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UGANDA INDOOR RESIDUAL SPRAYING (IRS) PROJECT ANNUAL PERFORMANCE REPORT

OCTOBER 1st, 2009 THROUGH SEPTEMBER 30th, 2010



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In collaboration with:
Communication for Development Foundation Uganda (CDFU) ■

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Acronyms

Abt	Abt Associates, Inc
BCC	Behavior Change Communication
CDC	Centers for Disease Control and Prevention
CDFU	Communications for Development Foundation Uganda
COP	Chief of Party
COTR	Contracting Officer's Technical Representative
DDHS	District Director of Health Services
DDT	Dichloro-Diphenyl-Trichloroethane
DEO	District Environment Officer
DHE	District Health Educator
DHI	District Health Inspector
DHO	District Health Officer
DHT	District Health Team
FAQ	Frequently Asked Questions
GIS	Geographic Information System
GoU	Government of Uganda
GPS	Global Positioning System
HHS	U.S. Department of Health and Human Services
IEC	Information, Education and Communication
IEE	Initial Environmental Examination
IR	Intermediate Result
IRS	Indoor Residual Spraying
LC	Local Council
M&E	Monitoring and Evaluation
MOH	Ministry of Health
MOP	Malaria Operational Plan
MOU	Memorandum of Understanding
NEMA	National Environment Management Authority
NMCP	National Malaria Control Program
PMI	President's Malaria Initiative
PMP	Performance Management Plan
PPE	Personal Protective Equipment
PSC	Pyrethrum Spray Collections
SEA	Supplementary Environmental Assessment
STTA	Short Term Technical Assistance
TA	Technical Assistance
TOT	Training of Trainers
USAID	U.S. Agency for International Development
WHO	World Health Organization
VCD	Vector Control Division

Executive Summary

This report presents the Uganda Indoor Residual Spraying (IRS) Project's progress in Year One (period covering October 1st, 2009 through September 30th, 2010). The report outlines the key project activities and achievements in the year, the challenges and constraints faced, lessons learned, innovative approaches and recommendations for future implementation.

Background

The purpose of the Uganda IRS Project is to achieve the President's Malaria Initiative (PMI) Uganda targets in indoor residual spraying. In particular, the Uganda IRS Project contributes to IR.8.1: Effective use of social sector services through three main objectives:

- Implementation of a high quality IRS program
- Conducting comprehensive monitoring and evaluation of the IRS program
- Developing the national capacity to conduct IRS.

The goal of PMI is to reduce malaria-related mortality by 50% by the end of 2010 in the following vulnerable groups: children under five and pregnant women. PMI/Uganda has a five-year strategic plan and an annual Malaria Operational Plan (MOP) for Uganda which guides current implementation and scale-up of activities. IRS is the largest component of the MOP and is the cornerstone of the PMI/Uganda program.

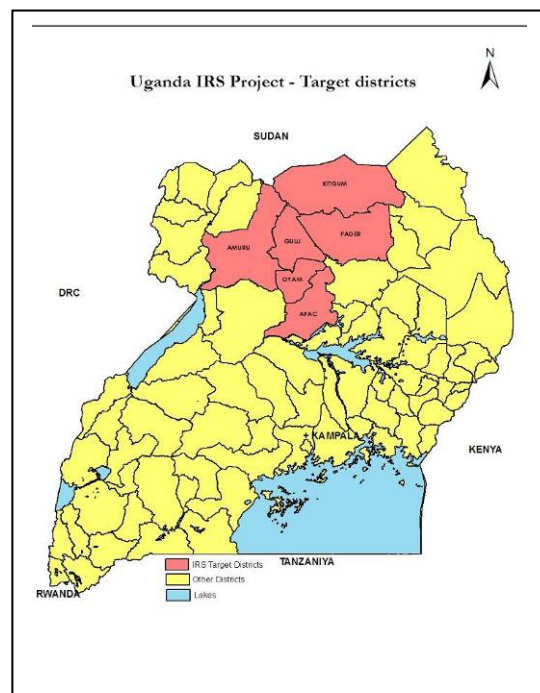
The Uganda IRS program activities are being carried out with full collaboration of the Uganda National Malaria Control Program (NMCP) and cover six priority districts: Apac, Amuru, Gulu, Oyam, Pader and Kitgum.

Abt Associates, Inc. (Abt) as prime contractor of this program, manages and directs all technical component activities in support of IRS planning, procurement, implementation, monitoring, and capacity building. In addition to Abt, the project is supported by Communications for Development Foundation Uganda (CDFU), a subcontractor which provides expertise and support for Information, Education and Communication (IEC) and Behavior Change Communication (BCC) activities in support of IRS program campaigns and population sensitization under the direction of Abt technical staff.

Project Activities/Achievements

Year One of the Uganda IRS Project led by Abt as the IRS implementing partner witnessed significant success and achievement of all expected annual program indicators and results. The project also confronted several key implementation challenges and constraints that led to important program lessons learned, and the further refinement of implementation approaches that will carry forward success in future years.

The project successfully conducted two cycles of spraying in each of the six target districts of Kitgum, Pader, Apac, Oyam, Gulu and Amuru during Year One, achieving a coverage rate of over 85% of targeted households and populations protected in each spray round. The first quarter of the year (October 1st through December 31st 2009) began with establishment of the Kampala and Gulu project offices, recruitment of staff, and other major project start-up activities in a constrained timetable in order to initiate seasonal spray activities on time. Abt Associates took possession of all spray equipment, insecticides, office equipment and other materials including three vehicles inherited from the previous IRS program. The initial work



plan and budget covering the period September through December, 2009 was approved by USAID/PMI during this quarter. The spray activities focused on the districts of Kitgum and Pader with the launching of the fourth spray round (first round under Abt Associates) in the two districts on November 4th, 2009 and conclusion of all spray activities by December 23rd, 2009.

In the second quarter (January 1st through March 31st, 2010) spray activities focused on the four districts of Oyam, Apac, Amuru and Gulu. Round two spraying in Oyam and Apac was from February 23rd, 2010 to March 31st 2010. The project Work plan and Budget for the period of January through September, 2010 was approved by USAID/PMI during this quarter. In addition, the project PMP was revised and the Branding & Marking Plan submitted to USAID/PMI was also approved.

In the third quarter (April 1st through June 30th, 2010) spray activities focused on the four districts of Amuru, Gulu, Kitgum and Pader. Spraying commenced in Kitgum and Pader districts on June 11th, 2010 and was concluded by the end of July, 2010. Spraying in Amuru and Gulu districts was between March 15th, 2010 and May 14th, 2010.

The fourth quarter of Year One (July 1st through September 30th, 2010) was extremely busy with preparation, implementation and monitoring of IRS activities in all six target districts. In Kitgum and Pader districts spraying was between June 11th, 2010 and August 17th, 2010. Round three spraying in Apac and Oyam was between August 23rd, 2010 and September 21st, 2010. Amuru and Gulu spraying was between September 6th, 2010 and September 30th, 2010. In order to conclude spraying by September 30th in Amuru and Gulu, additional spray operators were employed across the districts. District Vector Control Officers (VCOs) were also brought on board to boost supervision of the spray activities.

Planning Activities

The original six district boundaries have been revised by the Government of Uganda with effect from 1st July 2010, creating four new districts totaling to ten as follows: Kole, Nwoya, Lamwo and Agago created out of Apac, Amuru, Kitgum and Pader respectively. The project will be referring to the four new districts in Year Two as shown in the set targets for round 3 below:

	Round 1			Round 2			Round 3		
	Target	Found	% diff	Target	Found	% diff	Target	Found	% diff
Kitgum	105,475	162,799	54.35%	162,799	159,755	-1.9%	85,798		
Lamwo							73,957		
Pader	149,340	173,653	16.3%	173,653	183,367	5.6%	88,057		
Agago							95,310		
Apac	111,534	151,182	35.5%	151,182	164,501	8.8%	94,899		
Kole							69,206		
Oyam	101,908	111,548	9.5%	111,548	105,992	-5.0%	105,992		
Amuru	103,754	107,894	4.0%	107,894	107,448	-0.4%	74,484		
Nmoya							33,004		
Gulu	144,205	136,299	-5.5%	136,299	136,581	0.2%	136,581		
Total	716,216	843,375	17.8%	843,375	857,644	1.7%	857,288		

Activities by Intermediate Result

1.1. Result 1: High-Quality IRS Program Implemented

Strategy: Planning, management and implementation of indoor residual spraying in collaboration with key stakeholders.

Table 1: Result 1 Indicators

Indicator	Quarter 1 Actual	Quarter 2 Actual	Quarter 3 Actual	Quarter 4 Actual	FY 10 Target	FY 10 Actual
Number of district level planning and introductory meetings conducted	4	8	4	6	24	22
Trained in IRS*	2,298	2,989	1,928	2,957	5,500	10,172
Number of IRS print materials disseminated	1,450	19,209	15,000	24,000	15,000	59,659
Number of community meetings held	40	47	6	48	94	141
Number of radio spots aired	500	690	600	1,360	3,200	3,150
Number of radio talk shows conducted	27	24	10	48	120	109
Number of community members sensitized on IRS	1,244	1,745	495	2,069	3,290	5,553
Number of districts sprayed	2	2	2	6	6	6
Number of households sprayed with IRS	330,663	262,164	240,715	847,469	1,546,618	1,681,011

*Number trained includes clinicians, environmental officers, DHT members and spray personnel i.e. spray operators, team leaders, supervisors, store keepers, mobilizers and wash persons. The training includes refresher trainings.

Accomplishments in Year One:

Procurement and Logistics

A total of 223,370 sachets of Alpha cypermethrin was inherited from the previous IRS program, and used to conduct the first round of spraying in Kitgum and Pader. In the second quarter, the project procured 33 tons (248,000 sachets) of Alpha cypermethrin insecticide. In quarter three, the first batch of 500 drums (160,000 sachets) of Bendiocarb WP 80% insecticide was procured. The second batch of 732.25 drums (234,320 sachets) was procured in quarter four. A total of 700 spray pumps and associated spare parts were also procured. Most of the required Personal Protective Equipment (PPE) were in stock and were distributed in the districts; items newly procured included 3,000 haversacks and 2,000 face shields. In quarter two, four desktop computers were procured for the Gulu office, one A3 color inkjet printer and a new 4x4 double cabin pickup. A fifth vehicle was also procured in the third quarter. Additional office furniture, office desks and bookshelves for both Kampala and Gulu office were also procured.

