

### IRS Insecticide Procurement: Historical Trends

**Table 1: Coverage, insecticide class, and resistance status in countries where PMI or USAID is supporting IRS**

	Coverage (in structures) <sup>1</sup>		Insecticide Class <sup>2</sup>			Resistance Status <sup>3</sup>
	2009	2010	2009	2010	2011	
Angola	102,731	135,856	pyrethroid	pyrethroid	To be determined	Continued susceptibility to pyrethroids
Benin	156,223	166,910 (1 <sup>st</sup> 2010 round) 200,036 (2 <sup>nd</sup> 2010 round)	carbamate	carbamate	carbamate	Continued susceptibility to carbamates
Burkina Faso	Not sprayed	33,897	n/a	carbamate	carbamate	Continued susceptibility to carbamates
Ethiopia	459,402	646,870	DDT	pyrethroid	pyrethroid & carbamate	Documented resistance to DDT and emerging resistance to pyrethroids
Ghana	284,856	342,876	pyrethroid	pyrethroid	pyrethroid	Data indicates emerging resistance to pyrethroids
Kenya	517,051	503,707	pyrethroid	pyrethroid	To be determined although likely pyrethroids for one more year	<p>An. gambiae—Documented resistance to DDT and pyrethroids in particularly near the Uganda border; however, An. gambiae is rare to absent in much of western Kenya including the sprayed districts.</p> <p>An. arabiensis—Continued susceptibility to pyrethroids although some evidence of emerging resistance and concerns about behavioral avoidance</p>

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Liberia	20,393	48,375	pyrethroid	pyrethroid	pyrethroid & carbamate	Data indicates emerging yet localized resistance to pyrethroids (impacting only half of targeted IRS areas)
Madagascar	216,060	576,320	pyrethroid	pyrethroid	To be determined	Suspected pyrethroid resistance in some districts
Malawi	74,772	97,329	pyrethroid	organo-phosphate	To be determined	Data indicates localized emerging resistance to pyrethroids and carbamates
Mali	126,921	127,273	pyrethroid	pyrethroid	carbamate	Data indicates emerging resistance to pyrethroids
Mozambique	571,194	618,290	pyrethroid & DDT	pyrethroid	To be determined	Data indicates emerging resistance to pyrethroids and DDT
Rwanda	295,174	63,395 (1 <sup>st</sup> 2010 round) 303,659 (2 <sup>nd</sup> 2010 round)	pyrethroid	pyrethroid	To be determined	Continued susceptibility to pyrethroids
Senegal	176,279	254,559	pyrethroid	pyrethroid	carbamate	Data indicates localized emerging resistance to pyrethroids
Tanzania	422,749	849,595	pyrethroid	pyrethroid	To be determined	Continued susceptibility to pyrethroids
Uganda	330,663	481,859 (1 <sup>st</sup> 2010 round) 1,226,898 (2 <sup>nd</sup> round)	pyrethroid	carbamate	carbamate	Data indicates high levels of resistance to pyrethroids and DDT
Zambia	1,189,676	1,100,000	pyrethroid & DDT	pyrethroid & DDT	To be determined	Data forthcoming

*Parenthesis indicates draft figures.*

<sup>1</sup>Coverage = number of structures sprayed.

<sup>2</sup>There are four classes of insecticides recommended by the World Health Organization for IRS: pyrethroids, carbamates, organophosphates, and DDT (an organochlorine).

<sup>3</sup>Resistance status is based on either or both CDC or WHO bioassays that measure knockdown and mortality of vectors after exposure to various insecticides.

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<sup>4</sup>Susceptibility to DDT is only tested when a Government has indicated its interest in using DDT and its willingness to submit an application for Stockholm reporting requirements.

**Table 2. 2011 Spray Calendar**

Countries	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Angola												
Benin												
Burkina Faso												
Ethiopia												
Ghana												
Kenya												
Liberia <sup>1</sup>												
Madagascar												
Malawi												
Mali												
Mozambique												
Rwanda												
Senegal												
Tanzania <sup>2</sup>												
Uganda <sup>3</sup>												
Zambia												

<sup>1</sup>Two rounds of IRS in two spray districts.

<sup>2</sup>Two rounds of IRS in Zanzibar and the Lake Region.

<sup>3</sup>Two rounds of IRS in all spray sites.