AIM COST Action CA17108: *Aedes* Invasive Mosquitoes

and

MediLabSecure (EU DG DEVCO: IFS/2018/402-247)

Training Course:

Field assessment of Quality in Control Measures Against *Aedes* Invasive Mosquitoes (including SIT)

HOST INSTITUTIONS

City Council of Valencia, University of Valencia and Lokímica, Valencia, Spain

13-24 September 2021

Venue: Faculty of Medicine, University of Valencia, Avenida de Blasco Ibáñez, 15

TRAINERS

Romeo Bellini, Rubén Bueno, Eleonora Flacio, Gregory Lambert, Antonios Michaelakis, Dušan Petrić, Vincent Robert and Francis Schaffner

HOST PERSON

Rubén BUENO, PhD., Medical Entomologist, Technical Director, Laboratorios Lokímica

Associate Professor of the University of Valencia

President of the European Mosquito Control Association (EMCA)

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Concept: Adults and larvae will be sampled three days before and three (seven) days after the treatments (including SIT and MRR). Valencia's four areas/sampling plots, with similar AIM density, of similar size (30 ha) and equal distance to the home base (SIT walking distance, others 30 min), are chosen by the host.

Sampling density per plot:

5 BG traps (1 trap/6 ha); 2 edges (exposed to ULV and hidden), 3 middle (2 exposed, 1 hidden); 20 BG traps in total; each trainee has one

5 EVS traps (1 trap/6 ha); 2 border zone (exposed to ULV and hidden), 3 middle (2 exposed, 1 hidden); 20 EVS traps in total; each trainee has one

50 HLC (1 HLC station/0,6 ha); 20 border zone and 30 middle; 5 min each, targeting 2 hours window in the peak of the females/males daily activity; rotation; 200 stations in total; each trainee doing 10

25 ovitraps (1 ovitrap/1,2 ha); 10 border zone and 15 middle; 100 ovitraps in total; each trainee handling 5

Evaluation of the efficacy of larvicide, ground ULV adulticide treatments, and SIT (MRR) will be performed on four experimental plots:

- **Plot 1** – ground ULV adulticide treatment only (pyrethroid)
- **Plot 2** – larvicide and ground ULV adulticide treatment – emergency response (Aquatain or Vectomax + same pyrethroid adulticide as used at Plot1) – target 0 adults
- **Plot 3** – SIT + door to door (education + same larvicide as used at Plot1 and Plot2)
- **Plot 4** – untreated (i.e. negative control)

PROGRAMME

Week zero for trainers only

Friday, 10 September 2021

Time	Activity
whole day	The arrival of the trainers

Saturday, 11 September 2021

Time	Activity
09:00-17:00	Inspection of experimental plots, provisional design of sampling station to be discussed with trainees on Monday

Sunday, 12 September 2021

Time	Activity
18:00	Release of sterile males in Plot 3

Week one for trainees and trainers

Monday, 13 September 2021

Time	Activity
09:00-09:15	Introduction and welcome
09:15-09:45	Project representatives: AIM COST, MediLabSecure, IAEA RER 2026 - outlines of the projects and reasons for collaboration
09:45-10:00	Course content –schedule

Time	Activity
10:00-10:30	Control and QC methods -adults (general and AIM)
10:30-11:00	**Coffee break**
11:00-11:30	Control and QC methods - larvae (general and AIM)
11:30-12:00	Control and QC methods -SIT
12:00-13:00	How we do AIM control (Lokímica). Mosquito control program in València
13:00-14:00	**Lunch break**
14:00-14:30	Sampling for quality assessment of AIM control measures - eggs
14:30-15:00	Sampling for quality assessment of AIM control measures - larvae
15:00-15:30	Sampling for quality assessment of AIM control measures - adults
15:30-16:00	MRR for SIT
16:00-16:30	Door to door
16:30-17:00	Discussion and experimental design, the grouping of the trainees (4 groups of 5 trainees for 4 **plots (all trainers, Lokímica, trainees)**
17:00-17:30	AIMSurv 2022
17:30-18:30	Preparation of the equipment for the field sampling; commenting maps and sampling strategy already developed before the training (**all trainers**)

Tuesday, 14 September 2021

Time	Activity
09:00 - 09:30	Presentation of VECMAP®
09:00 - 13:00	Travel to the sampling sites, larval sampling, identifying the productivity of different breeding sites, identifying the breeding sites rich in larvae to be followed 3 days before and 3 days after the treatment from which samples will not be taken to the lab for identification; selecting the places for HLC and setting up the BG and EVS **(all experts, 4 groups of trainees)**
13:00-14:30	**Lunch break**
14:30-17:00	Selecting the places and setting up the BG and EVS **(all experts, 4 groups of trainees)**
17:00-18:00	HLC collection 5 people per site, 10 sampling stations per people, 50 HLC sampling stations per site: rotation of people and sampling time **(all experts, 4 groups of trainees)**
18:00-20:00	Travel back to the lab, sorting and identifying the adults' sampled by HLC, labelling, preserving the samples **(all experts, 4 groups of trainees)**