IEC/BCC

The IEC/BCC activities were carried out by the project partner CDFU under the direction of Abt's DCOP for IRS Operations and Communication. The IEC/BCC package included introductory meetings, sensitization meetings, community mobilization using film vans, radio talk shows, radio spots and print materials. Activity work plans were harmonized, and IRS communication activities were conducted in constant collaboration with other IRS operational activities. Later in the year, the IEC/BCC strategy evolved in response to the high level of population knowledge and acceptance of IRS; film shows, sensitization meetings and introductory meetings were reduced or eliminated, and the program adopted localized IEC committees and radio as the primary means of communication. IRS committees were formed to spearhead community mobilization and sensitization on IRS and also to assist in monitoring of spray activities at the community level. These IRS committees consist of 11 members drawn from local leaders including LC I & III chairmen, Secretary of Health, sub-county chief, women representatives, youth representatives, religious leaders and centre head teachers. IRS committees were formed in each sub-county in the six districts. Each district held weekly interactive radio talk shows from local radio stations – these talk shows were used to sensitize the community pre-, during and post- IRS exercise, respond to caller questions, and highlight specific IRS topics. Radio spot messages were also aired to reinforce the messages delivered in the radio talk shows. The table below provides details of the IEC/BCC activities conducted during the year.

Table 2: IEC Activities

District	IEC committees community sensitization meetings		Radio spots	Radio talk shows	IEC materials distribution		Cinema Shows	
	No. of Meetings	Participants			Community Leaflets	Leaders Factsheets	No. of Shows	Estimated Participants
Kitgum	21	812	550	18	5,500	2,690	19	6,080
Pader	25	927	550	19	5,500	2,760	21	5,880
Apac	31	895	600	21	7,700	2,450	9	11,350
Oyam	16	1,237	600	21	7,000	2,000	4	5,130
Amuru	16	559	430	15	9,750	2,000	4	9,750
Gulu	32	1,123	420	15	9,859	2,450	7	12,350
Total	141	5,553	3,150	109	45,309	14,350	64	50,540

World Malaria Day

In the third quarter of the year, the Uganda IRS Project was represented by the sub-contractor CDFU at the World Malaria Day celebrations which took place on the April 25th, 2010 in Mpigi district at the Main Celebration Centre. A newspaper supplement about IRS was printed in the New Vision newspaper, along with an exhibition during the commemoration day. The IRS exhibition display, which included photographs and equipment, garnered a lot of interest from the participants. This event provided an opportunity to further educate and inform the population on the IRS program. The exhibition was visited by the Director of Operations the Global Fund Geneva and the Deputy Coordinator -PMI Dr Bernard L. Nahlen who was accompanied by Mr. John Mark Winfield, Deputy Director USAID, M/s Megan Gerson Rhodes, Health Team Leader and a team from the Uganda USAID office.

Spraying Operations

Introductory Meetings

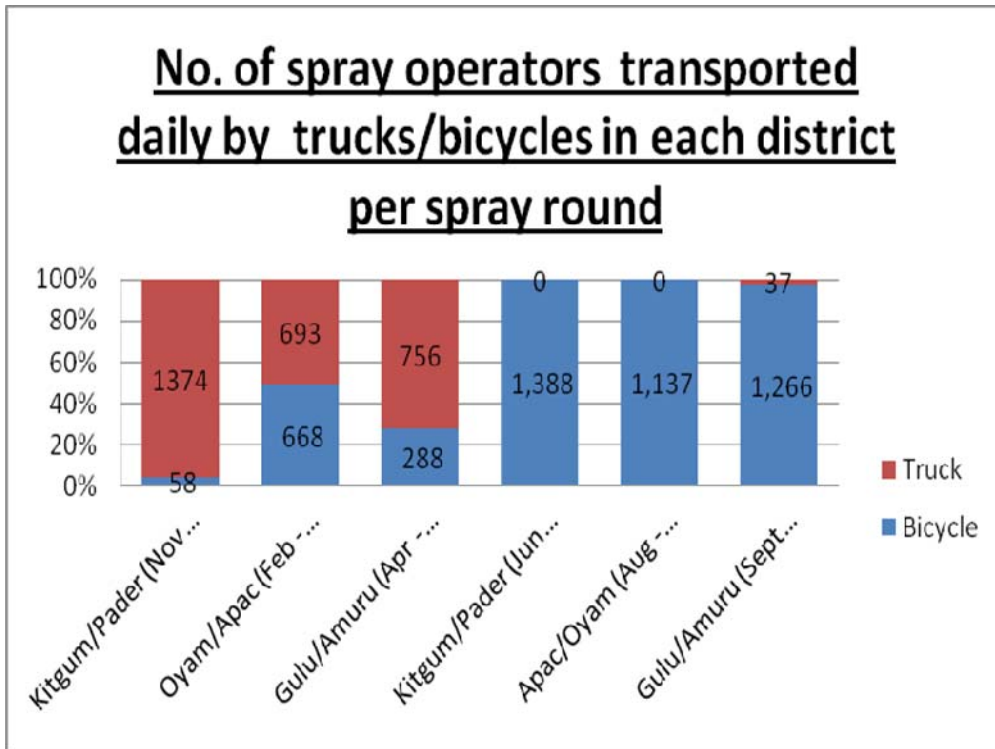
At project inception the Abt team worked with USAID to schedule introductory meetings with government partners and other stakeholders to officially introduce the project and key staff. A National IRS Planning meeting was held with the stakeholders on September 11th, 2009 in Kampala to present a broad overview of the proposed plan of the three-year Project. District-level introductory meetings were also held with the district leaders in the first two

quarters of the year prior to the IRS micro-planning meetings in each of the six target districts. The Uganda IRS Project was joined by Ministry of Health (MOH) officials to facilitate these district-level meetings.

Micro-planning

Prior to each spray round, the project collaborated with district officials to host micro-planning meetings in the six districts. The main objective of the micro-planning meetings was to involve key stakeholders in planning sessions of the IRS program. Spray reports of the previous spray round were also disseminated to the district technical teams. During these meetings the human resource requirements for the upcoming spray round were computed and IRS store locations identified. The best performing supervisors in the previous spray round were recognized while the poor performers were discontinued from future involvement in IRS activities. These meetings were facilitated by Abt staff, MOH and CDFU with participants including IRS sub-county supervisors, DHT members and environmental officers. In the first quarter, the project used IRS stores located at the sub-county level, and used trucks as the primary means of transportation for the spray operators. In several sub-counties, the project piloted the use of bicycles as an alternative and cost-saving means of transporting spray operators. In the second quarter, the use of bicycles for transportation of spray operators was recommended in the micro-planning meetings and was welcomed by the district officials. To support this more localized approach, IRS store locations were identified at the parish level for effective and efficient logistics and distribution. However, a few sub-counties in Amuru district continued to use trucks due to the exceptionally wide distances between store locations and target villages. Below is a graphical representation of the program’s transition from truck use to bicycle use as the primary means of spray operator transport over the course of the year.

Figure 1: Trucks Vs Bicycles





A team of spray operators returning from the field straight to the washing bay/ soak pit to clean up, a costly strategy and not effective in inaccessible communities



A team of spray operators use bicycles to reach remote households in Uganda, an effective and cost-saving strategy

At the beginning of year one, the project had hired 155 trucks to transport spray operators to and from the field. Each truck was ferrying on average 35 spray operators at a cost of UGX294,000/= (US\$ 135) per day. The cost per spray operator per truck day was UGX 9,281 (US\$ 4.2). Due to most communities being inaccessible by road, spray operators walked long distances and this resulted in fewer houses being sprayed at an average of 6 houses per spray operator per day.

With the introduction of the use of the bicycles and Village Health Teams (VHTs) strategies, the spray operators remarkably improved their performance and were spraying an average of 12 houses per spray operator per day. As a result, the spray round duration reduced from 43 days to 22.5 days. The project hired the spray operator's bicycles at UGX 2000/= (US\$0.9) per working day. These strategies therefore provided financial benefits and job opportunities to the communities.

The project also saved funds from use of bicycles and reduced number of spray days amounting to almost two million United States dollars.

Training of Trainers (TOT)

Before each spray round, a pool of trainers was mobilized, from IRS supervisors, DHT members and Environmental Officers. These trainers attended a two-day TOT refresher workshop on IRS in their respective districts. Efforts were made to ensure that the same participants involved in the micro-planning attended the TOT. The training developed capacity within the districts by equipping key stakeholders with skills to efficiently carry out the IRS program. The workshops refreshed participants on basic IRS approaches including spray techniques, data collection and management, team management and supervision, and environmental compliance and safety. The workshops also developed localized strategies for IEC activities. The sessions were facilitated by staff from Abt, CDFU and the MOH. In the third quarter, two representatives of Bayer Environmental Science (the supplier of the Carbamate insecticide) joined the facilitators and gave a presentation on the safe use and management of the Carbamate WP 80% Bendiocarb insecticide. Vector Control Officers (VCOs) from various districts were also brought on board to participate in the TOT in order to further develop the pool of skilled trainers and to build the capacity of VCOs at the national level.

Recruitment and Training for Spray Personnel

Spray personnel used in the previous spray rounds were selected based on their past performance and conduct. New recruits were selected on the basis of their current participation in local health activities or involvement in other community activities. Emphasis was put on selection of spray personnel who were representatives within their communities. Members of Village

Health Teams (VHTs) were targeted as their status within the community assists in community-level acceptance of IRS and facilitates successful implementation of the program. Literacy and numeracy were key prerequisites for recruitment. Spray personnel include supervisors, team leaders, spray operators, wash persons, and storekeepers. Initially a training needs assessment was conducted to identify the needs of the new recruits and previously-trained spray personnel. New spray operators were provided with an in-depth, six-day training course, while previously trained spray operators participated in a three-day refresher training course. By the project's third quarter, only 10% of the spray personnel were new recruits. The trainings were therefore primarily focused on the three-day refresher trainings. Also in quarter three, the project shifted primary training responsibility to VCOs and IRS supervisors trained in the TOT events. The involvement of VCOs in particular has proven to be effective and efficient in achieving quality training of the spray personnel. The spray personnel were taught basic skills associated with IRS, including basic spraying techniques, team management, environmental compliance and safety, and data management. The number of participants trained per district is provided in the inset table. The total number of spray personnel trained includes spray operators, store keepers, team leaders and wash persons.

