SUPPLEMENTARY S1: Composition of volatile organic compounds (VOCs) in selected insect and plant oils analyzed by Gas Chromatography coupled to Mass Spectrometry (GC-MS)

				Mean ± SE, (standard error) (*ng*/*μ*Lof oil)					
RT	**Compound**	**RI^{Cal*}**	**Idf**	*Ruspolia differens*	*Macrotermes spp*	*Schistocerca gregaria*	*Ocimum kilimandscharicum*	*Eucalyptus citriodora*	*Cymbopogon nardus*
	Alcohol								
6.17	3-methyl-2-butanol	778	RI.MS		2.52±0.00		2.92±0.19		
6.46	4-methyl-2-pentanol	788	RI.MS			2.80±0.21			
6.46	2-Hexanol	788	Std,RI.MS	2.9±0.21					
10.36	1-Octen-3-ol	945					4.32±0.82		
20.17	1*α*, 2*β*, 3*α*, 5*β*-Cyclohexanetetrol,	1587				20.38±3.92			
25.42	Z7-C16-enol	2120				98			
	Aldehyde								
6.34	Hexanal	783	Std,RI.MS			2.63±0.10			
21.85	(E)-Chrysanthemal	1746	RI.MS				5.03±1.04		
	Fatty acid								
8.40	2-Piperidinecarboxylic acid	863	RI.MS	3.6±0.40					
15.63	Nonanoic acid	1247	Std,RI.MS			12.65±3.45			
17.04	n-Decanoic acid	1344	Std,RI.MS			43.72±14.06			
19.32	Dodecanoic acid	1517	Std,RI.MS	9.0±0.74	65.15	1874.21±152.32			
20.73	ɣ-dodecalactone	1635	RI.MS		12.37±1.12	21.34±0.75			
21.15	Methyl tetradecanoate	1672	Std,RI.MS	5.7±0.09	16.83±2.21				
21.55	Tetradecanoic acid	1709	Std,RI.MS	8.8±0.65	14.09±2.59	380.51±40.45			
21.88	Ethyl tetradecanoate	1749	RI.MS	16.8±1.77					
21.92	Methyl pentadecanoate	1754	Std,RI.MS		6.93±0.63				
22.21	Methyl 2-hydroxydodecanoate	1789	Std,RI.MS			21.92±10.02			
22.59	Pentadecanoic acid	1827	Std,RI.MS		5.95±0.59	29.75±1.39			
22.87	14-methylpentadecanoate	1853	RI.MS		5.98±0.46				
22.91	Ethyl pentadecanoate	1857	RI.MS	5.4±0.12					
23.23	Methyl hexadecanoate	1887	Std,RI.MS	29.2±11.52	84.08±12.83				
23.42	9Z-Hexadecenoic acid	1905	Std,RI.MS	24.1±4.07	14.53±2.66	180.24±32.98			
23.59	Methylhexadecanoate	1924	Std,RI.MS	7.1±0.88	31.23±5.12				
23.70	Ethyl 9-hexadecenoate	1936	RI.MS	82.9±42.04					

