benefits for malaria control. It should also be noted that the national malaria control program was responsible for mobilization activities this year but AIRS Madagascar still worked closely with the NMCP to conduct IEC activities. The project adopted the following working methodology to conduct mobilization:

- Reviewed key policy documents (National Malaria Control Strategic Plan, PMI Strategy Papers on IRS messages, etc.).
- Discussed and planned IEC/ Behavior Change Communication (BCC) mobilization activities in collaboration with the Regional Directorates of Health and the health districts.
- Conducted advocacy meetings with the Health and Administrative Authorities in the regions, districts, communes, and fokontany.
- Trained seasonal staff involved in the implementation of IEC/ BCC activities (mobilizers and their supervisors).
- Disseminated IEC materials in the intervention communes and fokontany.
- Conducted door-to-door mobilization.
- Aired radio messages on all radio stations with a wide geographical coverage.
- Organized radio broadcasts with the participation of IEC officials from the public health system to strengthen advocacy at all levels.
- Provided supervisory training and ensured supervision of field mobilization teams.
- Involved the local leader, the chief of fokontany, as a paid IEC mobilizer responsible for community mobilization in his village working closely with CHWs

4.2 ADVOCACY

To ensure the involvement of local leaders in the spray campaign, AIRS Madagascar led several advocacy activities. This helped the project to minimize refusals from beneficiaries. The activities included:

- Organizing an Inter-regional Advocacy Workshop with the participation of all authorities in the project intervention regions and districts (health and administrative authorities) both in the South East and East Coast.

- Organizing advocacy actions in the communes and fokontany before and during IRS campaigns in the following forms: courtesy visits, meetings with local authorities, information sessions at different levels (communes and fokontany) with the involvement of all social actors; and participation in various official meetings in the districts, communes and fokontany, to strengthen advocacy and IRS messages and to share information about the spraying program in localities. As local leaders, chiefs of fokontany were engaged to carry out IEC mobilization in their villages working closely with CHWs. Their positions helped ensure easy community mobilization and increase IRS acceptance.

4.3 DOOR-TO-DOOR MOBILIZATION

Door-to-door mobilization was implemented from July 20 - 21, 2015 in the South East and from August 17 - 29 in the East Coast. Due to the lessons learned from the South East, the IEC strategy was revised for the East Coast and IEC mobilizers worked for only 15 days (12 days before and 3 days during the campaign, according to the spray operations plan) with the chief of the fokontany as an IEC team member. This approach adapted to local setting, called "communalization", is also used by the NMCP. Communalization is the organization and implementation of IRS operations at the sub district (commune) level. Recruitment of SOPs, team leaders, and sector manager, is done locally in their respective communes. Spraying begins simultaneously in all communes as opposed to the district approach. The District approach recruits operations teams at the district level moving from commune to commune during spray operations. This implies the use of several operations vehicles to transport SOPs. For example, in 2015, IRS campaigns in three districts of East Coast used only ten vehicles for operations at the commune level versus 33 vehicles in the same districts in 2014 for operations at district level.

Mobilizers worked under the supervision of the heads of Basic Health Centers (BHCs) supported by the District Coordinators and the Operations Manager. With IEC communalization in the East Coast, AIRS was able to conduct more in depth planning for IEC mobilization to make sure that there were enough mobilizers to reach all of the households. As a result, there was higher acceptance of IEC messages and IRS, because they were delivered by people that were from within the households' communities. For the 2015 IRS campaign, the team worked at the village level.

Mobilizers and their supervisors conducted mobilization activities before spraying and during spraying by accompanying SOPs in the villages on the spray day. Banners were used to reinforce IEC messages. The following four categories of messages were used during mobilization activities:

- Advocacy messages targeting local authorities and leaders
- Messages for communities on the advantage and the effect of IRS
- Messages for families on preparing homes
- Messages for SOPs on approaches they should adopt and precautions they should take during spraying

Next year, AIRS will add IEC messages to reinforce the advantages of accepting IRS to prevent malaria even though they may not like the smell of the insecticide. The team will also standardize mobilization activities with local authorities to reach all households and increase acceptance of IRS. Approved IEC pamphlets will be distributed before the next spray campaign.

During IEC mobilization, 1,196 household owners in South East and 11, 382 household owners in the East Coast did not accept IRS, which totaled 12,578 structures. With NMCP national and regional staff, an IEC mobilization activity was reinforced to address non acceptance of IRS. The table below summarizes the IEC mobilization results for the East Coast and the South East.

TABLE 5: MOBILIZATION RESULTS

District	Found	Mobilized	Not mobilized	Total	Men	Women	Acceptance	Non acceptance	IEC Materials Distributed
Farafangana (South East)	76,757	75,654	1,103	157,744	68,484	89,260	74,822	1,196	71,397
Brickaville (East Coast)	32,040	30,730	1,310	56,586	25,601	30,985	27,744	4,095	29,487
Fenerive Est (East Coast)	66,303	64,360	1,943	120,070	53,702	66,368	62,220	3,193	56,238
Toamasina II (East Coast)	44,668	40,631	4,037	82,234	37,577	44,657	37,153	4,094	39,909
Grand Total	**219,768**	**211,375**	**8,393**	**416,634**	**185,364**	**231,270**	**201,939**	**12,578**	**197,031**

4.4 OTHER IEC ACTIVITIES

Door-to-door mobilization was complimented with other IEC activities in the form of mass communication, including the distribution of three types of materials that were used during the 2015 campaign, flyers, banners and informative posters. Prior to the spray campaign, all materials were reviewed jointly with the NMCP communication service to match the Malagasy government's requirements and strategy. The project distributed 125,634 flyers in the East Coast, 71,397 flyers in South East and 3,200 posters in the South East and 4,400 posters in the East Coast during mobilization. The project also aired radio messages in collaboration with local radio stations, with broad geographic coverage in the project's intervention regions and districts to strengthen IRS messages and disseminate the spraying schedules. AIRS Madagascar developed and aired specific pre-spray and spray period messages. The team aired 54 radio spots in the South East and 108 spots in the East Coast, for a total of 162 radio spots.

5. IRS CAMPAIGN IMPLEMENTATION

5.1 IRS CAMPAIGN SCHEDULE

Once the SOP training sessions were completed, IRS implementation began immediately. The spray campaign in the South East, Farafangana district, was implemented from August 3 - 26, 2015, including 3 additional days. In the East Coast, districts of Tamatave II, Brickaville and Fenerive Est were sprayed from August 31 - September 26, 2015 including one additional day.

FIGURE 3: SOPS AND OFFICIALS AT THE LAUNCHING OF THE 2015 IRS CAMPAIGN

5.2 ORGANIZATION OF THE IRS CAMPAIGN

Communalization was adopted as the implementation approach for the campaign. Seasonal workers were recruited in their communities with the support of local authorities. At the district and commune level, seasonal staff decisions were made jointly between the district coordinator and local authorities. SOPs continued to work in their communes or in neighboring areas. A risk assessment was conducted and provided the team with the ability to assess local circumstances.

AIRS Madagascar grouped spray operators in each commune in two to three operational sites depending on the size of the district. Each operational site had a soak pit and a warehouse large enough to serve several spray teams. Approximately 67 mobile soak pits (MSPs) (29 for the South East and 38 for the East Coast) were built and used in remote areas both zones. Additionally, there were 13 permanent soak pits and warehouses (4 in the South East and 9 in the East Coast) for the 2015 IRS campaign.

Each morning, every District Coordinator organized breakfast for SOPs before they went to work. Breakfast was an opportunity for the team supervisors and sector manager to communicate recommendations and instructions based on information from the daily debriefing the day before.

Vehicles were made available to the spray teams to transport them to spray areas and back to the operational sites in the late afternoon, where spray teams conducted progressive rinsing to properly remove liquid waste (rinsing spray pumps and washing PPE, except for overalls) in soak pits. With communalization, vehicles served as support to operations implementation since the teams worked at

the commune level. However, when needed, they were used to transport SOPs to remote areas. At the end of each day, SOPs handed their completed spray forms to their Team Leaders, who checked and compiled them before submitting them to their Sector Manager. Spray forms were then sent to data entry centers for immediate entry into AIRS Madagascar's database. The number of spray teams and SOPs employed during the 2015 IRS campaign, and the location of soak pits and warehouses, are shown in Tables 7 and 8 below.

TABLE 6: NUMBER OF SPRAY TEAMS PER DISTRICT

Region	District	Number of spray teams	Number of SOPs
South East	Farafangana	80	401
	Total South East	**80**	**401**
East Coast	Brickaville	29	149
	Fenerive Est	46	230
	Tamatave II	43	180
	Total East Coast	**118**	**559**
TOTAL		**198**	**960**

TABLE 7: LOCATION OF SOAK PITS AND WAREHOUSES

Spray area	District	Location	# Warehouses	# Permanent Soak Pits
South East	Farafangana	Ankarana	1	1
		Evato	1	1
		Farafangana	1	2
	Total South East		**3**	**4**
East Coast	Brickaville	Brickaville	1	1
		Ranomafana Est	1	1
	Tamatave II	Fanandrana	1	2
		Antetezambaro	1	1
		Tamatave suburbaine	1	1
	Fenerive Est	Fenerive Centre	1	2
		Ambatoharanana	1	1
	Total East Coast		**7**	**9**
TOTAL			**10**	**13**

6. ENVIRONMENTAL COMPLIANCE

6.1 ENVIRONMENTAL COMPLIANCE

6.1.1 DOCUMENTATION

AIRS Madagascar operated under a supplemental environmental assessment (SEA), approved by USAID in September 2013, which authorizes the use of three classes of pesticides (pyrethroids, organophosphates, and carbamates) in all regions of Madagascar for the 2013-2018 period. AIRS Madagascar submitted a Letter Report, which outlined planned changes in operations from previous campaigns.

6.2 CHALLENGES AND PRECAUTIONS

As this was the first campaign in the South East, the environmental compliance officer (ECO) conducted an environmental reconnaissance trip to the area from March 26 - April 10, 2015 in Farafangana.

The main economic activities of the districts are:

- The cash crop (pepper, coffee, cloves, lychee);
- Beekeeping and sale of honey in some rural communities
- Some communes are beginning a Ravintsara culture. If a tree is identified to have therapeutic properties, it is mined under the leaves of trees to produce organic essential oil.

These activities required strict compliance with BMPs for sensitive areas. Specific measures were taken to avoid all contamination when spraying these areas:

- Minimum distance of 30 meters between the structure to be sprayed and beehive or Ravintsara culture;
- All harvested crops were removed from structures before spraying;
- Close supervision in these areas was conducted during spraying.

Information and guidelines on spraying methods close to protected areas was communicated to District Coordinators and Sector Managers.

The eastern region included two organic farming areas, a palm tree plantation in Fanandrana and a curcuma plantation in all localities in the commune Anivorano Est. These organic farming areas were granted the same consideration as other protected areas. As a result, the project did not spray these areas this year.

Like the East Coast, in Farafangana there are numerous streams and rivers to be crossed to reach the communes to be sprayed. Due to the substantial risk of insecticide spills in the rivers at these crossings, AIRS Madagascar implemented measures as detailed in the PMI BMP to prevent negative impacts on the environment.

- Full and empty insecticides bottles were packed in blue and waterproof plastic barrels;
- Other equipment was covered with waterproof tarpaulins;
- The raft or canoe carrying insecticides and IRS equipment did not carry other people or other

goods at the same time, except the person who piloted them;

- The crossing was done under the supervision of the ECO or another AIRS staff member.