Table 3: Spray Personnel Training

District	No. of Participants	Male	Female
Kitgum	1,858	1,698	303
Pader	2,047	1,941	249
Apac	1,772	1,642	130
Oyam	1,259	1,197	62
Amuru	1,325	1,099	226
Gulu	1,531	1,301	230
Total	10,078	8,878	1,200

Clinician Training on insecticide poisoning management

Health workers in the six districts were oriented to the health and environmental concerns associated with the use of Carbamate insecticide. A total of 94 clinical officers from health centers II, III and IV and hospitals as well as DVCOs were trained over the course of Year One. The training conducted by MOH staff raised the awareness of the health workers on the toxicity of the Carbamate insecticide and proper management procedures in case of chemical poisoning.

Storekeeper Training

In the first quarter of Year One, initial storekeeper training was limited to participation in spray operators' training, providing a basic orientation to IRS. In the following quarters, the project provided storekeepers with a separate training prior to each spray round. This training focused on the basics of stock keeping and the use of IRS store data tools in addition to participation in the spray personnel training. A total of 373* storekeepers were trained across the six target districts over the course of Year One. The table below summarizes the total number of storekeepers trained per district:

Table 4: Store keepers training

District	No. of Participants	Male	Female
Kitgum	59	51	8
Pader	63	49	14
Apac	87	48	39
Oyam	41	22	19
Amuru	70	35	35
Gulu	53	23	30
Total	373*	228	145

**The storekeepers' training in Apac, Oyam, Amuru and Gulu was conducted twice; in quarter two and quarter four.*

Launch of Spraying

Kitgum/Pader

The first spray round of the Uganda IRS Project implemented under Abt commenced on November 4th, 2009 in Kitgum and Pader districts, representing each district's fourth round of spraying. All 21 sub-counties in Kitgum and 19 in Pader completed spraying by December 23rd, 2009. A total of 336,452 households were found in Kitgum and Pader, of which 330,663 households were sprayed (98.3%). The total population recorded was 1,261,665, of which 1,243,654 (98.6%) were protected through the IRS spray campaign.

Round five spraying in Kitgum and Pader districts commenced on June 11th, 2010 and was concluded by August 2nd, 2010 in Kitgum and August 17th, 2010 in Pader. A total of 343,118 households were found in Kitgum and Pader round five, of which 337,393 households were sprayed (98.3% coverage). The total population recorded was 1,146,629, of which 1,132,756 (98.8%) were protected through the IRS spray campaign.

Apac/Oyam

Round two spray activities commenced in Oyam and Apac on February 23rd, 2010 and March 9th, 2010, respectively and concluded by March 31st, 2010 with Apac mop-up activities extending to April 8th, 2010. A total of 262,730 households were found in Apac and Oyam of which 262,164 households were sprayed (99.8%). The total population recorded was 755,795 of which 754,256 (99.8%) were protected through the IRS spray campaign.

Round three spraying in Apac and Oyam districts began on August 23rd, 2010 and was concluded by September 21st and September 11th, 2010 respectively. A total of 270,097 households were found of which 268,823 (99.5%) were sprayed. The total population recorded was 761,101 of which 757,297 (99.5%) were protected through the IRS spray campaign.

Amuru/Gulu

Round two spraying in Amuru district was welcomed with such eagerness that spraying began earlier than expected with Purongo sub-county starting on March 15th, 2010. By March 22nd, 2010 most sub-counties in Amuru had commenced spraying and all activities were concluded by May 8th, 2010. In Gulu, spraying commenced on April 5th, 2010 and was concluded by May 14th, 2010. A total of 244,193 households were recorded in Amuru and Gulu, of which 240,715 households were sprayed (98.7% coverage). The total population found was 818,308, of which 808,596 (98.9%) were protected through the IRS spray campaign.

Round three spraying in Amuru district commenced on September 13th, 2010 and concluded by September 30th, 2010 while Gulu commenced spraying on September 6th, 2010 and concluded by September 30th, 2010. In Amuru spraying was completed in the shortest time period yet recorded in the project, with an average of 16 spray days involving 532 spray operators.

All six districts surpassed the target of 85% coverage in each spray round, as demonstrated in the summary tables below:

Table 5: Summary of IRS Output Indicators for the Six Districts in Year One Round One (Alpha cypermethrin insecticide)

Indicator	Kitgum	Pader	Apac	Oyam	Amuru	Gulu	Total
Spray period	Nov 4- Dec 23	Nov 4- Dec 23	Mar 9- April 8	Feb 23- Mar 31	Mar 15- May 8	April 5- May 14	Nov 4- May 14
Total households*	162,799	173,653	151,182	111,548	107,894	136,299	843375
Households fully sprayed	157,083	171,620	146,497	106,986	106,483	130,817	819486
Households partly sprayed	899	1,061	4,682	3,999	1236	2,179	14056
Total households fully and partly sprayed	157,982	172,681	151,179	110,985	107,719	132,996	833542
Households not sprayed	4,817	972	3	563	175	3,303	9833
% of households partly or fully sprayed	97.0	99.4	100.0	99.5	99.8	97.6	98.9
% of households not sprayed at all	3.1	0.6	0.0	0.5	0.2	2.5	1.1
Total population	593,666	667,999	439,707	316,088	360,301	458,007	2835768
Total population protected	578,867	664,787	439,702	314,554	359,874	448,722	2806506
Total population not protected	14,799	3,212	5	1,534	427	9,285	29262
% of population protected	97.5	99.5	100.0	99.5	99.9	98.0	99.1
% of population not protected	2.6	0.5	0.0	0.5	0.1	2.1	1.0
No. of children under five protected	128,542	162,980	85,521	61,191	80,988	85,972	605194
No. of pregnant women protected	20,920	30,093	10,573	9,467	13,502	14,608	99163
No. of mosquito nets found	111,459	172,442	147,389	70,195	38,244	91,550	631279
No. of children under 5 sleeping under a net	90,758	120,576	59,432	31,634	32,573	43,086	378059
No. of insecticide sachets used	96,225	104,872	75,835	61,424	57,402	67,175	462933
Average number of households sprayed per sachet	1.6	1.6	2.0	1.8	1.9	2.0	1.8
Number of spray operators	711	796	747	614	435	609	3912
Average number of households sprayed per spray operator per day	5.2	5.0	7.2	6.0	7.3	7.5	6.4
Average number of spray days	43	43	28	30	34	29	34.5

* *Households are houses (individual structures) in the Ugandan context*

Table 6: Summary of IRS Output Indicators for the Six Districts in Year One Round Two (Bendiocard Insecticide)

Indicator	Kitgum	Pader	Apac	Oyam	Amuru	Gulu	Total
Spray period	June 11- Aug 2	June 11- Aug 17	Aug 23- Sept 21	Aug 23- Sept 11	Sept 13- Sept 30	Sept 6- Sept 30	June 11- Sept 30
Total households*	159,750	183,368	164,105	105,992	107,488	136,581	857,284
Households fully sprayed	155,075	180,070	158,543	101,860	105,710	133,479	834,737
Households partly sprayed	1,116	1,132	4,943	3,477	947	1,117	12,732
Total households fully and partly sprayed	156,191	181,202	163,486	105,337	106,657	134,596	847,469
Households not sprayed	3,559	2,166	619	655	831	1,985	9,815
% of households partly or fully sprayed	97.8%	98.8%	99.6%	99.4%	99.2%	98.5%	98.9
% of households not sprayed at all	2.2%	1.2%	0.4%	0.6%	0.8%	1.5%	1.1%
Total population	534,233	612,396	465,120	295,981	357,675	441,702	2,707,107
Total population protected	522,601	610,155	463,384	293,913	351,965	437,182	2,679,200
Total population not protected	11,632	2,241	1,736	2,068	5,710	4,520	27,907
% of population protected	97.8%	99.6%	99.6%	99.3%	98.4%	99.0%	99.0%
% of population not protected	2.2%	0.4%	0.4%	0.7%	1.6%	1.0%	1.0%
No. of children under five protected	111,135	138,927	88,874	57,367	83,077	91,312	570,692
No. of pregnant women protected	14,609	22,819	12,271	8,599	13,200	15,420	86,918
No. of mosquito nets found	99,343	138,189	129,079	65,470	29,818	76,556	538,455
No. of children under 5 sleeping under a net	66,352	94,443	53,739	29,002	24,814	39,197	307,547
No. of insecticide sachets used	58,249	64,594	66,185	42,470	35,797	50,587	317,882
Average number of households sprayed per sachet	2.7	2.8	2.5	2.5	3.0	2.7	2.7
Number of spray operators	689	699	694	443	532	549	3,606
Average number of households sprayed per spray operator	10	10	11	10	13	12	11
Average number of spray days	22	26	21	24	16	21	22

Below is the graphical representation of key indicators comparing results of round one and two in each of the six districts.

Figure 2: Insecticide Usage Rate Operator

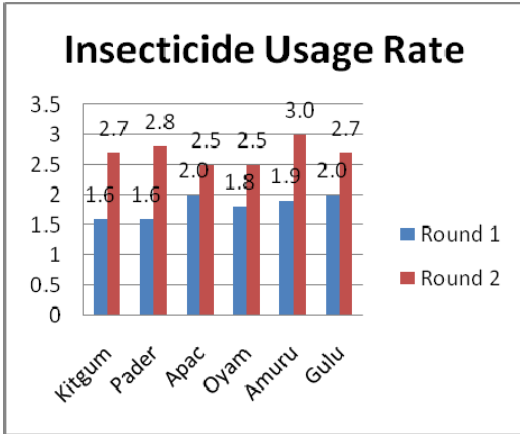


Figure 3: Houses Sprayed per Spray SO per Day

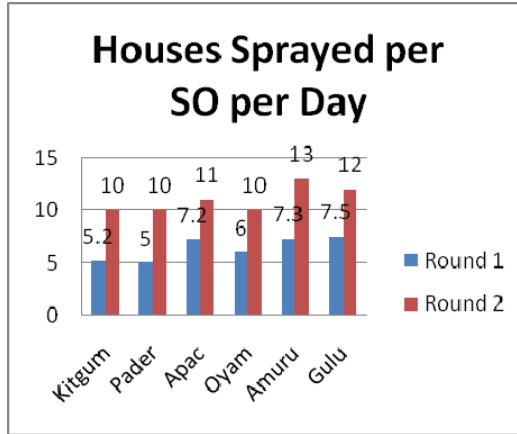


Figure 4: No. of Spray Days

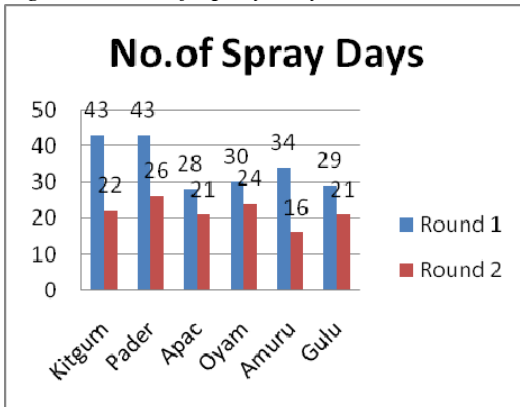
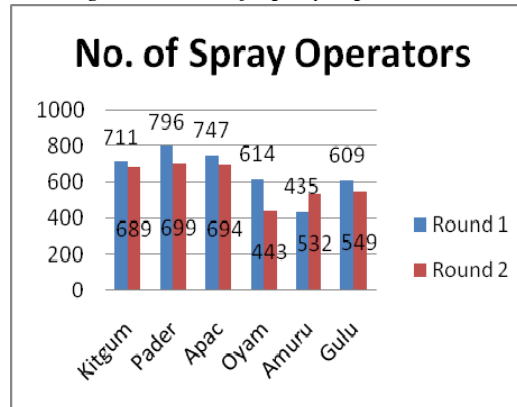