23.85	Methyl heptadecanoate	1952	Std,RI.MS		8.96±0.71				
23.90	Ethyl hexadecanoate	1957	RI.MS	270.0±105.51					
23.94	14-methyl hexadecanoate	1962	Std,RI.MS		7.48±0.57				
24.00	Methyl 10Z-heptadecenoate	1968	RI.MS		11.27±1.12				
24.21	Methyl heptadecanoate	1991	Std,RI.MS		12.13±1.22				
24.41	*n*-Hexadecanoic acid	2013	Std,RI.MS	192.5±101.38	56.20±13.79	1046.22±50.20			
24.41	methyl heptadecanoate	2013	Std,RI.MS	119.2±88.77					
24.56	Heptadecanoic acid	2028	Std,RI.MS	25.1±3.99		41.53±10.01			
24.62	Methyl 8-heptadecenoate	2035	RI.MS	18.9±3.80					
24.68	9Z,12Z-Octadecadienoic acid	2041	Std,RI.MS		10.18±1.05				
24.91	Methyl 9E-Octadecenoate	2066	Std,RI.MS	103.5±46.54	34.43±26.48				
24.92	Methyl 9Z-Octadecenoate	2067	Std,RI.MS		159.23±25.03				
25.14	Methyl octadecenoate	2090	Std,RI.MS	64.2±22.02	30.55±4.02				
25.32	Oleic Acid	2109	Std,RI.MS	378.6±187.01					
25.33	Methyl linoleate	2111	Std,RI.MS		48.56±12.12				
25.46	Octadecanoic acid	2125	Std,RI.MS		41.72±13.85				
25.55	Ethyl Oleate	2135	RI.MS	698.4±194.30					
25.74	Ethyl octadecenoate	2155	RI.MS	429.6±145.41					
26.34	(9Z,12Z,15Z)-octadecatrienoic acid	2222	Std,RI.MS	5.3±0.08					
26.36	Ethyl 5,8,11,14-eicosatetraenoate	2225	RI.MS	32.1±11.02	10.06±1.36				
26.61	Ethyl nonadecanoate	2254	RI.MS	41.4±9.44					
26.90	Ethyl eicosanoate	2288	RI.MS	48.7±6.59	15.55±2.57				
27.24	5Z,8Z,11Z,14Z-eicosatetraenoic acid	2329	RI.MS	42.1±7.45					
27.68	(5Z,8Z,11Z,14Z,17Z)-eicosapentaenoic acid	2382	RI.MS	31.9±5.32					
	Ketone								
6.78	Octane	800	Std,RI.MS	2.7±0.08					
6.91	6,6-Dimethylhepta-2,4-diene	805	RI.MS		2.52±0.00		3.09±0.25		
8.16	o-Xylene	854	Std,RI.MS	4.3±0.45	3.95±0.64		4.87±1.08	4.43±0.96	3.73±0.42
8.17	p-Xylene	854	Std,RI.MS	4.2±0.72	4.46±0.68	3.91±0.48	3.49±0.44	4.53±0.37	3.22±0.12
8.47	2,4,6-Trimethyl-3-heptene	866	RI.MS	4.9±0.09					
8.47	1,3-Bis(cyclopentyl)-1-cyclopentanone	866	RI.MS			3.40±0.01			
8.60	3-methyl 2E-Pentene	871	RI.MS					3.39±0.57	
8.75	Ethylbenzene	877	Std,RI.MS					3.09±0.26	