FIGURE 4: RIVER CROSSING BY OPERATIONS TEAM IN FARAFANGANA

FIGURE 5: SOUTH EAST MODERN BEEHIVES

TABLE 8 : LIST OF COMMUNES THAT REQUIRED RIVER NAVIGATION

District	Operation Site	Commune	River	Duration	Observation
Farafangana	Evato	Beretra Bevoay	Manapatrana	1h	Calm water
Toamasina II	Toamasina II	Amboditandroho	Pangalane Channel	3h	Calm water
Fenerive East	Ambatoharanana	Vohipeno	Maningory	2h + walk for 1 hour	River with rapids

6.3 PRE-SEASON ENVIRONMENTAL COMPLIANCE ASSESSMENTS

AIRS Madagascar conducted a pre-season environmental assessment from June 6 - August 2, 2015 in Farafangana and from July 8 -August 31, 2015 in the East Coast. The pre-season assessment was conducted using smart phones with PMI standard environmental compliance checklists. The checklist contained questions to ensure that operational sites, with special emphasis on soak pits and warehouses, were properly set up before spraying. They also guided the AIRS Madagascar's staff in checking that all PPE and insecticides were delivered and safely stored in warehouses, and that seasonal staff working in the warehouses or with soak pits had received appropriate training. Smart phones were also used to collect data on the coordinates of each operational site visited in the geographic information system, and

to take photos of soak pits and warehouses to show what repairs were needed, or that they were ready. It was found that numerous sites needed to be repaired to meet the standards required for IRS. Please see Annex C for the full list of repairs performed. In Farafangana center, because of the proximity of the ground water (less than 50 cm below ground), AIRS had to install a soak pit 2 km away from the warehouse.

Before the campaign, all seasonal staff underwent medical checkups and women had to pass a pregnancy test. One woman (SOP) was found pregnant during the campaign and was reassigned to join the IEC mobilizers' team for the remaining period of the IRS campaign.

FIGURE 6: BUILDING A SOAK PIT AND REPAIRING A STORE ROOM

6.4 ENVIRONMENTAL COMPLIANCE ACTIVITIES DURING THE CAMPAIGN

AIRS Madagascar's staff conducted inspections to ensure that spray operations met environmental compliance standards as specified in the BMP. These inspections included monitoring the use of PPE, progressive rinsing of spray pumps, vehicles used to transport spray teams and insecticides, storage conditions of PPE and insecticides, and warehouses displaying warning signs. The staff also monitored whether IRS waste was managed and stored properly; that stock cards at warehouses were accurate, and that the SOPs were using the proper spray techniques. In addition, the staff checked that beneficiaries had received clear information about the IRS campaign and knew how to prepare their structure for spraying. AIRS Madagascar continued to check the condition of fixed and mobile soak pits, specifically for their flow and drainage. Overall, AIRS Madagascar's staff found that spray operations were satisfactory but a few environmental compliance issues were identified. The non-compliance issues observed by the AIRS Madagascar staff during the 2015 IRS campaign and the measures taken to address them are listed in the table below.

TABLE 9: ENVIRONMENTAL COMPLIANCE ISSUES NOTED DURING SUPERVISION

Difficulties	Districts	Measures taken by AIRS
Lack of tarpaulin to cover household goods	Farafangana	All items in the house must be removed or the structure was not sprayed. In addition, AIRS Madagascar immediately purchased extra tarpaulin.
The gloves procured locally in the East were of poor quality and they were tearing easily.	Farafangana	All items in the house must be removed or the structure was not sprayed. In addition, AIRS Madagascar immediately purchased extra tarpaulin.
The gloves procured locally in the East were of poor quality and they were tearing easily.	Brickaville	The team was able to procure higher qualty gloves locally from another vendor. In 2016, the team will procure them internationally.
Some Hudson spray pumps leaked.	All districts	Leaky pumps were collected and either repaired or replaced and a spill kit was used for properly cleaning.
Thermometers were nonfunctional.	Brickaville	We replaced these thermometers.

6.4.1 MOBILE SOAK PITS

AIRS Madagascar built upon previous success and expanded the use of MSPs for this campaign. Thus, it has reduced the number of permanent soak pits (four in Farafangana and nine in East) and has increased the number of MSPs (29 for Farafangana and 38 for the East). The MSP used in 2015 uses a sponge instead of stones in it, making makes it much lighter and easier to carry.

FIGURE 7: MOBILE SOAK PIT

6.5 POST-SEASON ENVIRONMENTAL COMPLIANCE ACTIVITIES

Post-season environmental inspections took place from August 24 - 29 in the South East and from September 28 - October 7 in the East Coast. The main objective of the inspections was to ensure that all soak pits and warehouses had been properly closed out. All the warehouses were emptied of materials and equipment used during spraying. After these items and insecticides had been removed, warehouses were decontaminated with water mixed with bleach and soap. This decontamination was

performed before handing the premises back to the owners. All soak pits were covered with a concrete lid to prevent people from accessing materials and from interfering with insecticide-waste degradation process in the soak pit.

At the end of the campaign, all mobile soak pits were returned to the warehouse. Activated charcoals and screens were removed and considered as waste to be treated. Containers, buckets, and sponges that were not damaged were decontaminated and stored for reuse. Those that were unable to be reused were classified as IRS waste. All these activities were supervised by AIRS Madagascar's Environmental Compliance Officer.

FIGURE 8: SEALING A SOAK PIT

6.5.1 IRS CAMPAIGN WASTE DISPOSAL

From September 28 - October16, 2015 the Environmental Compliance Officer led the decontamination of PPE used during spraying and stored it in the central warehouse in Tamatave and Farafangana.

The following items were decontaminated and will be reused if not damaged:

- White plastic buckets of 25 L used for the manufacture of new models of mobile soak pit
- Sponges
- Plastic sheets

AIRS Madagascar will work with Adonis, who operates an incinerator in Tamatave, and the necessary equipment in Antananarivo to recycle eligible items, such as plastics and metal.

AIRS Madagascar currently owns a stock of worn overalls, boots, gloves and pumps. The gloves and boots contain greater than 1% chlorine. If incinerated, they can create dangerous persistent organic pollutants (POPs). After decontamination (washing them with soap and water), AIRS Madagascar will dispose of such materials by offering them to spray staff.

Currently, AIRS Madagascar is in technical discussion with Adonis for the disposal of 5,936 sachets of pyrethroids, 4,643 sachets of carbamates, 3,020 bottles of organophosphate which are obsolete pesticides, as well as 45,397 empty bottles of insecticide and other solid wastes.

7. MONITORING AND EVALUATION

7.1 M&E OBJECTIVES AND METHODOLOGY

AIRS Madagascar had a number of lessons learned from the 2014 campaign and in accordance with the 2015 work plan, improvements were introduced to the M&E system for the 2015 campaign, with the goal of:

- Ensuring the accuracy of data collected and entered through training and supervision at all levels
- Streamlining and standardizing data processing to minimize errors
- Ensuring data security according to established protocols

M&E activities were led by the M&E Officer and the Database Manager.

7.2 DATA MANAGEMENT AND PROCESSING

7.2.1 DATA COLLECTION

Data collection followed the protocols described in the 2015 work plan. The data collection forms were developed to ensure the collection of all indicators requested by PMI. Before the beginning of each mobilization and spraying operation, those involved in data collection were trained in the data collection process and in filling forms. Data on mobilization were collected by mobilizers who conducted door-to-door visits, and data on the spray by SOPs. Data collection forms went through several checks before being entered into the database.

7.2.2 DATA ENTRY

AIRS Madagascar employed a total of 35 DECs (14 in Farafangana and 21 in the East). We recruited more DECs in Farafangana because it was a new IRS district with very limited time to complete spray operations before the beginning of the campaign in the East on September 26, 2015. Each district had its own data entry center. Each DEC entered the data from the forms into the project's database. At the end of each day, DECs sent a copy of the database in the "cloud" (online SugarSync server) to forward the most recent data. DECs entered first the "total" for reporting purposes and then the "details" line by line in order to ensure accuracy of the data entered. The data entry was completed within a week after the end of the campaign.

7.2.3 STORAGE OF DATA

All data collection forms were stored in filing cabinets. They were filed by district, commune, and fokontany, and finally by date. At the end of the campaign, the forms were transferred and stored at the central warehouse (in Farafangana and Tamatave) in a secure location with limited access.

At the end of each day, all the files in the database were stored electronically in two different ways:

- In the "Back-up" folder available on the computer of DEC
- On the online SugarSync server

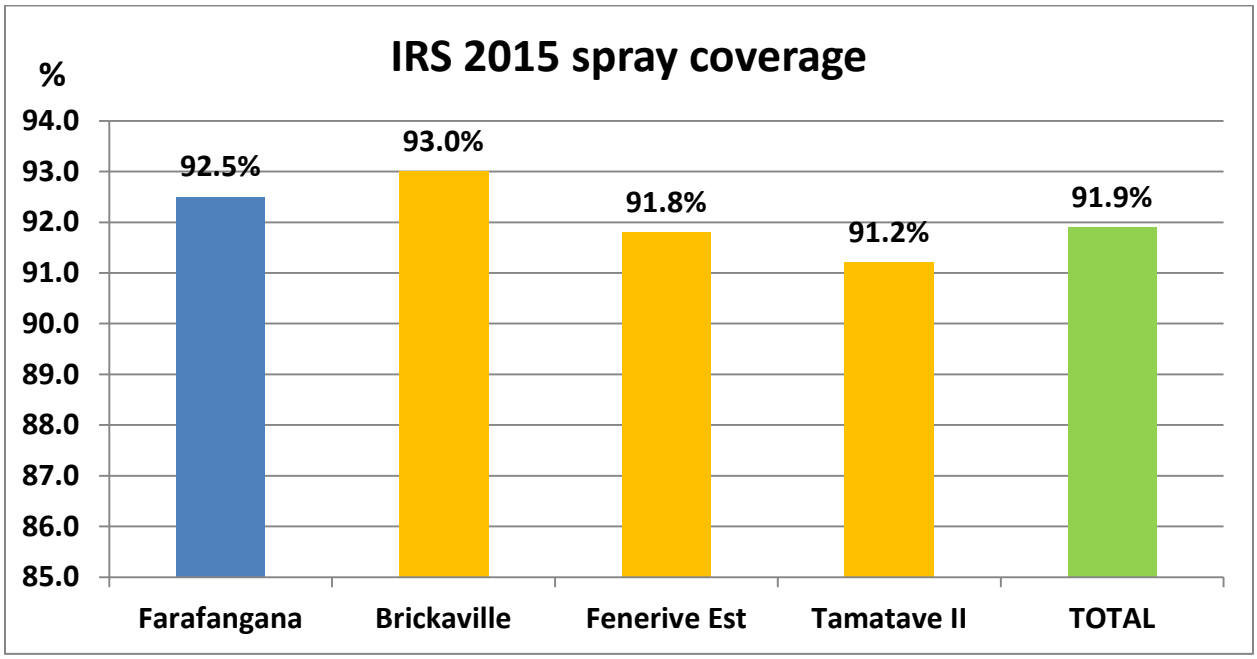
7.3 RESULTS

7.3.1 NUMBER OF ELIGIBLE STRUCTURES FOUND AND SPRAYED-COVERAGE

The number of structures found by spray operators was 268,829 (81,941 in Farafangana and 186,888 in the East), and the number of structures sprayed by spray operators was 247,902 (75,782 in Farafangana and 172,120 in the East Coast). In Farafangana, SOPs sprayed 92.5% of all structures found, and 91.9% of all structures in the East Coast. The total coverage rate achieved was 92.2% as indicated in Table 11. The spray coverage in 2014 was 94.5%, but due to "communalization" in 2015 SOPs found and sprayed more structures (+22,712) than in 2014.

SOPs found more structures than targeted during the work plan (9,821 additional structures in the South East and 28,882 in the East Coast). With "the communalization" operational approach, the SOPs had more time to go into remote locations and visit each structure of the commune in the East Coast. In Farafangana AIRS Madagascar did not complete enumeration in this new spray district and used recent available government data as an estimate for planning purposes. In addition, the structures in remote areas of Farafangana were much smaller, and more prevalent, than expected.

FIGURE 9: IRS 2015 SPRAY COVERAGE



7.3.2 POPULATION PROTECTED

The population of residents living within structures found by spray operators was 1,096,444 people (389,471 in South East and 706,973 in the East Coast). Out of this number, IRS provided protection to 1,016,841 people (361,980 in Farafangana and 654,861 in the East) including 36,241 pregnant women and 147,682 children under 5 years old. The details are presented in Table 10 below.