Figure 5: No. of Spray Operators



The insecticide usage rate has greatly improved overtime, starting at 1.6 houses per sachet in quarter one and standing at 2.7-3.0 houses per sachet in quarter four showing improved effective use of the insecticide. The houses sprayed per spray operator per day have also increased from 5.0 houses sprayed per spray operator in quarter one to an average of 11 houses sprayed per spray operator per day indicating an improvement in efficiency. The number of spray days per spray cycle has also reduced starting at 43 days to 16 days in the last spray cycle in quarter four in Amuru district (however, this was done with an increase to the number of spray operators).

1.2. Result 2: Comprehensive Monitoring and Evaluation of the IRS Program Performed

Strategy: Ensure appropriate program activity monitoring, environmental monitoring and compliance, and vector surveillance.

Table 8: Result 2 Indicators

Indicator	Quarter 1 Actual	Quarter 2 Actual	Quarter 3 Actual	Quarter 4 Actual	FY 10 Target	FY 10 Actual
Annual work plan developed and approved	1	0	0	0	1	1
IRS progress reports prepared and submitted	4	4	4	4	17	16
Number of district level digital maps prepared	6	8	8	12	12	34
Number of inspections done by supervisors per spray round	0	235	378	574	1,000	1,187
IEEs and/or SEAs completed as required	0	1	0	0	1	1
Percentage of washing bays and soak pits inspected	96%	95.9%	73.5%	100%	90%	91.4%
Number of entomological surveys conducted	4	6	4	10	16	24
Number of susceptibility tests conducted	0	4	2	0	6	6
Number of wall bioassay tests conducted	0	0	0	188	210	188*
Number of PSCs carried out	120	216	144	288	1,080	768

**During the first round we could not do any wall bioassays as we could not get susceptible vector mosquitoes. Then later we decided to go ahead with wild caught vector mosquitoes. Now we are carrying out bioassays 2-3 weeks after spraying to monitor quality of spraying and monthly monitoring in selected locations to evaluate the efficacy period*

Accomplishments in Year One:

Supplemental Environmental Assessment (SEA)

A SEA for Carbamates and Organophosphates (OPs) was carried out in February, 2010 led by an Environmental Specialist from Abt Associates' US office. The final SEA was submitted to and subsequently approved by USAID and Government of Uganda counterparts, paving the way for the program to procure and use and expanded selection of WHOPEs approved insecticide classes.

Routine Environmental Compliance Inspections

Environmental compliance inspections are designed to monitor PPE usage, triple rinsing, IRS store maintenance and safety of the community. A total of 661 environmental compliance inspections were conducted during the year by the project Environmental Officer in partnership with district environmental officers. Each soak pit was inspected twice. PPEs were regularly washed/cleaned and correctly used by all the IRS teams, and the soak pits were well constructed and well maintained with proper warning signage displayed. Triple rinsing, preparation of houses for spraying, IRS spraying, and bathing of IRS teams after work were conducted appropriately.

External Environmental Assessment and Compliance

The environmental assessment and compliance activities in Year One covered all six target districts of the project. In June, 2010 the project's IRS Advisor /Entomologist and Environmental Compliance Officer attended a workshop on Environmental Compliance in IRS which was held in Kisumu, Kenya. The workshop was organized by USAID and conducted by EMCAB, and included participants supporting IRS programs in eight African countries. In the project's fourth quarter, the project hosted a visit by Susan Anderson from EMACB, USA. She spent three working days visiting the program's field operations and reviewing the project's environmental compliance and mitigation procedures in accordance with the PMI-issued Best Practices Manual. She was accompanied by the COTR and the project's Environmental Compliance Officer, and reviewed IRS environmental compliance activities in Gulu district. She also held meetings with the NMCP, NEMA and USAID officials. The visit found that overall compliance was high, with several minor problems identified and improvements suggested. The following recommendations were given by Susan:

- To improve the drainage path of the soak pits and minimize excessive splash by placement of a polythene sheet on the washing bay under the first barrel to avoid environment contamination
- To add a charcoal layer in the soak pit
- Improve /Strengthen solid waste disposal
- Use environmental compliance checklist for supervisors
- Minor changes to central stores on stacking items

These recommendations will be put into place in upcoming spray rounds of the first quarter of year two.

IRS Stores

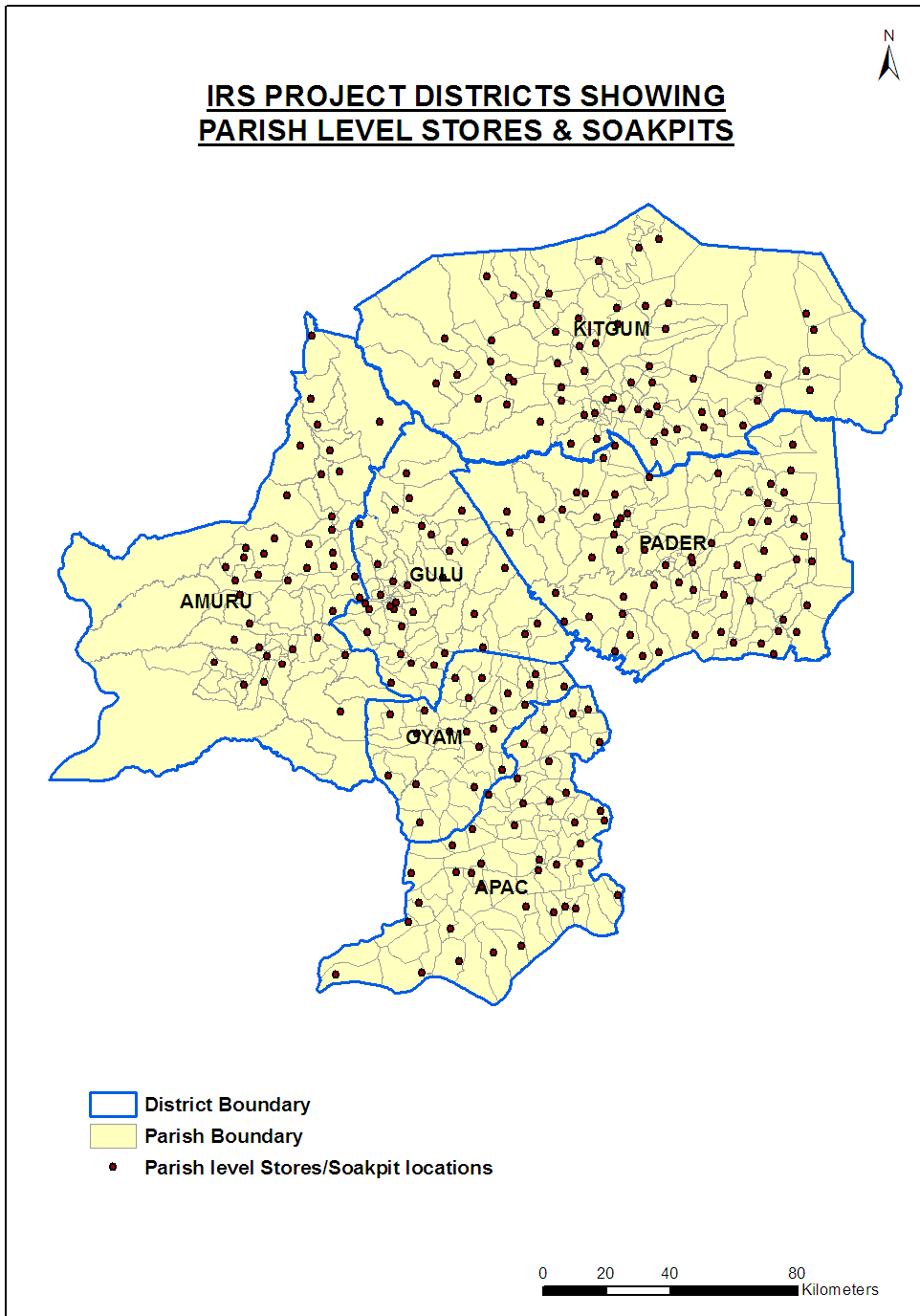
Initially, IRS stores and soak pits were located at the sub-county level with the spray operators using trucks as their means of transportation. In quarter one, the use of bicycles as a means of transportation of the spray operators was piloted in several sub-counties and was found to be efficient and cost effective. The use of bicycles was then expanded to the whole district in quarter two. However, the use of bicycles requires stores to be located at a feasible distance from communities, therefore requiring that the project identify stores and construct soak pits at the parish level. IRS stores were verified and confirmed in all six districts before commodities were delivered. Safety measures including polythene sheets, spillage kits, warning signs and First Aid Kits were distributed to each store in June, 2010. The spillage kits include a bucket full of sand and shovels meant for both fire fighting and floor cleaning in the event of insecticide spillage in the stores. Most of the identified new store locations required some level of repair, which was undertaken by the project. The districts of Gulu, Amuru and Kitgum, (as well as the new districts of Agago and Kole) have provided central district store locations that the project will use for district level consolidation of IRS equipment and commodities.

Disposal of IRS waste

The project was initiated with only one central store in Gulu that had to accommodate insecticide and all other equipment and material including the waste materials inherited from the previous project implementing partner. Subsequently, the project leased two additional central storage locations for the purpose of storing expired DDT and other materials. The project operated under a severe storage challenge for much of Year One. All DDT waste material and expired stock inherited from the previous project was carefully stored in Uganda prior to export to South Africa for incineration. Other project insecticide and waste materials and all other items are currently stored as per accepted rules and regulations

The empty insecticide sachets and nose and mouth masks from Kitgum and Pader were incinerated. The solid wastes from Apac and Oyam have been sorted and stored in the central store pending their transportation for final disposal and incineration in Nakasongola. Delay in the process of securing permission from Nakasongola to incinerate the pending wastes has resulted in accumulation of waste materials causing storage space challenges. To facilitate prompt and proper incineration of waste materials from future spray rounds, the project has budgeted for the purchase a mobile type of incinerator in Year Two.