9.97	2,6-dimethyl-4-hepten-3-one	928	RI.MS	6.9±0.15	4.89±0.00		4.89±0.00			
24.29	Eicosane	2000	Std,RI.MS		9.43±1.76					
	Monoterpene									
9.02	Tricyclene	887	Std,RI.MS				4.56±0.60			
9.18	α-thujene	893	Std,RI.MS				3.84±0.10			
9.62	α-phellandrene	912	Std,RI.MS				50.46±13.97			
9.64	α-Pinene	913	Std,RI.MS	4.5±0.60	3.70±0.38		12.96±2.51	4.53±0.62	3.77±0.35	
10.17	4-Carene	937	Std,RI.MS					8.35±1.62		
10.21	*β*-Pinene	939	Std,RI.MS				10.35±1.58			
10.56	β-Myrcene	954	Std,RI.MS				6.41±1.29	6.91±0.55	6.20±0.12	
11.23	δ-3-Carene	985	Std,RI.MS	9.0±0.48	7.55±1.16			8.73±0.69	6.64±0.42	
11.24	ɣ-Terpinene	985	Std,RI.MS	8.1±0.34						
11.25	Limonene	985	Std,RI.MS				143.90±91.50	31.13±7.84	16.68±0.75	
11.52	o-Cymene	998	Std,RI.MS				5.82±1.36			
11.63	Eucalyptol	992	Std,RI.MS				37.37±21.31			
12.35	L-Fenchone	1040	Std,RI.MS				6.73±1.82			
12.70	Terpinolene	1064	Std,RI.MS					5.97±0.36		
12.72	α-Terpinene	1066	Std,RI.MS						5.51±0.04	
12.75	(E)-Rose oxide	1068	RI.MS					6.23±0.46		
12.89	Linalool	1077	Std,RI.MS				38.41±21.10	10.88±1.73	7.65±0.43	
12.93	*trans-p*-Mentha-2,8-dienol	1080	RI.MS				12.21±3.42			
13.31	Isopulegol	1105	RI.MS					11.50±4.52	12.01±1.47	
13.34	Camphor	1107	Std,RI.MS				382.74±136.49			
13.42	Citronellal	1111	Std,RI.MS					183.61±38.04	100.03±36.59	
13.49	Isoborneol	1115	Std,RI.MS				8.94±2.59			
13.63	Borneol	1124	Std,RI.MS				11.92±2.84			
13.81	Terpinen-4-ol	1134	Std,RI.MS				31.37±15.23	7.86±2.09		
14.07	α-Terpineol	1149	Std,RI.MS				15.13±6.63	9.14±2.57		
14.12	Myrtenol	1152	Std,RI.MS				15.16±3.74			
14.57	Citronellol	1179	Std,RI.MS					94.96±27.90	53.96±7.46	
14.96	Geraniol	1202	Std,RI.MS					117.42±32.81	71.21±7.87	
16.27	3-Cyclopentylcyclopentene	1289	RI.MS			5.11±0.08				
16.37	Citronellyl acetate	1296	RI.MS					20.29±3.74		
16.74	2,6-dimethyl-2,6-octadiene	1322	RI.MS						13.23±0.61	

18.12	1,6-Octadien-3-ol, 3,7-dimethyl-, formate	1423	RI.MS				5.42±0.43
	sesquiterpene						
16.35	α-Cubebene	1295	Std,RI.MS		5.79±1.27		
16.72	α-Copaene	1321	Std,RI.MS		8.82±2.23		
16.85	β-Bourbonene	1330	RI.MS		8.72±2.45		
16.92	β-Elemene	1335	RI.MS			22.94±4.87	
17.15	Muurola-3,5-diene	1352	RI.MS	5.3±0.22	5.43±1.00		
17.17	α-Gurjenene	1353	RI.MS		5.64±0.99		
17.27	β-Elemene	1360	RI.MS		6.55±1.17		14.58±1.17
17.30	β-ylangene	1363	RI.MS			10.11±1.82	
17.64	Isoledene	1387	RI.MS			7.31±0.58	
17.66	(E)-Caryophyllene	1389	Std,RI.MS		13.28±1.95	7.49±0.38	
17.79	Copaene	1398	Std,RI.MS		7.77±1.25		6.75±0.30
18.02	ɣ-Muurolene	1415	Std,RI.MS		5.34±0.95	7.29±0.55	5.3±0.35
18.10	Germacrene D	1422	Std,RI.MS		7.18±2.59	9.24±0.95	9.46±0.41
18.13	Humulene	1424	Std,RI.MS		7.44±2.43		5.85±0.17
18.30	α-Muurolene	1437	RI.MS		4.71±1.00	8.16±1.28	7.55±0.28
18.46	Germacrene B	1449	RI.MS			11.07±2.28	
18.50	α-Cadinene	1452	RI.MS			10.85±3.38	
18.50	ɣ-Cadinene	1452	RI.MS		7.29±1.40		
18.59	Calamene	1459	RI.MS		6.87±1.15		
18.67	β-Muurolene	1466	Std,RI.MS			11.89±1.89	
18.85	α-Calacorene	1479	RI.MS		6.47±1.29		
18.86	ɣ-Cadinene	1480	RI.MS			8.11±1.07	8.79±0.65
18.95	δ-Cadinene	1487	RI.MS			20.01±2.22	13.78±1.11
19.27	Elemol	1513	RI.MS			20.51±7.50	15.94±1.46
19.35	Caryophyllene oxide	1519	Std,RI.MS		15.15±6.01		
19.62	Dauca-5,8-diene	1541	RI.MS			8.29±1.71	
19.64	(E)-Muurola-3,5-diene	1543	RI.MS		4.90±0.98		7.2±0.26
19.91	α-Eudesmol	1565	RI.MS			7.16±0.45	12.95±1.07
20.01	β-Cadinene	1574	RI.MS		6.81±1.87		
20.29	ɣ-Eudesmol	1597	RI.MS			11.31±1.67	
20.40	tau-Cadinol	1606	RI.MS			7.80±2.58	
20.42	Amorpha-4,7(11)-diene	1608	RI.MS			12.15±6.90	