TABLE 10: SUMMARY OF SPRAY RESULTS

Area	District	Structure found by SOP	Structures Sprayed	Spray coverage	Population protected	# Pregnant Women	# Children <5 years
East	Brickaville	48,483	45,414	93.0%	170,328	6,076	23,548
	Fenerive Est	80,604	74,000	91.8%	292,649	8,991	31,765
	Tamatave II	57,801	52,706	91.2%	191,884	6,342	26,632
Total East		**186,888**	**172,120**	**91.9%**	**654,861**	**21,409**	**81,945**
South East	Farafangana	81,941	75,782	92.5%	361,980	14,832	65,737
Total South East		**268,829**	**247,902**	**92.2%**	**1,016,841**	**36,241**	**147,682**

7.3.3 USE OF INSECTICIDE AND PERFORMANCE OF SPRAY OPERATORS

AIRS Madagascar used 45,397 bottles of organophosphates (10,629 in Farafangana and 34,768 in the East). On average, each SOP sprayed 11.7 structures per day in Farafangana and 15.1 in the East. One bottle of organophosphate sprayed 6.6 structures in Farafagana, while operators in the East sprayed 4.8 structures per bottle. The difference is due to the size of the structure in Farafangana, which is smaller than in the East.

Table 11 shows the average numbers of structures covered by a bottle of insecticide, by district.

TABLE 11: INSECTICIDES USED PER DISTRICT AND SOP PERFORMANCE

Zone	District	Structures sprayed	Insecticide used	Average number of structures sprayed by SOP per day	Average number of structures sprayed per bottle
East Coast	Brickaville	45,414	9,241	14.4	4.8
	Fenerive Est	74,000	14,750	15.8	5.1
	Tamatave II	52,709	10,777	14.5	4.8
Total East Coast		**172,123**	**34,768**	**15.1**	**5**
South East	Farafangana	75,782	10,629	11.7	6.6
Grand Total		**247,905**	**45,397**	**13.4**	**5.8**

7.4 DATA QUALITY ASSURANCE

Data quality assurance activities were implemented both for data collection and data entry verification, using the project supervision tools, and standard database audit control. AIRS found that these tools formalized self-audits of the IRS campaign data for better data quality, and reduced the number of errors encountered in the operators' everyday forms as well as in the M&E database. Table 12 below shows the number of forms used for each data quality assurance tool and the percentage of forms audited.

TABLE 12: NUMBER OF SUPERVISORY TOOLS USED

Supervision tools for M&E	Number of forms used	Percentage checked
Error Eliminator	7,549	97% of the spray forms
Data Collection Verification (6,461 structures)	432	2.4% of structures found

District M&E Assistants, the M&E Manager and the Database Manager used the Data Collection Verification (DCV) tool to interview households to verify spray coverage data. Staff visited and interviewed residents from 6,461 structures (2.38 % of structures found) during the campaign. Common data collection inconsistencies were primarily due to a variance in the population-protected count. Each District M&E Assistant interviewed at least 90 structures per week during the spray campaign. We did not find other inconsistencies because of the simplicity of the three questions (i.e., is the structure sprayed?, number of people, number of rooms). Some SOPs reported the wrong number of population.

Inconsistencies were primarily due to a variance in the population-protected count. Each District M&E Assistant interviewed at least 90 structures per week during the spray campaign.

At the end of every week, the M&E Assistants met with the District Coordinators to discuss the spray progress and the errors found using the data quality assurance tools. Furthermore, the AIRS Madagascar M&E Manager and Database Manager provided feedback regarding errors found on spray operator cards and gave recommendations to the AIRS Madagascar Operations team in order to minimize future data errors on the spray operator cards.

7.5 MSPRAY PILOT DATA COLLECTION

To monitor real-time spray progress, AIRS Madagascar automated the data collection system in three communes in Tamatave II. The system was developed by Akros, and is an electronic version of the SOP form uploaded on a tablet. The system was used as a pilot project in three communes of Tamatave II district (Tamatave Suburbaine, Foulpointe and Antetezambaro). With its first application in the East, the project's technical teams, in coordination with Akros, agreed that the Team Leader would collect and send the daily spray data to the cloud-based database.

Akros sent a consultant to Tamatave to train AIRS Madagascar's M&E staff and team leaders of the three pilot communes on August 27 and 28, 2015. The project recruited a seasonal person who was dedicated to managing mSpray and cleaning collected data.

For the pilot, the TL managed three SOPs instead of five. The TL followed each SOP in his team to each structure and entered spray data in his mSpray tablet. SOPs would write the data on their paper data collection forms and TLs would enter that data into the tablet before the SOP left the structure.

Every day before 6 p.m., although all the logic checks were completed during data entry, every TL verified each paper forms using the error eliminator, and did a cross check of the data collected on the mSpray tablet and spray forms. Once done, he sent all the data to Akros' cloud based ONA server. Collected data are visible immediately on the online database.

FIGURE 11: TEAM LEADER ENTERING SPRAY DATA IN MSPRAY TABLET

There were several lessons learned during the deployment:

- mSpray shortened the data collection process. Spray data collected in the field was available at the end of the day and all of the spray data was entered at the end of the spray campaign;
- mSpray is more efficient if structures are close to each other to allow the TL to better supervise IRS while doing the data entry. If not, then a dedicated person to mSpray may be necessary;
- Some TLs were not able to combine their main role of TL supervising the spray team with mSpray data entry; they were busy entering data and the TL could only follow one SOP at a time.
- The data cleaning, done online, was very time intensive given the internet connectivity;

AIRS Madagascar recommends adding a day on to the two day training for Team Leaders on how to correctly use the system. Furthermore, Akros and AIRS need to build in more time to test the system when implementing this technology.

7.6 EPIDEMIOLOGICAL DATA COLLECTION

AIRS Madagascar collected epidemiological data in six districts (four IRS, two comparison districts). This data was collected at the district level (District Malaria Program Focal point) and the AIRS Madagascar team analyzed the rate of confirmed malaria cases over the total district population in our spray districts, Farafangana, Brickaville, Fenerive Est, and Tamatave II, and in our comparison districts, Soanierana Ivongo, Vavantenina and Vangaindrano. AIRS Madagascar will collect epidemiological data from September 2015 - August 2016 in order to be able to analyze the trends over twelve months from IRS and comparison health facilities. The analysis will be shared with PMI when the results are available.

FIGURE 11: POSITIVITY RATE FROM SEPTEMBER 2014 TO FEBRUARY 2015

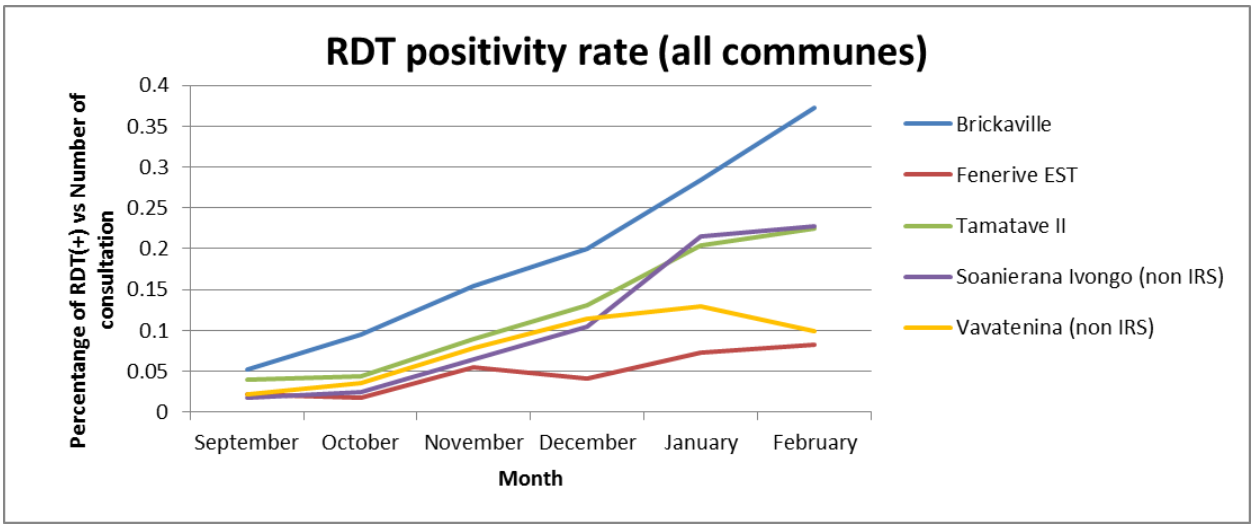
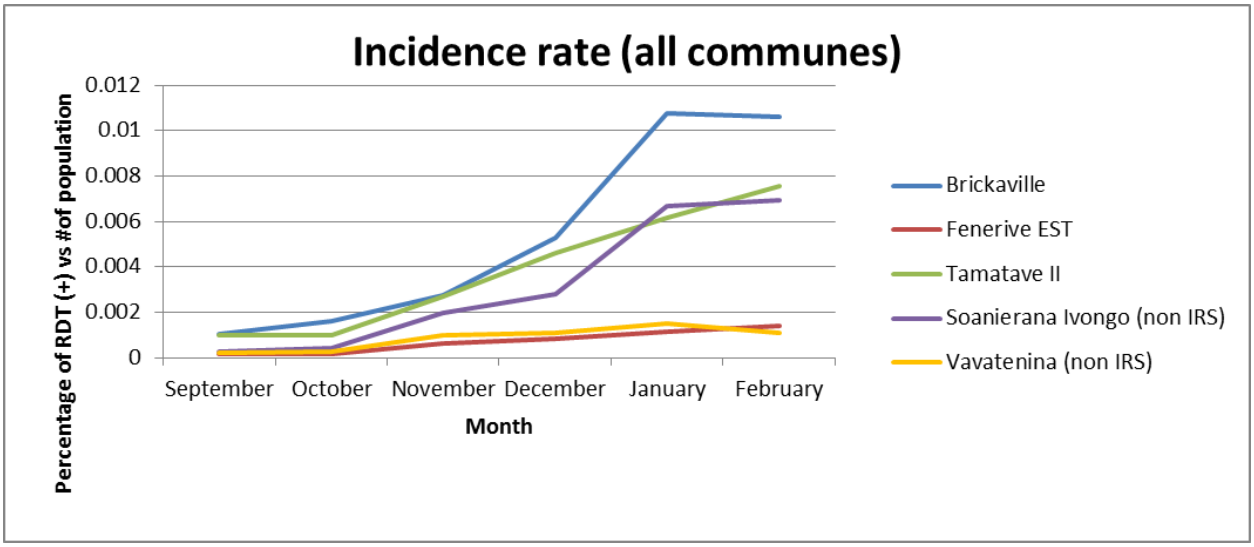


FIGURE 12: INCIDENCE RATE FROM SEPTEMBER 2014 TO FEBRUARY 2015



8. ENTOMOLOGY

Under the supervision of the AIRS Madagascar's Technical Director, the project's four entomological surveillance teams (each consisting of an entomologist and two assistants) performed all entomological surveillance activities. Given that the entomological surveillance is currently on going, and a final entomological report will be submitted in June 2016, this section presents a brief summary of some results of entomological surveillance conducted in 2015.

8.1 ENTOMOLOGICAL SURVEILLANCE SENTINEL SITES

In April 2015, AIRS Madagascar and the vector control committee of the NMCP selected entomological monitoring sentinel sites for 2015. The decision was to maintain one of the sentinel sites located in the south and four others in the Central Highlands, because the region is a former IRS zone. Some sentinel sites monitored during the 2014-2015 IRS campaign were dropped since PMI's IRS support shifted districts in 2015.

Ankafina Tsarafidy (district of Ambohimahasoa), Vavatenina (district of Vavatenina) and Lopary (district of Vangaindrano) were selected as control sentinel sites, respectively, for the Central Highlands, the East Coast and the South East. Ankafina Tsarafidy is located in communes that have not been sprayed, while Vavatenina and Lopary are located in a district not selected for IRS in 2015 in the East Coast and South East.

All sentinel sites where entomological surveillance was performed during the 2015 IRS campaign are listed in Tables 13 and 14.