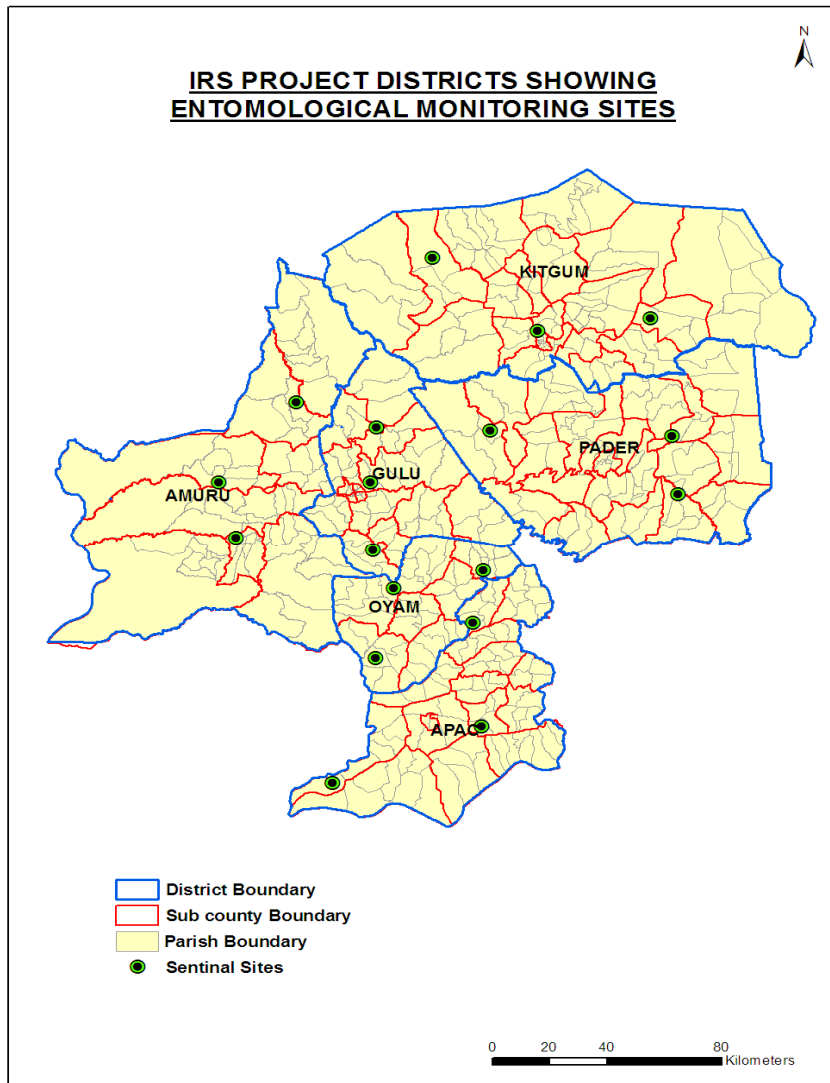
Map 1: IRS Stores



Entomological Monitoring

Pre and Post IRS Pyrethrum Spray Collections (PSCs) were carried out in sentinel sites in 3 sub counties in each target district.