	Sterols						
26.74	10-oxo-methyl octadecanoate	2269	RI.MS		11.51±1.44		
33.64	γ-Tocopherol	3009	Std,RI.MS	17.2±7.26			
34.11	Cholestan-3-ol, (3, beta,5, beta.)-	3027	RI.MS		22.96±6.59		
34.72	Cholesterol	3049	Std,RI.MS	60.0±52.60	41.84±9.24		
36.58	Campesterol	3297	Std,RI.MS		29.26±13.24		
37.26	Stigmasterol	2595	Std,RI.MS		28.24±17.70		
37.61	Stigmastanol	3366	Std,RI.MS		13.35±4.35		
38.47	β-Sitosterol	3385	Std,RI.MS		24.97±10.22		
	Triterpene						
22.05	2,6,10,14-tetramethyl hexadecane	1770	RI.MS		7.47±1.12		
30.96	Squalene	2787	Std,RI.MS	48.0±18.94	25.41±4.66	105.40±9.95	
31.34	Peucelinendiol	2824	RI.MS				6.49±1.03

Relative mass values presented as Mean M± SE, (SE =standard error) of triplicate determinations (*ng*/μL of oil) from three independent analyses. Id[f] Definitive compound identification via authentic standard; if not authenticated then compound identity is tentative by RI match to only one column. Ie Std, comparison with available analytical standards; RI, linear with those calculated with ADAMS (2007) [20] and NIST (2020) [21] libraries. comparison to published mass spectral data (MS). *Retention index for HP-5 MS column using a homologous series of n-alkanes and a linear GC ramp program.

Supplementary Table 2a: Repellency (%) (±SE) at hours after treatment and CPT of 1:1 C.*nardus*/Macrotermes spp against *Ae. aegypti* in laboratory test

			0min		30min		60min		120min		150min		180min		240min		270min		
Treatment	**Volunteer**	**N**	**N**	**R(%)**	**N**	**R(%)**	**N**	**R(%)**	**N**	**R(%)**	**N**	**R(%)**	**N**	R(%)	N	R(%)	N	R(%)	CPT
50%CTN/50%TMT	V-1	12	0	100	0	100	0	100	0	100	8	96	10	95	20	90	22	89	2.5
	V-2	17	0	100	0	100	0	100	0	100	0	100	0	100	15	92.5	23	88.5	3
	V-3	23	0	100	0	100	0	100	0	100	11	94.5	16	92	16	92	27	86.5	2
	V-4	25	0	100	0	100	0	100	0	100	0	100	0	100	10	95	20	90	3
	V-5	27	0	100	0	100	0	100	0	100	0	100	0	100	22	89	34	83	3
	V-6	34	0	100	0	100	0	100	0	100	0	100	0	100	32	84	36	82	3.5
	V-7	11	0	100	0	100	0	100	0	100	0	100	0	100	40	80	40	80	3
	V-8	19	0	100	0	100	0	100	0	100	0	100	5	97.5	25	87.5	36	82	2.5
	AVG	**21.0**	**0.0**	**100.0**	**0.0**	**100.0**	**0.0**	**100.0**	**0.0**	**100.0**	**2.4**	**98.8**	**3.9**	**98.1**	**22.5**	**88.8**	**29.8**	**85.1**	**2.8**
	StdErr	**2.76**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.58**	**0.79**	**2.16**	**1.08**	**3.44**	**1.72**	**2.70**	**1.35**	**0.46**