TABLE 13: ENTOMOLOGICAL SURVEILLANCE SITES

Intervention zone	District	Sentinel sites	Observations
CHL	Ambositra	Imerina Imady	Sentinel site during the 2014-2015 campaign, pyrethroid spray area.
	Fandriana	Milamaina	Sentinel site during the 2014-2015 campaign, carbamate spray area.
	Finanaratsoa II	Vohimarina	Sentinel site during the 2014-2015 campaign, carbamate spray area.
	Ambohimahasoa	Ankafina Tsarafidy	Control sentinel site for CHL.
East Coast	Brickaville	Ambodifaho	Old site 2012-2013, organophosphate spray area.
	Toamasina II	Vohitrambato	Sentinel site during the 2014-2015 campaign, organophosphate spray area.
	Fenerive Est	Mahambo	Sentinel site during the

Intervention zone	District	Sentinel sites	Observations
			2014-2015 campaign, organophosphate spray area.
	Vavatenina	Vavatenina	Sentinel site in non sprayed area used as a control site.
South East	Farafangana	Manambotra Sud	New sentinel site in the organophosphate spray area.
	Vangaindrano	Lopary	New sentinel site in non sprayed area used as a control site. used as a control site.
South	Bekily	Bekily	Old site during the 2013-2014 campaign but not located in the intervention districts in 2014 and 2015.

8.2 ENTOMOLOGICAL SURVEILLANCE BASELINE STUDY

Baseline entomological data was collected one month before the start of the IRS campaign in two spray zones (in July 2015 in the South East Coast and in August 2015 in the East Coast). The East Coast has three sites which were used for baseline data collection: Ambodifaho (Brickaville district), Vohitrambato (Toamasina II district), Mahambo (Fenerive Est district) and one control site, Vavatenina. The South East had two sites used for baseline data collection: Manambotra Sud (Farafangana district), and Lopary (control site in Vangaindrano district). The sampling methods used were Human Land Catch (HLC), Pyrethrum Spray Catch (PSC), and hand collections using an aspirator. In both areas, baseline data indicated that the *Anopheles gambiae* s.l., was the most common vector species.

- *An. gambiae* s.l., *An. funestus* and *An. mascariensis*, the three vectors of malaria in Madagascar, were found in Toamasina II (Vohitrambato), in Vavatenina (control site of the East) and Farafangana. The vector density was highest in Vohitrambato. *An. gambiae* s.l. is the most prevalent in number in the baseline data collection (69.7%), followed by *An. mascariensis* (21.2%), and *An. funestus* (9.1%).
- During this investigation, *An. funestus* was absent in Ambodifaho (Brickaville) and *An. mascariensis* was not found in Lopary (Vangaindrano).
- In Vohitrambato, Vavatenina, Farafangana and Lopary, the vectors showed an exophagic tendency, while they had an endophagic tendency in Ambodifaho and Mahambo.
- Chi-square test:
- The results are significant for a cut off of 0.05.

	Vohitrambato Toamasina II	Vavatenina	Manambotra Sud Farafangana	Lopary Vangaindrano
Two tailed p value	6.88878E-12	0.0022635	0.0007891	8.77E-05
endophagic index	0.2059	0.2258	0.0667	0.1154
exophagic index	0.7941	0.7742	0.9333	0.8846

- The room vector density was low (0 to 0.1 vector per room).
- The baseline data show the parity rate was high in Toamasina II (86%), Brickaville (100%) and Vavatenina (68.7%) but was low in Mahambo/Fenerive Est (1%), Farafangana (25%) and Lopary (13.6%).
- Non-anopheline mosquitoes accounted for more than 60.4% of all the mosquitoes collected in the East Coast and 41.6% in the South East. All vectors have been preserved for further laboratory analysis that included identification of species by PCR and detection of sporozoites by ELISA test

The following table shows the results from HLC baseline data collection:

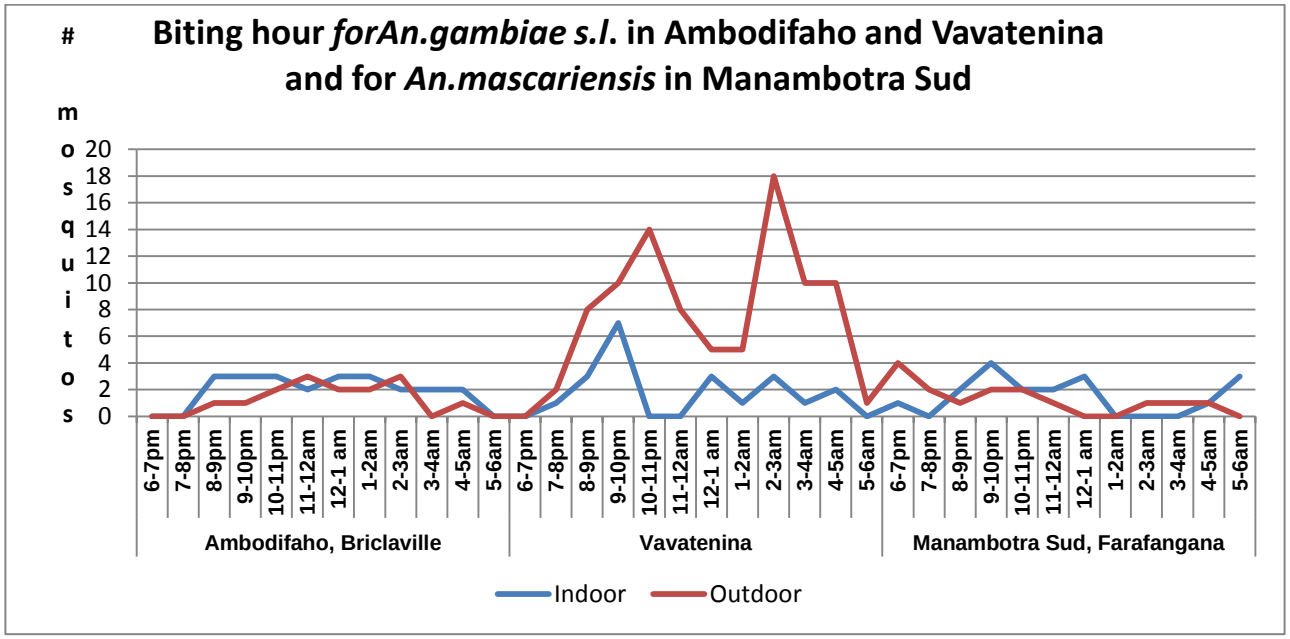
TABLE 14: BASELINE DATA COLLECTION RESULTS PRIOR TO SPRAYING

HLC Collection

Sites	Species	HLC In (# mosquitos captured)	HLC out (# mosquitos captured)	Total (# mosquitos captured)	Endo. rate	Exo. rate	MBR in (# bites per person per night: b/p/n)	MBR out (b/p/n)
Mahambo Fenerive Est	*An. gambiae* s.l.	0	1	1			0.0	0.2
	An. funestus	0	0	0				
	An. mascariensis	18	15	33	55%	45%	3.0	2.5
	Other *Anopheles*	0	0	0				
	Other genus	45	78	123				
Brickaville Ambodifaho	*An. gambiae* s.l.	23	15	38	60.5%	39.5%	3.83	2.5
	An. funestus	0	0	0				
	An. mascariensis	0	0	0				
	Other *Anopheles*	1	1	2				
	Culicidae	157	209	366				
Tamatave II Vohitrambato	*An. gambiae* s.l.	21	91	112	19%	81%	3.5	15.2
	An. funestus	0	3	3			0	0.5
	An. mascariensis	7	14	21	33%	67%	1.2	2.3
	Other *Anopheles*	9	62	71				
	Culicidae	9	39	48				
Vavatenina (control East)	*An.gambiae* s.l.	4	10	14	28.6%	71.4%	0.7	1.7
	An. funestus	1	7	8	12.5%	87.5%	0.2	1.7
	An. mascariensis	2	7	9	22.2%	77.8%	0.3	1.7
	Other *An.*	7	42	49				
	Culicidae	7	31	38				
Farafanga Manambo tra Sud	*An. gambiae* s.l.	0	2	2			0.0	0.3
	An. funestus	1	11	12	8%	92%	0.2	1.8
	An. mascariensis	0	1	1			0.0	0.2

Sites	Species	HLC In (# mosquitos captured)	HLC out (# mosquitos captured)	Total (# mosquitos captured)	Endo. rate	Exo. rate	MBR in (# bites per person per night: b/p/n)	MBR out (b/p/n)
	Other *Anopheles*	6	18	24				
	Culicidae	6	21	27				
Vangaindrano Lopary (control South East)	*An. gambiae* s.l.	3	22	25	12%	88%	0.5	3.7
	An. funestus	0	1	1			0.0	0.2
	An. mascariensis	0	0	0			0.0	0.0
	Other *Anopheles*	1	11	12				
	Culicidae	7	27	34				

The following is the vector biting hour during the baseline data collection:



The following table shows the results from PSC and ODC baseline data collection:

Sites	Species	PSC #	Ind. Rest. rate	ODC #	# Dissec	# Parous	Parity rate
Mahambo Fenerive Est	*An. gambiae* s.l.	0			18	5	28%
	An. funestus						
	An. mascariensis	1	0	2	71	14	20%
	Other *Anopheles*	1					
	Culicidae	5					
Brickaville Ambodifaho	*An. gambiae* s.l.	0	0	0	23	18	78.3
	An. funestus						
	An. mascariensis				4	4	100
	Other *Anopheles*						
	Culicidae						
Tamatave II Vohitrambato	*An. gambiae* s.l.	0	0	0	37	26	70.3
	An. funestus	0	0	0	27	20	74.1
	An. mascariensis	0	0	0	152	99	65.1
	Other *Anopheles*	0		7			
	Culicidae	1		7			
Vavatenina (control East)	*An. gambiae* s.l.	1	0.1	1	15	11	73.33
	An. funestus	0	0	0			
	An. mascariensis	0	0	3			
	Other *An.*	1		7			
	Culicidae	2		3			
Farafangana Maambotra Sud	*An. gambiae* s.l.	0	0	2	4	1	25
	An. funestus	0	0	0	0	0	
	An. mascariensis	0	0	0	0	0	
	Other *Anopheles*	0		0			
	Culicidae	0		1			

Sites	Species	PSC #	Ind. Rest. rate	ODC #	# Dissec	# Parous	Parity rate
Vangaindrano Lopary (control South East)	*An. gambiae*	0	0	4	29	4	13.8
	An. funestus	0	0	0	1	0	0.0
	An. mascariensis	0	0	0	0	0	
	Other *Anopheles*	3		4			
	Culicidae			2			