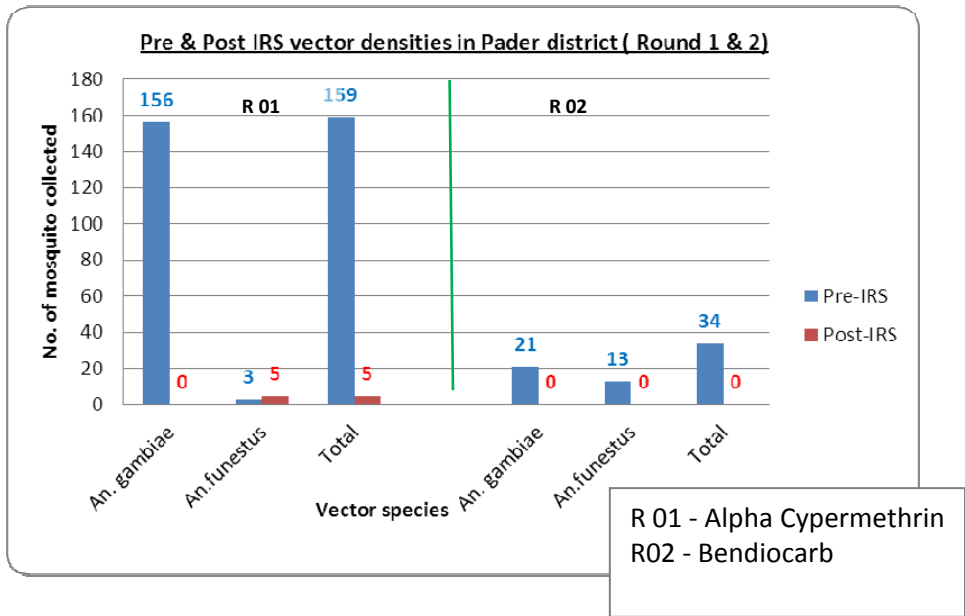
Map 2: Entomological Monitoring Sites

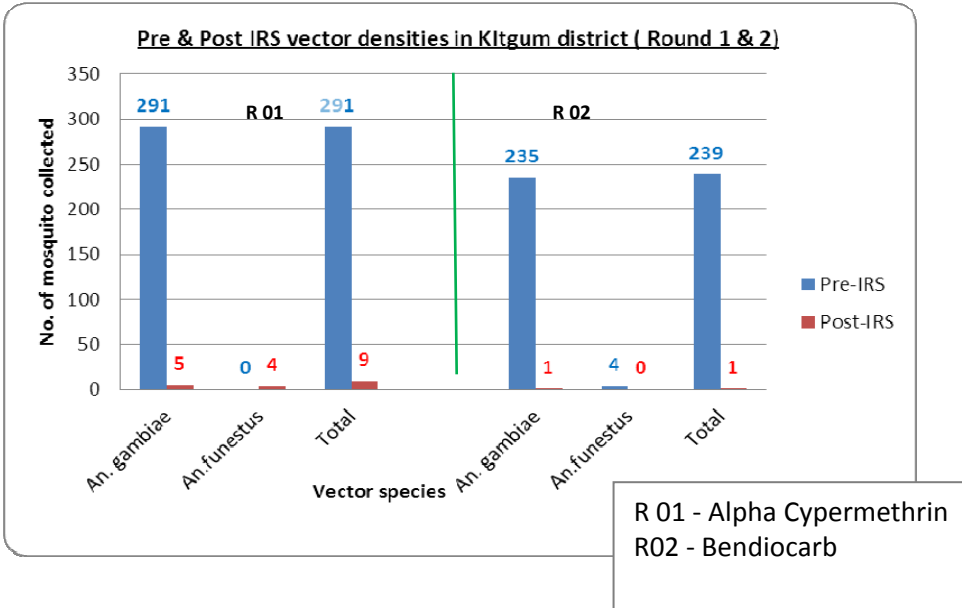


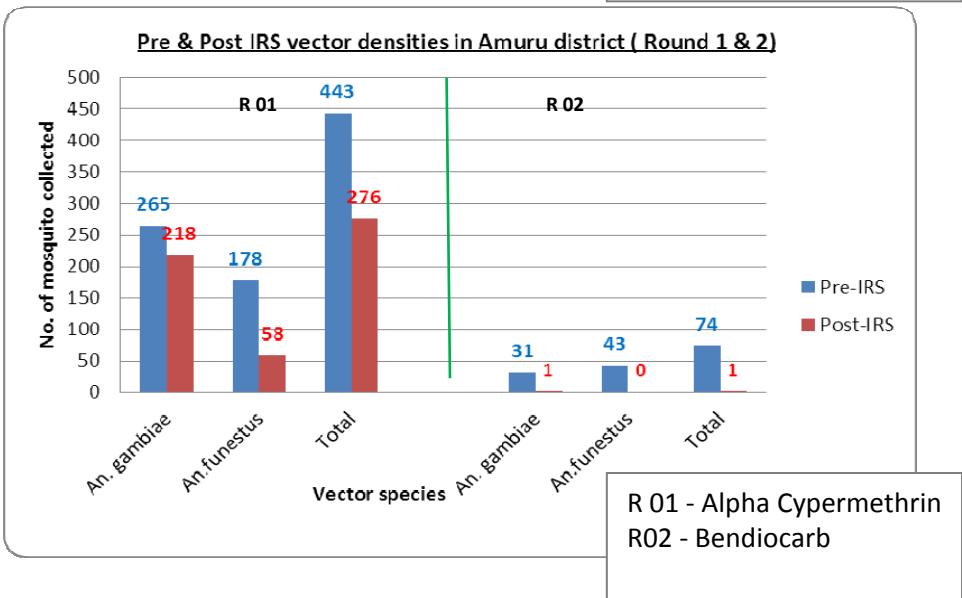
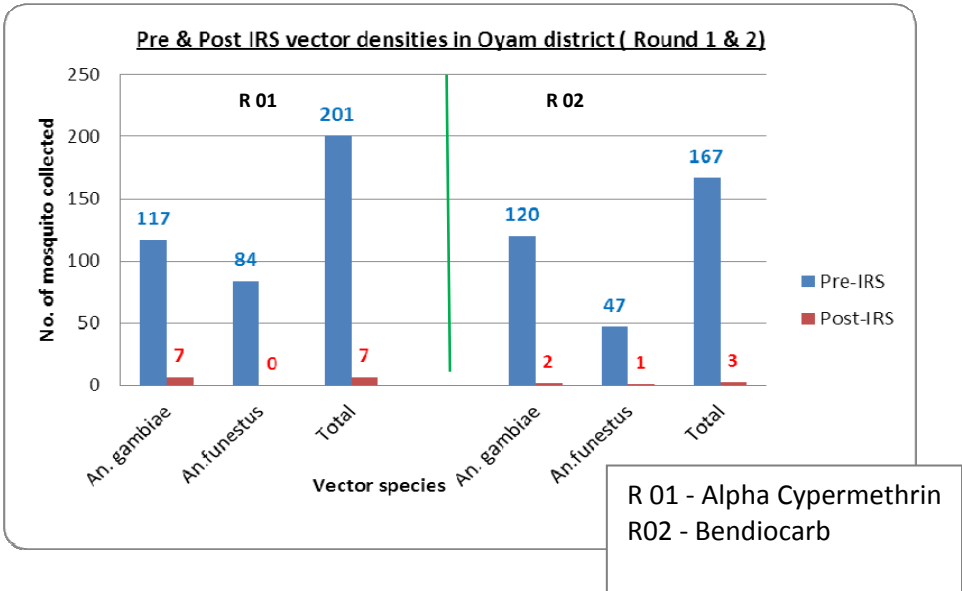
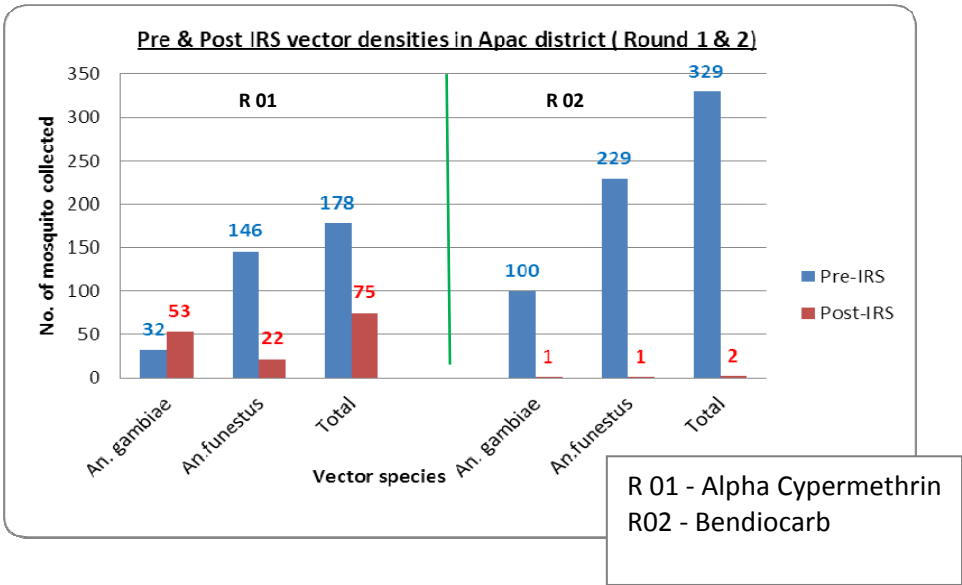
During Year One, the project conducted routine entomological surveillance to measure vector density before and after IRS spray activities. Marked reduction of vector densities were observed following Round One (Alpha cypermethrin) spraying in Kitgum and Pader districts compared to other target districts. However, in the other four districts it was observed that Alpha cypermethrin was not producing the expected outcome in sites where post IRS PSCs were carried out. It was observed that there was a significant reduction in *Anopheles funestus* in Apac and Oyam locations after IRS activities; however *Anopheles gambiae* populations appeared to increase. *Anopheles funestus* is the most common malaria vector species in Apac and Oyam as these districts include swampy areas, which are the preferred breeding sites of *Anopheles funestus*. The increase in *Anopheles gambiae* may be due to the change in their resistance level, competition between two vector species, poor quality of spraying, and/or a change in the resting and feeding behavior of vectors. However, since the data was not adequate to make a definite conclusion about the cause of the persistent *Anopheles gambiae* population, the project decided to conduct additional studies in the future. Presently, the

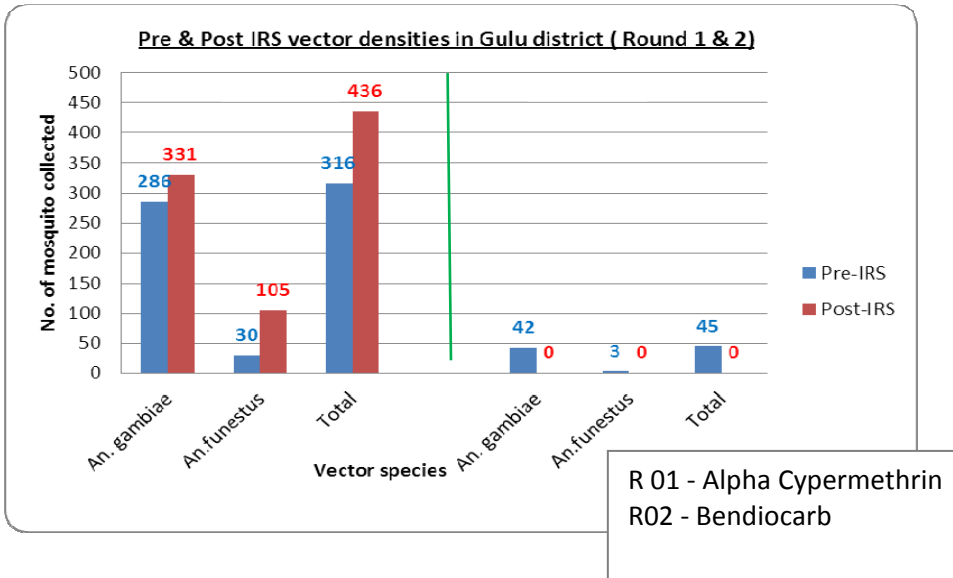
quality of IRS cannot be tested as the project is not equipped to get a susceptible vector population; this will be possible only after establishing an insectary (planned for Year Two). The project is also in the process of expanding its entomological monitoring activities by using more techniques targeted towards studying the behavioral changes of vectors in the project area.

It was also observed that in Gulu district both *Anopheles gambiae* and *Anopheles funestus* populations had gone up in the houses where Post IRS PSCs were carried out. It was found that four out of 12 houses where PSC were done in this sub county had high vector populations. This may be due to the poor quality of the spraying, poor quality of insecticide or the alternative reasons mentioned earlier. A similar trend was also observed in Amuru district where there were a few houses with high *Anopheles gambiae* populations. The appearance of *Anopheles gambiae* in areas where *Anopheles funestus* populations have gone down was observed in Gulu district as well. Intermittent rains in these districts during the study period could also have contributed to the high vector populations. As a supplementary monitoring tool project decided to carry out wall bio assays using wild caught vector mosquitoes to check the quality and residual effect of IRS in these districts following the second round of spraying.









Vector susceptibility tests were conducted in Apac, Oyam, Amuru and Gulu districts in January 2010 for Alpha-cypermethrin using WHO test papers, with findings of 100% vector susceptibility. DDT, Bendiocarb and Pirimiphos Methyl papers were also used, and it was found that Bendiocarb is also effective with 100% mortality. Increased resistance levels were observed with DDT.

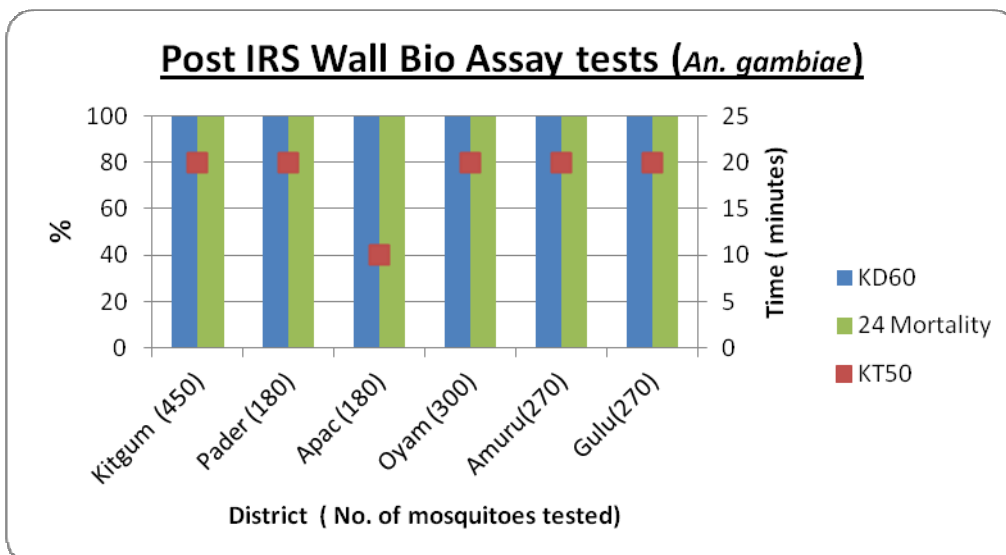
In April, 2010 susceptibility studies were again carried out in Kitgum and Pader districts for Alpha cypermethrin, DDT, and Bendiocarb, and it was found that DDT showed a high level of resistance, while Bendiocarb showing 100% susceptibility.

Vector susceptibility studies were also conducted in all the six districts using standard WHO test during the year. Alpha cypermethrin, DDT, and Bendiocarb were primarily tested in these studies, and it was found that DDT showed a high level of resistance, while Bendiocarb showed 100% susceptibility. Decreased susceptibility to Alpha cypermethrin was observed in Kitgum and Pader districts while in other districts it showed 100% susceptibility. Decreased susceptibility to Alpha cypermethrin was one of the important observations, suggesting increasing vector resistance to both DDT and pyrethroid insecticides.

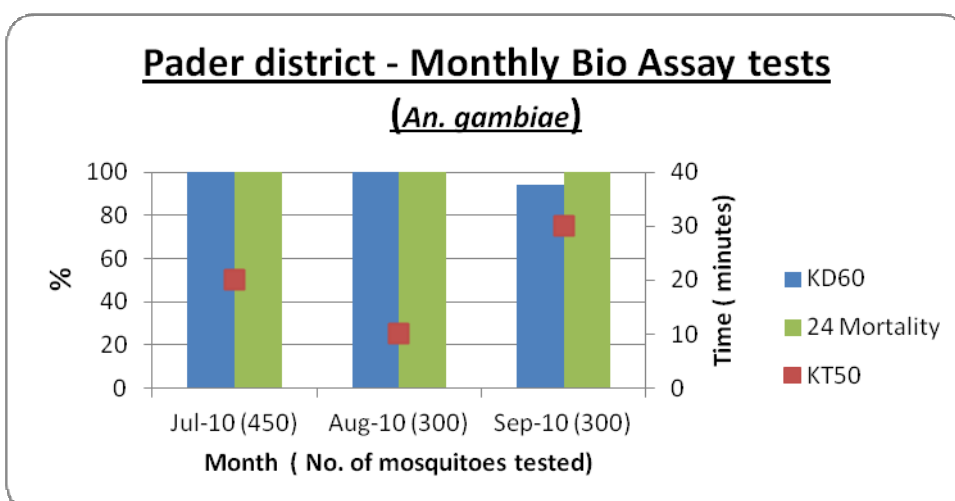
After detailed discussions with the MOH, NMCP, USAID and CDC, and based on the results from PSCs and susceptibility studies, it was decided to shift to Carbamate insecticides for the second round of IRS. Bendiocarb was therefore selected as the insecticide for the second round.