Supplementary Table 2b: Repellency (%) (±SE) at hours after treatment and CPT of 1:1 C.*nardus*/Macrotermes spp against *Cx quinquefasciatus* in laboratory test

			0min		30min		60min		120min		150min		180min		240min		270min		
Treatment	**Volunteer**	**N**	**N**	**R(%)**	**N**	**R(%)**	**N**	**R(%)**	**N**	**R(%)**	**N**		**N**	R(%)	N	R(%)	N	R(%)	CPT
50%CTN/50%TMT	V-1	20	0	100	0	100	0	100	0	100	0	100	4	98	9	95.5	26	87	2.5
	V-2	23	0	100	0	100	0	100	0	100	2	99	2	99	9	95.5	10	95	2
	V-3	36	0	100	0	100	0	100	0	100	0	100	0	100	8	96	14	93	3
	V-4	40	0	100	0	100	0	100	0	100	0	100	0	100	7	96.5	56	72	3
	V-5	40	0	100	0	100	0	100	0	100	0	100	4	98	14	93	16	92	2.5
	V-6	50	0	100	0	100	0	100	0	100	0	100	4	98	16	92	24	88	2.5
	V-7	25	0	100	0	100	0	100	0	100	0	100	6	97	13	93.5	27	86.5	2.5
	V-8	41	0	100	0	100	0	100	0	100	0	100	6	97	14	93	20	90	2.5
	AVG	**34.4**	**0.0**	**100.0**	**0.0**	**100.0**	**0.0**	**100.0**	**0.0**	**100.0**	**0.3**	**99.9**	**3.3**	**98.4**	**11.3**	**94.4**	**24.1**	**87.9**	**2.6**
	StdErr	**3.73**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.25**	**0.13**	**0.84**	**0.42**	**1.19**	**0.60**	**5.02**	**2.51**	**0.32**

Supplementary Table 2c: Repellency (%) (±SE) at hours after treatment and CPT of 1:1 C.*nardus*/Macrotermes spp against *An. gambiae* in laboratory test

			0min		30min		60min		120min		150min		180min		240min		270min		
Treatment	**Volunteer**	**N**	**N**	**R(%)**	**N**	**R(%)**	**N**	**R(%)**	**N**	**R(%)**	**N**	R(%)	**N**	R(%)	N	R(%)	N	R(%)	CPT
50%CTN/50%TMT	V-1	20	0	100	0	100	0	100	0	100	0	100	0	100	0	100	6	97	4
	V-2	11	0	100	0	100	0	100	0	100	0	100	0	100		100	10	95	3
	V-3	47	0	100	0	100	0	100	0	100	0	100	0	100	8	96	12	94	4
	V-4	50	0	100	0	100	0	100	0	100	0	100	0	100	6	97	8	96	3
	V-5	43	0	100	0	100	0	100	0	100	0	100	0	100	0	100	14	93	3.5
	V-6	38	0	100	0	100	0	100	0	100	0	100	0	100	10	95	16	92	3
	V-7	19	0	100	0	100	0	100	0	100	0	100	0	100	0	100	18	91	3.5
	V-8	37	0	100	0	100	0	100	0	100	0	100	0	100	0	100	22	89	4
	AVG	**33.1**	**0.0**	**100.0**	**0.0**	**100.0**	**0.0**	**100.0**	**0.0**	**100.0**	**0.0**	**100.0**	**0.0**	**100.0**	**3.4**	**98.5**	**13.3**	**93.4**	**3.5**
	StdErr	**5.13**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.57**	**0.76**	**1.89**	**0.94**	**0.46**

The number (N) of mosquitoes landing on the arm of each volunteer was counted per hour for 5 h. Repellency (R)was calculated each hour and complete protection time (CPT) was determined by calculating the number of minutes from the time of repellent application to the first mosquito landing.