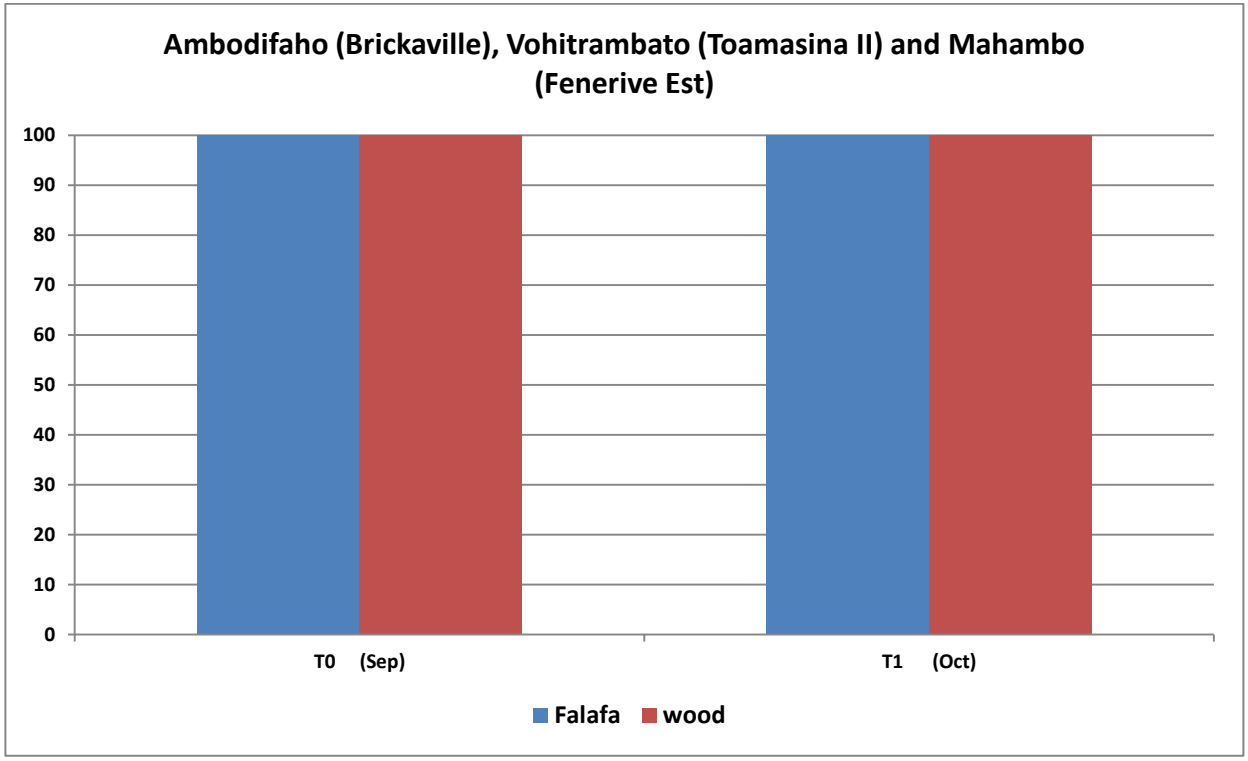
8.3 CONE BIOASSAY TEST RESULTS

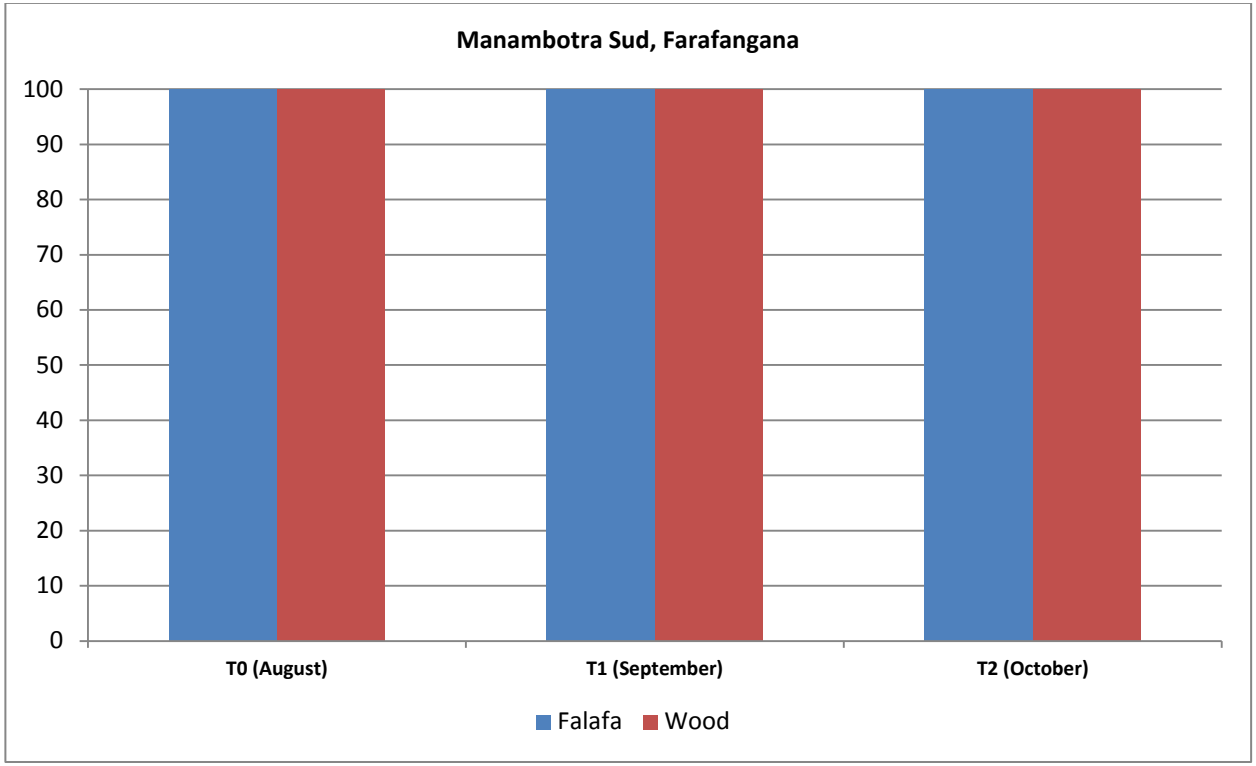
AIRS Madagascar conducted monthly cone bioassay tests using the World Health Organization (WHO) procedure to assess the residual effectiveness of insecticides sprayed during the 2015 IRS campaign. The tests were conducted in the following sentinel sites: Ambodifaho (district of Brickaville), Vohitrambato (district of Toamasina II), and Mahambo (district of Fenerive Est) in the East Coast; and Manambotra Sud (district of Farafangana) in the South East. Since Madagascar does not have a susceptible mosquito colony (Kisumu strain), all cone bioassay tests were performed with local wild adult mosquitoes reared from field-collected larvae and pupae. The mosquitoes were exposed to the sprayed surfaces for 30 minutes and the "knock-down" rate was recorded at 30 minutes and 60 minutes post exposure. The vector mortality was observed after a 24- hour recovery period. The residual life of pirimiphos-methyl CS 300 (an organophosphate) was tested in the sentinel sites of Brickaville, Vohitrambato and Mahambo, in the East and Manambotra Sud in the South East.

At the East Coast sites (Ambodifaho, Brickaville; Vohitrambato, Toamasina II; Mahambo, Fenerive Est) and the South East site (Manambotra Sud, Farafangana), most houses have a wall made up of wood or falafa (branches of traveler's palm, scientific name Ravenala madagascariensis).

During the first week of IRS campaigns in the East Coast and in the South East, AIRS Madagascar conducted cone bioassay tests to assess whether the quality of the spraying was satisfactory. The results indicated that the spray quality, both in the East Coast and in the South East, was good, mortality being 100% for all the structures sampled. In the South East and in the East Coast, two months and one month after spraying respectively (early October 2015), pirimiphos-methyl CS 300 retained a 100% effectiveness. (Fig. 12)

FIGURE 13: RESIDUAL EFFECTIVENESS OBSERVED FOR PIRIMIPHOS-METHYL CS 300 (ORGANOPHOSPHATES) IN THE EAST COAST AND SOUTH EAST




Manambotra Sud, Farafangana
100
90
80
70
60
50
40
30
20
10
0
T0 (August)
T1 (September)
T2 (October)
Falafa
Wood

8.4 INSECTICIDE SUSCEPTIBILITY TESTS

Susceptibility testing is ongoing and the results will be available at end of November 2015.

8.5 OTHER FINDINGS FROM ENTOMOLOGICAL SURVEILLANCE

- *An. gambiae* s.l. human biting rates were low, except in Vohitrambato and Ambodifaho, before spraying. In most spray areas, the vector biting rates inside houses have decreased post spraying in comparison with the baseline. This could be due to either the killing effect or the repellent effect of the insecticide (Table 15).
- The indoor resting density collected using the Pyrethrum Spray Catch (PSC) was very low in all the sentinel sites, both at the baseline and post spray (Table 16).
- *An. gambiae* s.l. appeared to have exophagic tendency both in the East and in the South East. (Table 17).
- Chi-square test:
- The results are significants for a cut off of 0.05. (data from July to October for the South East districts and from August to October for the East.)

	Vohitrambato Toamasina II	**Vavatenina (control)**	**Ambodifaho Brickaville**	**Mahambo Fenerive Est**	**Manambotra Sud Farafangana**	**Lopary Vangaindrano (control)**
Two tailed p value	2.67864E-38	0.000578	4.80699E-08	0.010408	0.000118	0.008085
endophagic index	0.1512	0.2958	0.2931	0.3273	0.2821	0.3869
exophagic index	0.8488	0.7042	0.7069	0.6727	0.7179	0.6131

It is likely that the use of a large number of LLINs contributed to the outdoor bite patterns.

The tables below summarize the data collected on aggressive density (HLC), density per room (PSC), and behavior of *An. gambiae* s.l., during the period of investigation.

TABLE 15: DENSITY OF *AN.GAMBIAE* S.L. OBSERVED DURING INVESTIGATIONS

Sites	Month	Indoor (bites/person/night)	Outdoor (bites/person/night)
Ambodifaho, Brickaville	August*	3.8	2.5
	September	1.3	3.8
	October[1]	3.3	14.2
Vohitrambato, Toamasina II	August*	3.5	15.2
	September	0.7	1.2
	October	2.8	10.7
Mahambo, Fenerive Est	August*	0.0	0.2
	September	0	1.2
	October	0.0	2.3
Vavatenina, control East (control site for east)	August*	0.7	1.7
	September	0.2	0
	October	1.0	2.5
Manambotra Sud, Farafangana	July*	0.0	0.3
	August	0.7	0.3
	September	0.3	2.3
	October	1.8	3.3
Lopary, Vangaindrano, control South East (control site for south East)	July*	0.5	3.7
	August	1.5	2.2
	September	0.0	0.8
	October	1.5	3.0

* baseline month

TABLE 16: DENSITY PER ROOM AFTER PSC PSC UNDER MORNING RESIDUAL FAUNA COLLECTION

Area	Sites	July	August	September	October
East	Ambodifaho		0	0	0
	Mahambo		0	0	0
	Vohitrambato		0	0	0
	Vavatenina		0.1	0	0
South East	Manambotra Sud	0	0	0	00
	Lopary	0		0	0

TABLE 17: ENDOPHAGY RATE (%) OBSERVED DURING THE INVESTIGATIVE PERIOD

Areas	Sites	July	August	September	October
East	Ambodifaho		60.5	25.8	23.4
	Mahambo		0	0	0.0
	Vohitrambato		19	28.6	21.0
	Vavatenina		28.6		28.6
South East	Manambotra Sud	0	67	12.5	35.5
	Lopary	12	49	0	33.3

9. POST SEASON ACTIVITIES

9.1 IRS MATERIALS AND EQUIPMENT

After completion of the IRS campaign, SOPs, washers, team leaders, spray pump technicians, couriers, and district coordinators brought back all PPE, bottles of insecticide (used and unused), and all the other IRS products to their assigned storage rooms. All items were inspected and recorded on the final stock records. Then, District Coordinators, the Logistics Manager and logistics assistants went to all storage rooms with trucks to recover all PPE, insecticides and other materials, and brought them back to the central warehouses in Antananarivo and Toamasina.

9.2 POST-SEASON INVENTORY

Prior to the spray campaign, AIRS Madagascar had 14,028 bottles of organophosphate in stock, of which 13,932 were labelled to expire by July 2015. Approximately 12,509 bottles out of 14,028 passed the test and obtained authorization to be used for the spray campaign; those bottles that did not pass will be incinerated appropriately by Adonis as approved by the Ministry of Environment (MOE). AIRS Madagascar bought 40,632 additional bottles of Actellic CS 300 to cover the spray campaign both in the South East and the East Coast. About 10,629 bottles were used in Farafangana, 10,777 in Tamatave II, 9,241 in Brickaville and 14,750 in Fenerive Est. At the end of the spray campaign, 1,744 bottles are in stock at Tamatave and 6,000 bottles at Farafangana. In 2015, AIRS Madagascar used a total of 45,397 bottles of Actellic 300 CS and 7,744 remain in stock. The remaining stock will be used in 2016. The empty bottles will be destroyed by Adonis, a local firm who has the capability and the authorization from MOE to do so. Other materials and equipment out of use will be incinerated by Adonis.