Post IRS PSCs clearly demonstrated that following the introduction of Bendiocarb, Post IRS indoor resting vector mosquito densities were greatly reduced in Kitgum, Pader, Apac, Oyam, Amuru and Gulu districts as represented in the earlier graphs.

Following the first round of spraying, wall bioassay tests were carried out in each district two to three weeks after Bendiocarb spraying to find out the quality of spraying. All bioassay tests were conducted using wild caught mosquitoes. 100% mortality within 24 hours and 100% knockdown (KD60) was observed in all the districts showing the high efficacy of the Bendiocarb, and also indicating the high quality of spraying. It was also found that KT50 (Time taken for 50% knockdown of the exposed mosquitoes) was between 10-20 minutes.

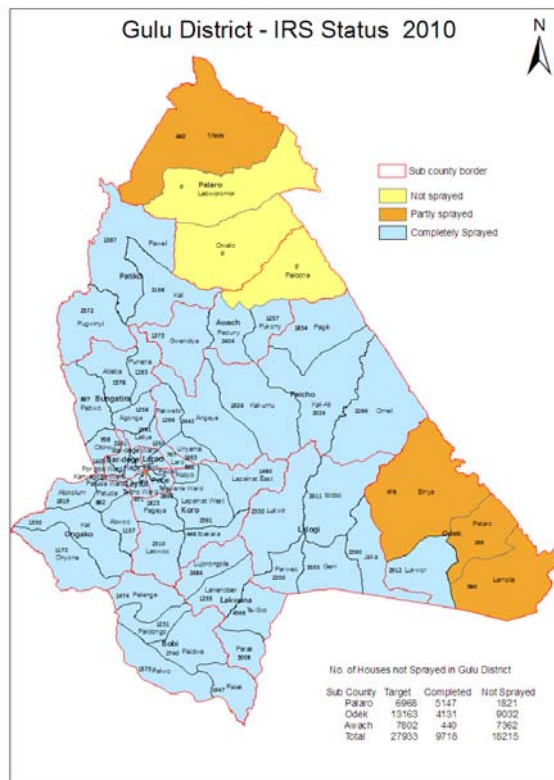
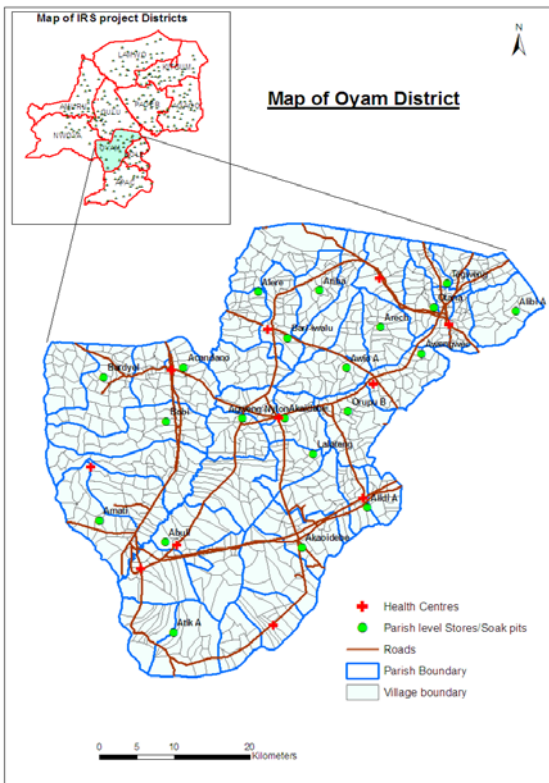
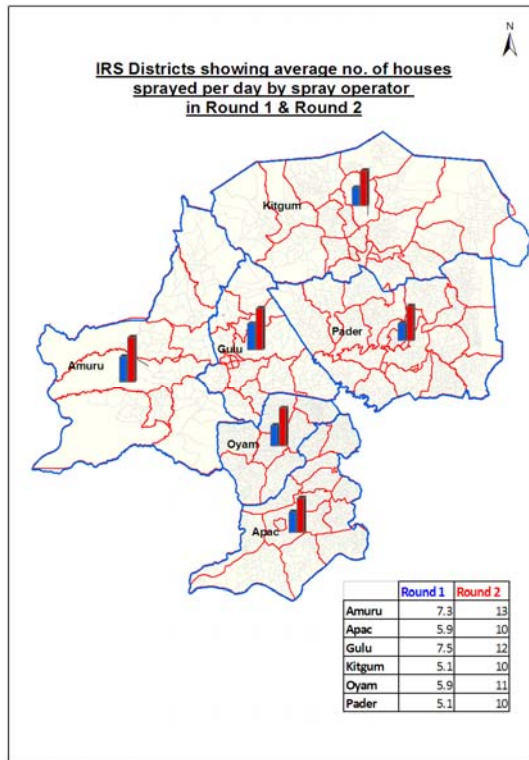
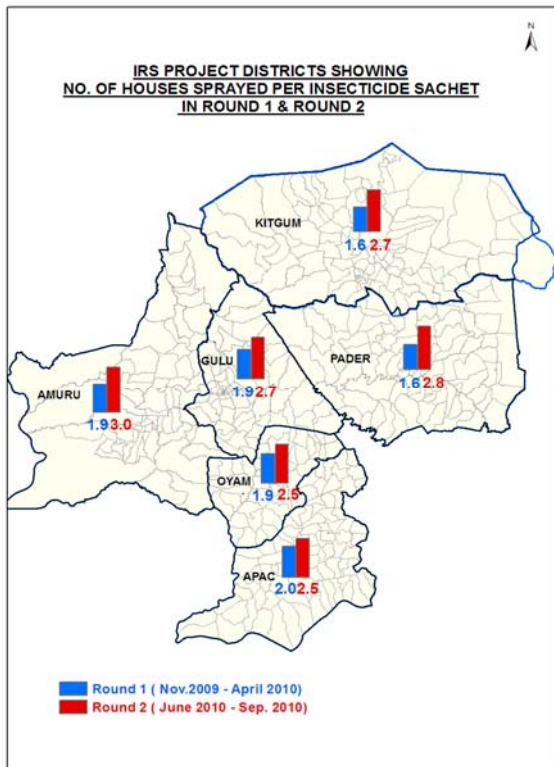


In addition to the above tests it was decided to carry out monthly wall bioassays in three selected districts (Pader, Oyam and Gulu) to monitor efficacy period (decaying rate) of the insecticide. The project has started this work in Pader district and the following chart demonstrates the progress so far. The same houses were used for each month's study, all having been sprayed in June, 2010.



Geographic Information Systems (GIS)

GIS technology was used to develop project maps showing insecticide usage rates, spray coverage, average number of houses sprayed per spray operator per day, and health centers and IRS store locations for all six target districts. These maps are useful in tracking key performance indicators and in identifying the location of parish stores during logistics distribution planning and data collection. The GIS map for Gulu district was used during the insecticide shortfall to identify the parishes that required subsequent spraying; those along the border with Pader district allowed for easy logistics distribution. The maps were developed to display district, sub-county and parish levels. Some of the maps developed using GIS are shown below.



DDT Re-export

The Project inherited a consignment of 38,453kg of DDT expired product and waste materials retained from the previous IRS project were collected and exported to Pretoria during the fourth quarter of Year One. A company, by the name of AVIMA of South Africa was sub-contracted at a cost of US\$ 199,171.73 to transport DDT and the waste materials from Uganda to South Africa for disposal by incineration. The whole consignment was airlifted in two rounds. Disposal by incineration is yet to be carried out by Thermopower Process Technology (PTY) LTD of South Africa.

Monitoring and Evaluation

In the second quarter of the year, the project's data management system was reviewed and modified to increase the efficiency and timeliness of data reporting for improved performance monitoring and decision making. A new database was developed using Epi Info software, through which the project performance can be tracked including details such as the individual performance of team leaders and spray operators. The new database also tracks the rate of insecticide usage and houses sprayed per team on a daily basis. The database is secure and has automatic daily data backups. Validation rules were inbuilt in the database which helps in quick identification and minimizing of errors. A data collection system was introduced to improve the timeliness of data collection and transmission from the field to the data entry point, improving the pace at which the project could identify and address individual or spray team performance issues. Data collectors using motorbikes transport the data cards from the Parish stores to the data entry point on a daily basis. Three data clerks are employed per district to enter data from the data cards into the database on a daily basis to curb data backlogs. The data clerks are based at a central data entry point provided by the districts. Daily performance reports showing key performance indicators are issued from the database to the program team to aid in performance monitoring, decision making, and quick action to address problem areas.

1.3. Result 3: National Capacity for Conducting IRS Developed

Strategy: Improve the technical skills and capability of NMCP/MOH (national and district level) and other relevant government bodies including National Environment Management Authority (NEMA).

Table 9: Result 3 Indicators

Indicator	Quarter 1 Actual	Quarter 2 Actual	Quarter 3 Actual	Quarter 4 Actual	FY 10 Target	FY 10 Actual
IRS training module developed	0	0	0	0	0	0
Number of IRS and entomological monitoring plans developed and implemented.	1	0	0	0	1	1
Number of national and district staff conducting the in-service training	0	0	0	0	0	0
Number of students trained in IRS	0	0	0	0	0	0

Accomplishments in Year One:

Most of the activities under Result 3 are scheduled for the second year of the project cycle. However, some progress has been made on establishment of the insectary as detailed below.

Establishment of Insectary

The establishment of the insectary in Gulu University premises was discussed with USAID, the MOH and Gulu University. During this meeting, it was decided that a Memorandum of Understanding (MOU) should be prepared between the Uganda IRS Project and Gulu University whereby the university will provide the necessary space and plan for the building. Following another discussion with MOH and USAID, it was decided that a MOU should be signed between MOH and Gulu University allowing MOH to have access to the insectary during and after the project. After receiving the Bill of Quantities (BOQ), it was decided to give the task of construction of the insectary to Gulu University engineers, through an agreement laid out in a MOU between Gulu University and Abt Associates, Inc.