10. Challenges and Lessons Learned

The AIRS team encountered several challenges which varied according to the location of the campaign:

- Refusals were the principal challenge faced by the program both in the South East and East Coast. Refusal is one of the reasons for non-spraying besides door locked, sickness, family event and other reasons. In 2015, for East Coast 91.5% of the structured found were sprayed and 8.5% were not sprayed and 3.4% of them (40%) were refusals. To improve the spray coverage, IEC messaging was reinforced, increased supervision was targeted in areas with the lowest coverage, and AIRS worked closely with the NMCP to address the causes of refusals.
    - Some reported reasons for refusals were the insecticide smell and people not feeling comfortable moving out their household objects. Other main reason was a lack of understanding of the benefits of IRS.
    - Of all eligible unsprayed structures in 2015 (i.e., 5.4% in 2014 and 8.5% in 2015) refusals were lower in Brickaville (34.9% v. 32.6% of unsprayed structures) and Fenerive Est (28.1% v. 22.4% of unsprayed structures) than in 2014. It was only in Tamatave that of all eligible unsprayed structures refusals increased to 55.5% of unsprayed structures in 2015 compared to 34.7% in 2014. However, AIRS Madagascar still achieved a 92.2% coverage rate in 2015.
- Distance and access to remote areas required spray operators to walk long distances within the commune to find and spray structures.
- Some Control Flow Valves (CFVs) were obstructed because of dried insecticide. It is recommended that they are cleaned daily to avoid this problem.
- Communalization as an operational approach works and helps to improve the spray coverage faster than working from the district but some improvement will be necessary for logistics, secondary stores, seasonal staff recruitment process, management of IRS ID cards, and site training of SOPs for next year. With this approach AIRS Madagascar sprayed more structures in the East in 2015 compared to 2014. In 2015, 172,120 structures were sprayed in East Coast compared to 149,408 in 2014, which are 22,712 additional structures sprayed this year.
- mHealth tools were helpful to monitor spray progress and conduct spray supervision. They allowed the management team to make quick decisions and respond to problems in a timely manner.
- mSpray was a useful tool but the team also encountered several challenges implementing it; namely, it required a lot of special attention and effort to employ it. The TL in charge of mSpray could not efficiently supervise more than one SOP, updating the electronic data form is time consuming, and the data cleaning process needs a very good internet connection.
- Collaboration with NMCP and District Medical staff was very strong this year and their support was helpful to supervise the campaign. AIRS will continue to work closely with the NMCP to improve national capacity building.
- Advocacy meetings with stakeholders to address identified issues and problems during the operations were key to improving coverage rates.

- Involvement of the chief fokontany as IEC mobilizer and having IEC mobilizers and SOPs from the commune were very helpful to increase spray coverage.
- Local authorities and health personnel should always be part of the supervision team of the spray operations.
- The use of mHealth, and especially the organization of the "daily debriefing" with staff and governmental officials was very helpful to adjust the field strategy when needed.
- Mobile soak pits allowed AIRS Madagascar to save considerable cost and time. The mobile soak pit used in 2014 and 2015 helped to further improve the quality of spray operators' work. The MSP used in 2015 is far lighter than the previous one because stones were replaced by sponges.
- AIRS Madagascar staff developed good relations with the NMCP and the local authorities. With the lifting of the restriction on collaboration with the Government of Madagascar, the quality of partnership with the NMCP and other governmental decentralized services was reinforced, through their involvement with the implementation process in the 2015 IRS campaign (i.e., planning, training, overseeing operations, and active participation).

The following are recommendations for next year's campaign:

- Continue with communalization as the IRS implementation approach.
- Increase the use of mobile soak pits in future campaigns, for better compliance with environmental requirements and for cost saving. Build permanent soak pits when necessary.
- Continue the use of mHealth tools since they are helpful for daily spray progress monitoring and supervision. For the upcoming spray campaign, it will be good to have the sector manager as the primary SMS sender in the system. If possible, integrate inventory management into the system to better monitor warehouses. mHealth should also take into account IEC activities.
- Review the French version of mobile supervision tools to ensure similarity with the English version.
- Continue to strengthen efforts to substantially increase the percentage of women among seasonal workers, particularly in the spray teams.
- Revise IEC/BCC mobilization strategies based on lessons learned (two IEC mobilizers per village including the chief of fokontany and possibly use of sector manager as supervisor). The project should work closely with local leaders since they have the capacity to really motivate people and change their views about IRS.

Since some IRS equipment is old and worn out, replacements will be needed for next year's campaign.

ANNEX A:
ITEMS PROCURED INTERNATIONALLY

Item	Stock before the campaign	Quantities purchased	Quantity used	Quantity in stock after the campaign	Notes
Visor bearing	3,307	3,600	1793	6,907	121 still new for Farafangana
Visor	3,454	1,700	1,793	5,154	50 still new Farafangana/1369 still new for Tamatave
Gloves for Spray Operators	13	3223	3236	1,135	Usable Stocks for 2016 campaign
Masks	33,926	0	24,346	9,580	
Activated charcoal	115	225	300	40	
Actellic CS 300 insecticide	12,509	40,632	45397	7,744	
Control Flow Valves kit	0	1,134	960	1,134	
Laptop	0	4	4	4	Servers for Data Centers
Insecticides impregnated papers	44	32	44	32	It's a WHO Test kit containing 8 papers per box/ 32 out of date

ANNEX B: SITE REPAIRS

Area	District	Operational sites	# of permanent soak pit	# of store rooms	Repairs made
East	Fenerive Est	Ambatoharanana	1	1	Fence repaired
		Fenerive Centre	2	1	None
	Toamasina II	Atetezambaro	1	1	Fence and window screen repaired
		Antanandava	1	1(warehouse)	None
		Fanandrana	2	1	Separation between insecticides and other materials
	Brickaville	Brickaville centre	1	1	Fence repaired
		Ranomafana	1	1	Fence repaired
South East	Farafangana	Farafangana	2	1	Fence repaired
		Evato	1	1	Fence repaired
		Ankarana	1	1	

ANNEX C: NUMBER OF PEOPLE TRAINED

TABLE 18: NUMBER OF PEOPLE TRAINED, DISAGGREGATED BY GENDER

South EAST																										
Categories of Persons Trained	Training on IRS Delivery										Other Trainings															
	Training of Trainers: Spray Ops		Spray Operations		Data Entry		Logistics		Technical Maintenance		IEC Mobilization		IEC TOT		Public Health Training		PPEs Washing		Financial training		Enumeration training		Security		Transportation	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Logistics Assistant							1																			
Financial Assistant																				1						
Environmental Compliance Assistant	1																									
M&E Assistant						1																				
Data Entry Clerk					2	12																				
Sector Manager	22	6																								
Store Keeper							9	26																		
Store Room Guard																							37	0		
Team Leader			32	48																						
Spray Operator			324	77																						
Washer																	1	35								

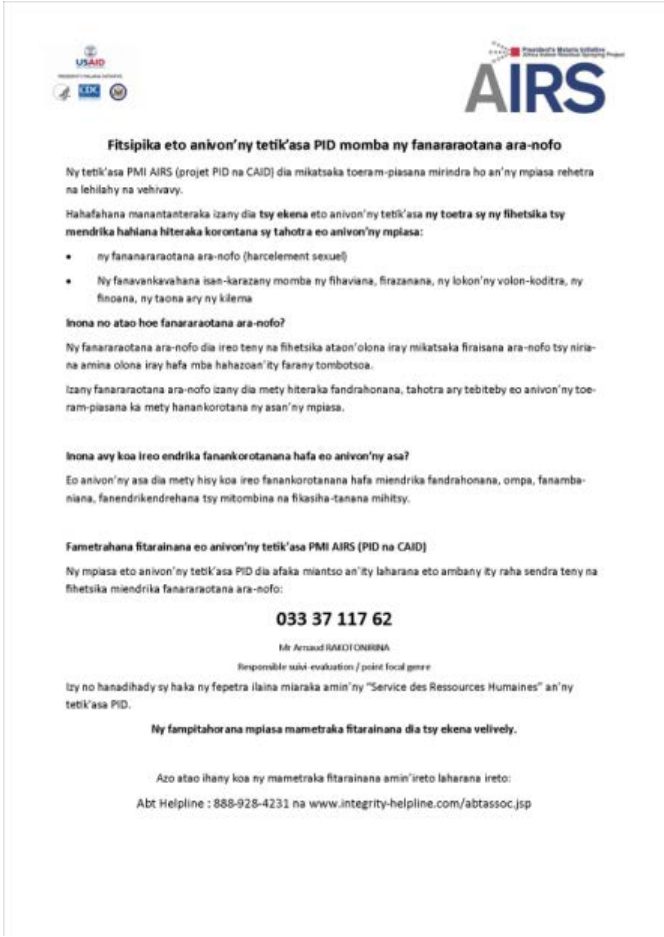
South EAST																												
Categories of Persons Trained	Training on IRS Delivery										Other Trainings																	
	Training of Trainers: Spray Ops		Spray Operations		Data Entry		Logistics		Technical Maintenance		IEC Mobilization		IEC TOT		Public Health Training		PPEs Washing		Financial training		Enumeration training		Security		Transportation	
	M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
IEC Mobilizer											112	195														
IEC Supervisor													15	23												
Carrier/Porter																									31	11
Spray Pump Technician									38	2																
Public Health Agent															4	7										
TOTAL M/F	23	6	356	125	2	13	10	26	38	2	112	195	15	23	4	7	1	35	0	1	0	0	37	0	31	11
TOTAL/ training	29		481		15		36		40		307		38		11		36		1		0		37		42	
Grand TOTAL	**1073**																									
Total Number of Women trained in the SOUTH EAST	**444**																									
Total Number of men trained in the SOUTH EAST	**629**																									

EAST														
Categories of Persons Trained	Categories of Persons Trained					Categories of Persons Trained								
	Training of Trainers: Spray Ops	Spray Operations	Data Entry	Logistics	Technical Maintenance	IEC Mobilization	IEC TOT	Public Health Training	PPEs Washing	Financial training	Enumeration training	Security	Transportation

South EAST																												
Categories of Persons Trained	Training on IRS Delivery										Other Trainings																	
	Training of Trainers: Spray Ops		Spray Operations		Data Entry		Logistics		Technical Maintenance		IEC Mobilization		IEC TOT		Public Health Training		PPEs Washing		Financial training		Enumeration training		Security		Transportation	
	M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
	M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
Logistics Assistant																										
Financial Assistant																				3						
M&E Assistant					1	2																				
Data Entry Clerk					8	13																				
Sector Manager	23	14																								
Store Keeper							9	27																		
Store Room Guard																							46	2		
Team Leader			67	51																						
Spray Operator			439	120																						
Washer																		53								
IEC Mobilizer											354	556														
IEC Supervisor													38	46												
Carrier/Porter																									218	0
Spray Pump Technician									49	6																
Public Health Agent															38	46										
TOTAL M/F	23	14	506	171	9	15	9	27	49	6	354	556	38	46	38	46	0	53	0	3	0	0	46	2	218	0
TOTAL/ training	37		677		24		36		55		910		84		84		53		3		0		48		218	
Grand TOTAL	**2,229**																									

South EAST																												
Categories of Persons Trained	Training on IRS Delivery										Other Trainings																	
	Training of Trainers: Spray Ops		Spray Operations		Data Entry		Logistics		Technical Maintenance		IEC Mobilization		IEC TOT		Public Health Training		PPEs Washing		Financial training		Enumeration training		Security		Transportation	
	M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
Total Number of Women trained in the East	**893**																											
Total Number of Women Trained in the SOUTH EAST and EAST	1,337																											
Percent Women Trained in the SOUTH EAST and EAST	40.5%																											
Grand Total Number of People Trained in SOUTH EAST and EAST	**3,302**																											

ANNEX D: GENDER AWARENESS AND SEXUAL HARASSMENT GUIDELINES



Fitsipika eto anivon'ny tetik'asa PID momba ny fanararaotana ara-nofo

Ny tetik'asa PMI AIRS (projet PID na CAID) dia mikatsaka toeram-piasana mirindra ho an'ny mpiasa rehetra na lehilahy na vehivavy.

Hahafahana manantanteraka izany dia **tsy ekena** eto anivon'ny tetik'asa **ny toetra sy ny fihetsika tsy mendrika hahiana hiteraka korontana sy tahotra eo anivon'ny mpiasa:**

- ny fananararaotana ara-nofo (harcelement sexuel)
- Ny fanavankavahana isan-karazany momba ny fihaviana, firazanana, ny lokon'ny volon-koditra, ny finoana, ny taona ary ny kilema

Inona no atao hoe fanararaotana ara-nofo?

Ny fanararaotana ara-nofo dia ireo teny na fihetsika ataon'olona iray mikatsaka firaisana ara-nofo tsy niria-na amina olona iray hafa mba hahazoan'ity farany tombotsoa.

Izany fanararaotana ara-nofo izany dia mety hiteraka fandrahonana, tahotra ary tebiteby eo anivon'ny toe-ram-piasana ka mety hanankorotana ny asan'ny mpiasa.

Inona avy koa ireo endrika fanankorotanana hafa eo anivon'ny asa?

Eo anivon'ny asa dia mety hisy koa ireo fanankorotanana hafa miendrika fandrahonana, ompa, fanamba-niana, fanendrikendrehana tsy mitombina na fikasiha-tanana mihitsy.

Fametrahana fitarainana eo anivon'ny tetik'asa PMI AIRS (PID na CAID)

Ny mpiasa eto anivon'ny tetik'asa PID dia afaka miantso an'ity laharana eto ambany ity raha sendra teny na fihetsika miendrika fanararaotana ara-nofo:

033 37 117 62

Mr Arnaud RAKOTONIRINA

Responsible suivi-evaluation / point focal genre

Izy no hanadihady sy haka ny fepetra ilaina miaraka amin'ny "Service des Ressources Humaines" an'ny tetik'asa PID.

Ny fampitahorana mpiasa mametraka fitarainana dia tsy ekena velively.

Azo atao ihany koa ny mametraka fitarainana amin'ireto laharana ireto:

Abt Helpline : 888-928-4231 na www.integrity-helpline.com/abtassoc.jsp

ANNEX E: MEP INDICATOR MATRIX

Last Updated: 11/10/2015

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
Component 1: Establish cost-effective supply chain mechanisms and execute logistical plans								
1.1 Procurement								
1.1.1 Number and percentage of insecticide procurements that had a pre-shipment QA/QC test at least 60 days prior to spray campaign	*Data source*: Project records – insecticide procurements *Reporting frequency*: Each spray campaign	By Spray Campaign	1; 100%	1;100%	100%		; 100%	
1.1.2 Number and percentage of international insecticide procurements delivered in country, at port of entry, at least 30 days prior to the start of spray operations	*Data source*: Project records – international procurements *Reporting frequency*: Each spray campaign	By Spray Campaign	1; 100%	1;100%	100%		100%	
1.1.3 Number and percentage of international equipment procurements, including PPE, delivered in country, at port of entry, at least 30 days prior to start of spray operations	*Data source:* Project records *Reporting frequency*: Each spray campaign	By Spray Campaign	1; 100%	1;100%	; 100%		; 100%	

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
1.1.4 Number and percentage of local procurements for PPE delivered 14 days before the start of spray operations	*Data source:* Project records *Reporting frequency*: Each spray campaign	By Spray Campaign	1; 100%	1; 100%	100%		100%	
1.1.5 Successfully completed spray operations without an insecticide stock-out	*Data source:* Project records *Reporting frequency*: Each spray campaign	By Spray Campaign	Completed	Completed	Completed		Completed	
1.2 In-Country Exemption and Custom Clearance Process								
1.2.1 Complete exemption and clearance process within the minimum 2 weeks	*Data source:* Project records *Reporting frequency:* Each spray campaign	By Spray Campaign	Completed	Completed	Completed		Completed	
1.3 In-Country Logistics, Warehousing, and Training								
1.3.1 Number and percentage of logistics and warehouse managers trained in IRS supply chain management	*Data source*: Training records *Reporting frequency*: Each spray campaign	By Spray Campaign By Gender	109;100% M : 50% F: 50%	72;100% M:19 F: 53	; 100%		; 100%	
1.3.2 Number and percentage of base stores where physical inventories are verified by up-to-date stock records	*Data source:* Project records *Reporting frequency*: Each spray campaign	By Spray Campaign	108;100%	10;100% South East:3 East Coast: 7	; 100%		; 100%	
1.3.3 Submit up-to-date inventory records 30 days after the end of each spray campaign	*Data source:* Project records *Reporting frequency*: Each spray campaign	By Spray Campaign	Completed	Completed	; 100%		; 100%	

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
Component 2: Implement safe and high-quality IRS programs and provide operational management support								
2.1 Planning and Design of IRS Programs								
2.1.1 Annual PMI AIRS country work plan developed and submitted on time	*Data source:* Project records *Reporting frequency*: Annually	By Spray Campaign	Completed	Completed	Completed		Completed	
2.1.2 Percentage reduction in project operational expenses per structure from the previous year,excluding insecticide costs .	*Data source:* Project financial records *Reporting frequency*: Annually	By Spray Campaign	5%	TBD	5%		5%	
2.2 Support of Safety and Health Best Practices and Compliance with USAID and Host Country Environmental Regulations								
2.2.1 SEA/letter reports submitted on time based on schedule agreed upon with the-PMI COR team	*Data source*: Project records – submitted SEAs/ letter reports Reporting frequency: Each spray campaign	By Spray Campaign	Completed	Completed	Completed		Completed	
2.2.2 Number of spray personnel trained in environmental compliance and personal safety standards in IRS implementation[1]	Data source: Project records – Training reports Reporting frequency: Each spray season	By Spray Campaign By Gender	1,219 M: 853 F: 366	1,223 M: 907 F: 316	TBD		TBD	
2.2.3 Number of health workers receiving insecticide poisoning case management training	Data source: Project records – Training reports Reporting frequency: Each spray season	By Spray Campaign By Gender	114	95 M:42 F: 53	TBD		TBD	
2.2.4 Number of adverse	Data source: Incident report	By Spray	0	0	0		0	

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
reactions to pesticide exposure documented	forms Reporting frequency: Each spray campaign	Campaign By Residential/ occupational exposure						
2.2.5 Number and percentage of soak pits and storehouses inspected and approved prior to spraying	Data source: Project records – Reports submitted by district environmental officers Reporting frequency: Each spray season	By Spray Campaign By Soak Pit By Storehouse	100%	23;100% Soak Pit: 13 Warehouse:10	100%		100%	
2.3 Conduct Communications Activities and Community Mobilization								
2.3.1 Number of radio spots and talk shows aired	Data source: Project records Reporting frequency: Per spray campaign	By Spray Campaign	342	162 East Coast:108 South East: 54	TBD		TBD	
2.3.2 Number of IRS print materials disseminated	Data source: Project records Reporting frequency: Semi-annually	By Spray Campaign By Type of printed material and message(s)	263,738 Leaflet : 256 000 Booklet : 138 Poster : 7600	204,631 Leaflet: 197,031 Poster: 7,600	TBD		TBD	
2.3.3. Number of people reached with IRS messages via door-to-door mobilization	Data source: Mobilization Data Collection Forms Reporting frequency: Daily per mobilization conducted	By Spray Campaign By Gender	949,961	416,634 M:185,634 F:231,270	TBD		TBD	

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
2.4 Spray Targeted Structures According to Technical Specifications								
2.4.1 Number of structures targeted for spraying	Data source: Previous spray campaign data, enumeration data (targets); Daily Spray Operator Forms (results) Reporting frequency: Daily per spray campaign	By Spray Campaign	230,126 South EAST: 72,120 EAST: 158,006	268,829 South EAST:81,941 East Coast:186,888	TBD		TBD	
2.4.2 Number of structures sprayed with IRS	Data source: Daily Spray Operator Forms Reporting frequency: Daily per spray campaign	By Spray Campaign	195,607 (85 % of 230,126)	247,902 South East: 75,782 East Coast: 172,120	TBD		TBD	
2.4.3 Percentage of total structures targeted for spraying that were sprayed with a residual insecticide (Spray Coverage)	Data source: Daily Spray Operator Forms Reporting frequency: Daily per spray campaign	By Spray Campaign	85%	92.2%	85%		85%	
2.4.4 Number of people residing in structures sprayed (Number of people protected by IRS)	Data source: Daily Spray Operator Forms Reporting frequency: Daily per spray campaign	By Spray Campaign By Gender By pregnant women By children <5 years old	807,467 (85 % of 949,961)	1,016,841 M: 510,854 F: 505,987 Pregnant Women: 36,241 Children<5: 147,682	TBD		TBD	TBD
COMPONENT 3: ONGOING MONITORING AND EVALUATION AND QUALITY CONTROL MEASURES								

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
3.1 Submit AIRS COUNTRY M&E Plan to PMI for approval	Data source: Project records Reporting frequency: Semi-annual	By Spray Campaign	Completed	Completed	Completed		Completed	
3.2 Conduct a post-spray data quality audit within 60 days of completion of spray operations	Data source: Spray operations reports Reporting frequency: Per spray campaign	By Spray Campaign	Completed	N.A	Completed or N.A.		Completed or N.A.	
COMPONENT 4: CONTRIBUTE TO GLOBAL AND COUNTRY-LEVEL IRS POLICY SETTING AND DEVELOP AND DISSEMINATE EXPERIENCES AND BEST PRACTICES								
4.1 Number of guidelines/checklists/tools related to IRS operations developed or refined with project support	Data source: Project records – Activity reports Reporting frequency: Semi-annually	By Spray Campaign By guideline/ checklist/tool	1 Gender awareness guidelines	1 Gender awareness guidelines	TBD		TBD	
4.2 Number of articles/best practices documents published	Data source: Project records – Activity reports Reporting frequency: Semi-annually	By Spray Campaign By IRS Technical Area	1	1 Operations	TBD		TBD	
4.3 Number of best practice presentations given at national/ regional/international workshops and conferences	Data source: Project records – Activity reports Reporting frequency: Semi-annually	By Spray Campaign By IRS Technical Area	1	1 Operations	TBD		TBD	

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
4.4 Number of enterprises engaged through public-private partnerships	Data source: Project records – Activity reports Reporting frequency: Semi-annually	By Spray Campaign	N/A	N/A	TBD		TBD	
Component 5: Contribute to the collection and analysis of Routine entomological and epidemiological data								
5.1 Support entomological monitoring activities and insecticide resistance strategies								
5.1.1 Number of entomological sentinel sites supported by the PMI AIRS Project established to monitor vector bionomics and behavior (vector species, distribution, seasonality, feeding time, and location)	Data source: Entomological reports Reporting frequency: Annually	By Spray Campaign	6	6	TBD		TBD	
5.1.2 Number and percentage of entomological monitoring sentinel sites measuring all the five primary PMI entomological monitoring indicators	Data source: Entomological reports Reporting frequency: Annually	By Spray Campaign	6: 54.5%	6; 54.5%	TBD		TBD	
5.1.3 Number and percentage of entomological monitoring sites measuring at least one secondary PMI indicator	Data source: Entomological reports Reporting frequency: Annually	By Spray Campaign	6; 54.5%	6; 54.5%	TBD		TBD	

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
5.1.4 Number and percentage of insecticide resistance testing sites that tested at least one insecticide from each of the four classes of insecticides recommended for malaria vector control	Data source: Entomological reports Reporting frequency: Annually	By Spray Campaign By Insecticide class	11: 100%	11: 100%	TBD		TBD	
5.1.5 Number of wall bioassays conducted within 2 weeks of spraying to evaluate the quality of IRS	Data source: Entomological reports Reporting frequency: Per spray campaign	By Spray Campaign	4 sentinel sites: 36.4% of the sites; 32 tests	TBD	TBD		TBD	
5.1.6 Number of wall bioassays conducted after the completion of spraying at monthly intervals to evaluate insecticide decay	Data source: Entomological reports Reporting frequency: Per spray campaign	By Spray Campaign	4 sentinel sites: 36.4% of the sites 32 tests per site/month=128 tests/month	TBD	TBD		TBD	
5.1.7 Number of vector susceptibility tests for different insecticides conducted in selected sentinel sites	Data source: Entomological reports Reporting frequency: Per spray campaign	By Spray Campaign	396 WHO tube tests* 396 CDC bottles assay	TBD	TBD		TBD	
5.2 Support Epidemiological Malaria Data Collection and Analysis								
5.2.1 Collect routine epidemiological data	Data source: *Project Reports* Reporting Frequency: Annually	By Spray Campaign	Complete	Ongoing	TBD		TBD	

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
5.2.2 Number of targeted health facilities with routine epidemiological malaria data collection supported by the PMI AIRS Project	Data source: Epidemiological reports Reporting frequency: Annually	By Spray Campaign	110	110	TBD		TBD	
Component 6 (Cross-cutting): Capacity Building, Knowledge Transfer, Gender Inclusion								
6.1 Increasing the Role of Women and Addressing Gender Barriers								
6.1.1 Number of people trained to deliver IRS in target districts	Data source: Project records – Training reports Reporting frequency: Semi-annually	By Spray Campaign By Spray Campaign By Gender Percentage of Women Trained	1326	1,319 South East:521 East: 798 M:950 F:369 38.8%	TBD		TBD	
6.1.2 Total number of people trained to support IRS in target districts	Data source: Project records – Training reports Reporting frequency: Semi-annually	By Spray Campaign By Spray Campaign By Gender Percentage of women trained	3,185	3,302 South East:1,073 East: 2,229 M:1,965 F:1,337 40.5%	TBD		TBD	
6.1.3 Number and percentage of women recruited (i.e.	Data source: Project records – Recruitment reports reports	By Country	909	1,337	TBD		TBD	