Project Management and Administration

The project experienced a major challenge in the second quarter. The subcontractor for logistics, Cooper Uganda Ltd, withdrew from the project without prior notice which led to a disruption in the management of the logistics and logistical tracking. Concurrently the logistics officer in Gulu had to be replaced. Abt Associates, Inc. took over direct management responsibility for logistical operations, and will retain this role going forward.

Accomplishments this quarter:***Human resources***

A staff retreat took place from January 7th- 9th at the Lake Victoria Serena Hotel. The primary purpose of the retreat was to share the project's goals and objectives and reinforce team work spirit through team-building activities. In addition to all Abt staff, key representatives from project partners Coopers and CDFU were present. Three new positions were created in the approved work plan through September, 2010 which included two additional field coordinators and one additional driver – all to be based in the Gulu office. Recruitment was carried out for the three new positions, candidates were identified and the positions were filled. The project Accountant tendered her resignation in the third quarter and the position was re-advertised and a new account recruited. Three new staff joined the Uganda IRS team in quarter four; a Data Analyst and Logistics manager based in Gulu and an Accountant based in Kampala. Job descriptions of the Project Assistant, Administrative Assistant Kampala, Field Coordinators, and National IRS Field Coordinator were revised. The plan to subcontract a logistics firm to replace Coopers was cancelled following detailed review of potential subcontract partners, and it was decided to handle the logistics in-house. The project's organisational structure has since been reviewed and the Year Two work plan and budget includes new logistics positions: four district store keepers, two dispatch agents and one central store manager.

Short Term Technical Assistance (STTA)

During the third quarter, consultant Juan Manual Urrutia provided STTA to the project in the area of logistics management. A copy of his trip report and findings were provided to USAID/Uganda, and his recommendations were put into practice by the project. As part of the orientation for the accountant, Sita Magua, the Accounting Manager from Abt Associates' home office, visited the project to provide training. Simon Smith from the home office came to provide technical assistance with finalization of the Year Two work plan and budget.

Disciplinary Measures

- The storekeeper for Laroo sub-county in Gulu district was arrested on April 29th, 2010 for failing to account for nine cartons of insecticide. He was held at the Central Police Station in Gulu, awaiting appearance in court.
- The sub-county supervisor of Bobi was arrested on September 22nd, 2010 for charges of soliciting bribes during the recruitment of the spray operators.
- Supervisors who performed poorly in the previous spray rounds were discontinued from any further involvement in current and future IRS activities.

Reporting Requirements

The Uganda IRS Project developed and submitted the following program documentation as contractually obligated:

1. Monthly Reports
 2. End of Spray Reports
 3. Quarterly Reports
-

Successful interventions/ Innovative Approaches

1. An Innovative Approach was implemented when Post Bank was contracted to make payments to spray personnel throughout the project span using their mobile banking services. This service allows spray personnel to receive their wages in time and has saved both Abt from handling large sums of money during spray personnel payments. Additionally, this system provides the project with a visible display of transparency in the payment process. Payment of spray personnel has been very successful.
2. Spraying at the parish level was piloted in the first quarter with a few sub-counties. In the second quarter onwards, the spraying at parish level was scaled up to cover the whole of each district. Spray operators used bicycles as a means of transportation which has proved to be a cost effective and efficient approach.
3. To improve the timeliness of reporting, motorcycles were introduced to collect data daily from the field and deliver to the data entry point. This data collection system has provided the project with timely information which is used to monitor the project.
4. The IRS field coordinators were allocated districts/sub-counties to supervise each spray round. This has improved on the supervision of the spray activities due to the close monitoring at sub-county level.
5. Thanks to IEC messages, the community is vigilant in observing that a sachet is dropped into the spray pump when the spray operator requests water. By encouraging this community level monitoring, the project was able to reduce the risk of theft of insecticide.
6. The districts provided IRS storage facility free of charge at the Parish and Sub County level.
7. An IRS data management training manual was developed to ensure synchronization of knowledge passed on from the trainers to the trainees. This manual and the manuals from Bayer Environmental Science were given as handouts to all participants in the TOT. There has been a great improvement in the understanding of IRS concepts by the spray personnel, which is partly attributed to the manuals used during training.
8. VCOs were trained in the TOT and were deployed to train the spray operators in the districts of Kitgum and Pader. This has brought about a great improvement in the quality of the training given to the spray operators and has contributed to positive results in the quality of spraying and the insecticide usage rate.
9. Involving the entire spray team in the construction of local soak pits is found to be motivating, promotes ownership, and speeds up the construction process as compared to contracting a team leader alone.
10. In Amuru district during the third quarter, the sub-county leadership in Purongo sub-county were so pleased with the successful completion of the spray round that they organized a party inviting project staff to celebrate successful implementation.
11. A performance tracking sheet was designed and placed at each store to track daily selected statistics. This sheet is now the cornerstone of the supervision activities.
12. Experienced Vector Control Officers (VCOs) from other districts across the country and from the MOH were engaged to support the project with training of spray

operators at sub-county level in order to improve the quality and efficiency of spray application.

13. In Amuru district during the fourth quarter, a pilot was launched where VCOs were brought on board to boost supervision of the spray round.
 14. Hard to reach population centers in Purongo sub-county of Amuru district were reached with IRS using boats as a means of transportation of the spray team.
 15. Unique identities were issued to the spray operators enabling the project to track individual performance and quality of spraying.
 16. The logistics department has implemented a data base, which is used to determine numbers of spray personnel by Parish, as well as quantify supplies and equipment needed based on the number of houses served from each store. This improvement allowed for advance planning and pre-positioning of supplies, making it possible to distribute logistics consistently and on time to all sub-counties in Amuru and Gulu districts resulting in all the sub-counties in the two districts starting spraying on the same day.
 17. The project has continued to innovatively devise ways of efficient and effective operation while minimizing program costs. The insecticide usage rate has greatly improved overtime, in quarter four standing at 2.7 houses per sachet. The houses sprayed per spray operator per day have also improved standing at an average of 11 houses sprayed per day. The number of spray days per spray cycle have also reduced with the last spray cycle in quarter four in Amuru district taking only 16 days to complete (albeit this was done with an increase to the number of spray operators).
 18. IRS has been well received by many community members who have opened their houses without hesitation and have reported satisfaction with the current insecticide and spray rounds.
-

Challenges/Constraints

1. Hard to reach villages in some districts pose a challenge. In Amuru district, Purongo sub-county, the communities in Aringo and Latoro parishes, are surrounded by a national game park. The only access route to these communities is by passing through another district and crossing River Nile using canoes.
2. Some pockets of resistance to the spray exercise were observed in some sub-counties in Gulu district, notably sub-counties of Paicho, Lakwana, Bungatira and Lalogi. The IEC/BCC sub-contractor intervened with dissemination of electronic media messages on radio and mobilization of district leadership to address the communities. The communities responded positively thereafter.
3. In Apac there was uncertainty in gaining local political support to conduct IRS activities following a council resolution to suspend spraying. However project management promptly convened a meeting of the district leadership and resolved the problem, though there was a two weeks delay in implementation of the spray round.
4. The spray region experienced heavy rains in quarter two and four that interrupted the day-to-day spray activities.
5. The high incidence of faulty pumps slowed down the implementation of the spray activities. The project worked closely with the supplier of the newly purchased pumps to catalogue the issues, and has agreed upon full.
6. Incidences of indiscipline are still reported among spray personnel. Some sub-county supervisors (Health Assistants) still need close follow-up to do their supervisory duties.
7. Involvement of health assistants and spray operators in other health activities of other development partners sometimes interrupts/delays spray activities.

8. Lack of coordination among implementing partners of different, sometimes competing projects affects the progress of activities.
9. Inadequate mobilization by some LC1 chairmen leading to slowing down of the spray process.
10. A few suspected cases of indiscipline among the spray personnel resulted in the alleged insecticide poisoning of six livestock in two incidents reported in Kitgum district. Also, there was one case of suspected suicide in Pader district. In all of these incidents it was suspected that cause of death was ingestion of insecticide stolen by project spray operators. All these incidents are still under investigation by the police.
11. Identifying suitable storage locations at parish level is difficult in some remote parishes.
12. The project encounters occasional conflicts of interest where a local leader wants their relatives, friends and in-laws to be recruited in the spray team.

Lessons Learned and Recommendations

1. Close supervision is key for quality results to be achieved. The field supervision structure for spray campaigns has been revised. The spray team leaders' responsibilities have been revised to enhance their supervisory function. There will also be more direct engagement with the team leaders. The basic unit of supervision has been shifted from the sub-county to the parish.
2. Timely data is critical for performance monitoring of field operations. The operations and M&E departments have strengthened the monitoring system to be able to produce daily reports to be used as management tools.
3. It is recommended that selected health facilities with malaria laboratory diagnosis be identified to monitor the trends of malaria confirmed cases in each district where IRS has been conducted.
4. Involvement of various leaders (political, religious and opinion) at the district and sub county levels through sensitization sessions promotes acceptability/ownership of the spraying exercise by the households.
5. Combining political/religious leaders with district technical staff during the interactive radio talk shows enables clarification of issues, promotes positive attitudes towards the spraying exercise, and builds support and confidence for the IRS intervention among the community members. Poor performing spray personnel should be discontinued from work and the high performers should be recognized and rewarded.
6. Involvement of VCOs in the training of spray operators has not only built capacity at national level, but has also enhanced the quality of the spray operators' training.
7. All cadres of politicians, religious leaders, civil society and elders should be involved in mobilizing the community for forth coming IRS implementation.
8. Spray operators are capable of working hard if motivated to do so. In the current spray round in Kitgum and Pader, each spray operator was given a target of spraying 10 houses per day. They were encouraged to maintain a high rate of households sprayed, with proper quality, with assurances that they will be compensated for the value of 25 days work, even if they complete spraying in less duration. This has removed the incentive to lengthen the time of spraying, and motivated the spray operators, who are now spraying an average of 11 houses per day.
9. Establishing stores at the Parish level, and using bicycles for transportation, has given spray operators better access to houses which were previously difficult to reach due to

the poor road network. This has helped in achieving a higher degree of community acceptance and improved coverage rates.

10. Empowering the district leaders' ownership of the program resulted in the provision of free storage space.
11. Involvement of DHT members and Abt staff in recruitment of the spray personal enabled more VHT members to be brought on board, thus ensuring transparency and community participation
12. Following the decision to take up logistics management in-house, the logistics management component has since been improved. The Year Two work plan and budget includes new logistics positions: four district store keepers, two dispatch agents and one central store manager for better management of logistics.

Planned Activities for the Next Year

Outlined in the Annual Work Plan 2011