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
number/percentage of women on the selection list) for IRS employment	Reporting frequency: Semi-annually		30%	40.5%				
6.1.4 Number of people trained as IRS Training of Trainers	Data source: Project records – Training reports Reporting frequency: Semi-annually	By Spray Campaign By Gender Percentage of women trained	65 Wmn 26 40%	66 M: 46 F: 20 30.3%	TBD		TBD	
6.1.5 Total number of people hired to support IRS in target districts	Data source: Project records – Contracts signed Reporting frequency: *Semi-annually*	By Spray Campaign By Gender Percentage of women hired	3,123 Wmn 1200 39%	3,237 South East:1074 East: 2,163 M:1904 F:1333 41.2%	TBD		TBD	
6.1.6 Number of women hired in supervisory roles in target districts (this number includes site supervisors, team leaders, M&E assistants and others who supervise seasonal staff)[1]	Data source: Project records – Contracts signed Reporting frequency: Semi-annually	By Spray Campaign Percentage of women hired By role	447 179 40%	195 50% Finance Assistant: 4 M&E Assistant: 3	TBD		TBD	

[1]Sector Manager , Team leader, Spray Operators

[1] Team Leader, Sector Manager, M&E Assistant, Supervisor of Mobilization, Finance Assistant

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
				Supervisor of mobilization: 69 Sector manager: 20 Team leader: 99				
6.1.7 Number of staff (permanent and seasonal) who have completed gender awareness training	Data source: Project records – Training reports Reporting frequency: Semi-annually	By Spray Campaign By Gender Percentage of women	TBD	18 M:11 F:7 38.8%	TBD		TBD	
6.2 Capacity Building								
6.2.1 Number of government officials trained in IRS oversight	Data source: Project records – Training reports Reporting frequency: Semi-annually	By Spray Campaign By Gender Percentage of Women	16	20 M: 19 F: 11 55%	TBD		TBD	
6.2.2 Implement all activities outlined in their yearly Capacity Building Action Plan	Data source: Project records – Capacity assessment reports Reporting frequency: Semi-annually	By Spray Campaign	Completed	Completed	Completed		Completed	
6.2.3 MADAGASCAR government implements at least one aspect of the IRS program	Data source: Project records – MOUs	By Spray Campaign	Completed	Completed	Completed		Completed	

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
independently.	Reporting frequency: Semi-annually							

ANNEX F: IEC MESSAGES

IRS MESSAGES CONVEYED BY IEC/BCC MOBILIZERS

I. OBJECTIVE: Households prepare for IRS and agree to receive SOPs and let them inside their homes.

II. MESSAGES

Messages for Advocacy *(to community leaders)*

- Inform the public in advance of the schedule and goal of IRS.
- Get involved in mobilization
- Facilitate the operation with the community (programming, consultation, etc.)

IEC messages:

–To families:

- **Prepare for spraying:**

  ✓ Prepare 10 liters of water for preparing the product.
  ✓ Remove food, clothing, cooking utensils, drinking water, furniture, etc..
  ✓ Keep animals in a safe place and far enough away from home.
  ✓ Remove anything that is hanging on the walls.
  ✓ Put heavy furniture in the middle of the house.
  ✓ Leave a space in the house to all SOPs to spray all the walls.

- **Receive SOPs:**

  ✓ Give water to the SOPs.
  ✓ Show SOPs the rooms to be sprayed.
  ✓ Let SOPs work unhindered.
  ✓ Stay out of the house.

- **After spraying:**

  ✓ Do not wash the walls after spraying.
  ✓ Close all doors for 2 hours before opening.
  ✓ Leave the doors open for 30 minutes to allow air to flow.
  ✓ Clean the house.
  ✓ Throw in the latrines or bury dead mosquitoes or other insects, as well as dust.
  ✓ Wash hands with soap.
  ✓ Wait 6-9 months to paint the walls depending the insecticides used.

–To the community:

- IRS is free.
- IRS protects the family and the entire region.

IRS MESSAGES CONVEYED BY IEC/BCC MOBILIZERS

- IRS reduces mortality of pregnant women and children under 5 years.
- IRS protects the house for 3 to 6 months.
- IRS is safe for people and pets if all conditions are met.
- IRS is very effective if all structures are sprayed.

Messages to SOPs:

- Facilitate the process by working with the community.
- Wear personal protective equipment (PPE).
- Ensure the effectiveness and quality of spraying.
- Do not cover the walls after spraying and for at least 6 months.

ANNEX G: ENVIRONMENTAL MITIGATION AND MONITORING REPORT

Please find table on the following page.

Mitigation Measure	Status of Mitigation Measures	Outstanding issues relating to required conditions	Remarks
1a. Pre-contract inspection and certification of vehicles used for pesticide or spray team transport.	Pre- contract inspection and certification of vehicles was conducted on the 31st of July, 2015 for the South East and from the 29th to 30th of August, 2015 for the East		For the South East, AIRS Madagascar contracted 6 vehicles and for the East it used 10 vehicles
1b. Driver training	Driver training was conducted on July 31 in the South East and August 30 in the East. 16 drivers were trained for the 2015 spray campaign in 4 districts.		
1c. Cell phone, personal protective equipment (PPE) and spill kits on board during pesticide transportation.	All drivers had cell phones as a pre-requisite for hiring and were provided with PPE and spill kits after being trained. IRS Madagascar conducted 25 supervisions for the morning mobilization vehicle inspection. For 19 of these inspections, the vehicles had the complete kit		For the 6 times that the spill kits are missing, the reason was: the spray operators needed to go far away from the vehicle to spray and they took the spill kit along.
1d. Initial and 30-day pregnancy testing for female candidates for jobs with potential pesticide contact.	Initial pregnancy tests were conducted before hiring Spray Operators, washers and Store Assistants from July 27 to August 01, 2015 for the South East and from August 24 to August 30, 2015 for the East		
1e. Health fitness testing for all operators	Medical examinations were conducted for potential candidates as one of the benchmarks for		

	selection of spray operators from July 27 to August 01, 2015 for the South East and from August 24 to August 30, 2015 for the East across the targeted IRS districts.		
1f. Procurement of, distribution to, and training on the use of PPE for all workers with potential pesticide contact.	Both International and local procurement were carried out successfully prior to all trainings.		
1g. Training on mixing pesticides and the proper use and maintenance of spray pumps.	The correct mixing procedure for pesticides, including triple rinse of the bottles, was included in all training. The Supervisors were trained together with the Team Leader as pump mechanics for the maintenance of the pumps		198 Team Leaders and 960 Spray Operators were formed and 95 Spray pump Technicians regarding the maintenance of spray pumps
1h. Provision of adequate facilities and supplies for end-of-day cleanup,	Most of the storage facilities were donated to the project by the District Assemblies of the various districts. However, the end-of-day cleanup was solely the responsibility of the site managers and supported by the field supervisors at each operations site. AIRS Madagascar conducted 68 supervision for the end of day cleanup		
1i. Enforce clean-up procedures.	The clean-up procedure for the pumps was done in the designated wash areas and supervised by the site managers.		
2a. IEC campaigns to inform homeowners of responsibilities and precautions.	AIRS Madagascar conducted sensitization campaigns and information before spraying. 435 532 IEC materials were distributed among households.		

2b. Prohibition of spraying houses that are not properly prepared.	119 supervisions were made and found 10 cases where the resident was not informed of spraying protocol and was not well prepared so that the structure was pulverized		
2c. Two-hour exclusion from house after spraying			
2d. Instruct homeowners to wash itchy skin and go to health clinic if symptoms do not subside.			
3a. Indoor spraying only.	AIRS Madagascar conducted 119 supervision regarding the homeowner preparation and spray operator performance		
3b. Training on proper spray technique	Team Leader and Spray Operator training was conducted on South East from July 27 to August 01, 2015 in South East and from August 24 to August 29, 2015 in East		
3c. Maintenance of pumps	11 cases of leaking pump were observed during the 119 supervision inspections.		The SOP were immediately instructed to stop spraying and contact the maintainer for the repair or replacement of the pump
4a. Choose sites for disposal of liquid wastes according to PMI BMPs.	The selection of sites was done by the ECO and supervised by the COP according to the PMI BMP. 3 rounds of Pre Season Environmental Compliance Assessment were conducted. For the South East 9 PSECAs were conducted (from June 06 to August 02, 2015) and for the East 18 PSECAs (from July 08 to August 31)		

4b. Construct soak pits with charcoal to adsorb pesticide from rinse water.	All the soak pits were constructed as per directions in the BMP. During the PSECA, the ECO supervised the construction of all new soak pits.		We built 13 new soak pits (4 in the south east and 9 for the east)
4c. Maintain soak pits as necessary during season.	All soak pits were cleared of vegetation and serve as a filter during the spray campaigns These soak pits are functional during the campaign and have not necessity maintenance		
4d. Inspection and certification of solid waste disposal sites before spray campaign.	All solid waste generated will be incinerated at a waste management and recycling company at Adonis Madagascar.		
4e. Monitoring waste storage and management during campaign.	102 inspections regarding storekeeper performance are conducted		
4f. Monitoring disposal procedures post-campaign.	The ECO will monitor the post spray campaign solid waste procedure and disposal from the district level to the central warehouse and to the final designation for proper disposal at Adonis from December 2015		
5a. Maintain records of all pesticide receipts, issuance, and return of empty sachets/bottles.	Records of all pesticides receipts from central stores, issuances and returns of empties were kept on the stock cards with backups in ledger books at regional and district level, as well as the sub-districts warehouses. 102 controls are made regarding the documents of stock.		
5b. Reconciliation of number of houses sprayed vs. number of sachets/bottles used.	on average, a bottle is needed to spray 5.5 houses. it is higher compared to the target: 4.8 houses /		In the South East: 7.12 houses sprayed for one bottle and in the East : 4.95 houses sprayed for one

	bottles		bottles
5c. Visual examination of houses sprayed to confirm pesticide application.	Visual examination of houses spray was conducted by observing the traces of the sprayed chemical of the walls, ceilings, and eaves. IRS technical Staffs and government supervisors conducted 119 examinations		
5d. Perform physical inventory counts during the spray season.	ECO, Logistics ensured physical inventory taking during and after the spray season. 102 inspections was made		

ANNEX F: REASONS FOR NON-SPRAY, 2014 & 2015

TABLE 19: REASONS FOR NON-SPRAY, 2014 (5.4%) & 2015 (8.5%) OF ALL ELIGIBLE STRUCTURES FOUND

	Reason for non-spray											
	Closed Structure		Refusal		Sickness		Family event		Other		Total	
	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015
BRICKAVILLE	1,398	598	1,054	923	299	1,074	30	167	240	670	3,021	2,834
%	46.3	21.1	34.9	32.6	9.9	37.9	1.0	5.9	7.9	23.6	100.0	100.0
FENERIVE EST	1279	2023	950	1687	537	2088	30	594	579	885	3375	5254
%	37.9	53.8	28.1	22.4	15.9	29.0	0.9	10.5	17.2	38.0	100.0	100.0
TAMATAVE II	997	1317	868	2237	290	980	28	644	316.0	167	2499	4028
%	39.9	32.7	34.7	55.5	11.6	24.3	1.1	16.0	12.6	4.1	100.0	100.0
TOTAL EAST COAST	3674	3938	2872	4847	1126	4142	88	1405	1,135.0	1722	8895	12116
%	41.3	32.5	**32.3**	**40.0**	12.7	34.2	1.0	11.6	12.8	14.2	100.0	100.0

- Globally refusals are 40.0% of the reasons for non-spray in 2015 compared to 32.3% in 2014 of all non-sprayed structrures .
- The difference is higher in Tamatave II 55.5% in 2015 compared to 34.7% in 2014 of all non-sprayed structrures.
- But there are less refusals in 2015 in Brickaville (32.6% in 2015 versus 34.9% in 2014) and Fenerive Est (22.4% in 2015 versus 28.1% ei 2014) of all non-sprayed structrures.