Wednesday, 15 September 2021

Time	Activity
09:00 - 09:30	Official welcome address by the dean of Faculty of Medicine, University of Valencia, and the Health Councillor of the City Council of Valencia
09:30 - 11:00	Demonstration of larvicide (with three different mode of action – endotoxins, surface films, IGR) impact on larvae
09:30 - 13:00	Travel to the sampling sites; collecting the nets from BG and EVS, larval sampling, positioning of ovitraps **(all experts, 4 groups of trainees)**
13:00-14:30	**Lunch break**
14:30-17:00	Sorting and identifying samples from the BG and EVS; replacing the batteries. Setting up the BG and EVS at chosen places **(all experts, 4 groups of trainees)**
17:00-18:00	HLC collection 5 people per site, 10 sampling station per people, 50 HLC sampling station per site: rotation of people and sampling time. **(all experts, 4 groups of trainees)**

Time	Activity
18:00-20:00	Travel back to the lab; sorting and identifying the adults' sampled by HLC, labelling, preserving the samples, charging the batteries **(all experts, 4 groups of trainees)**

Thursday, 16 September 2021

Time	Activity
09:00 - 09:30	Two Morning lectures (trainees)
09:30 - 13:00	Travel to the sampling sites; collecting the nets from BG and EVS, larval sampling, identifying the productivity of different breeding sites **(all experts, 4 groups of trainees)**
13:00-14:30	**Lunch break**
14:30-17:00	Sorting and identifying samples from the BG and EVS; replacing the batteries. Setting up the BG and EVS at chosen places **(all experts, 4 groups of trainees)**
17:00-18:00	HLC collection 5 people per site, 10 sampling stations per people, 50 HLC sampling stations per site **(all experts, 4 groups of trainees)**
18:00-20:00	Travel back to the lab; everyone from Plots 1, 2 and 4 goes to plot 3; there all (1,2,3,4) engage in group by group to door to door; also sorting and identifying the adults' sampled by HLC, labelling, preserving the samples, charging the batteries **(all experts, 4 groups of trainees)**

Friday, 17 September 2021

Time	Activity
08:00-11:00	Release of marked sterile males in Plot 3
11:00-13:00	Trainees who did not joined door to door (Plots 1, 2 and 4) goes to Plot 3; there all (1,2,3,4) engage in group by group to door to door. Then, 1, 3, and 4 travel to Plot 1 to engage in the larvicide treatment.
13:00-14:00	**Lunch break**
14:00-14:30	All travel to sampling sites. Collecting the nets from the BG and EVS
14:30-16:00	Everyone from Plots 1, 3 and 4 goes to plot 1; to sample the adults for WHO cages
16:00–17:30	All sample the adults for WHO cages for treatment at Plot 1.
17:30-18:00	Setting up the cages and the Teflon plates at one place tri positions (EXPOSED, HALF HIDEN FROM DIRECT SPRAY DIRECTION, FULLY HIDDEN)
18:00-19:00	Demonstration of different adult Ground adulticide treatments (Plot 1)
19:00-20:30	Adulticide treatment
20:15	One hour after treatment (time when vehicle with ULV generator treats the mosquitoes in cages and Teflon plates) - collecting the Teflon plates, registering adult mosquito mortality inside the cages after 1 hour, transferring mosquitoes to the clean vials. Travel back to the lab.
21:15-22:00	Registering the adults' mortality 2h after the treatment (Groups 1, 3 and 4)

Saturday, 18 September 2021

Time	Activity
07:15	Registering the adults' mortality 12 h after the treatment (Groups 1, 3 and 4).
09:00 - 13:00	Plot 2 demonstration of larvicide treatment for Group 2.
13:00-16:00	**Lunch break**
16:00-17:00	Setting up the BG and EVS at the same places as before the treatment **at Plots 1, 3, 4; Group 2** sample the adults for WHO cages for treatment at Plot 2
17:00-18:00	HLC collection **at Plots 1, 3, 4**: Group 2 sets up the cages and the Teflon plates at one place tri positions (EXPOSED, HALF HIDEN FROM DIRECT SPRAY DIRECTION, FULLY HIDDEN)

Time	Activity
18:00-19:50	Demonstration of different adult Ground adulticide treatments (Plot 1) Ground ULV adulticide treatment (Plot 2)
19:15	Registering the adults' mortality 24 h after the treatment. (Groups 1, 3 and 4), identifying the adults sampled by HLC, UV light needed
20:20-20:50	One hour after treatment (time when vehicle with ULV generator treats the mosquitoes in cages and Teflon plates) - collecting the Teflon plates, registering adult mosquito mortality inside the cages after 1 hour, transferring mosquitoes to the clean vials. Travel back to the lab.
21:20-22:00	Registering the adults' mortality 2h after the treatment (Group 2).

Sunday, 19 September 2021

Time	Activity
07:20-7:30	Registering the adults' mortality 12 h after the treatment (Group 2)
09:00 - 10:00	Three Morning lectures (trainees)
10:00 - 13:00	Travel to the sampling sites; collecting the nets from BG and EVS, larval sampling at already identified and sampled breeding sites **(all experts, 4 groups of trainees)**
13:00-14:30	**Lunch break**
14:30-17:00	Sorting and identifying samples from the BG and EVS; replacing the batteries. Setting up the BG and EVS at chosen places **(all experts, 4 groups of trainees)**
17:00-18:00	HLC collection **(all experts, 4 groups of trainees)**
18:00-19:00	Travel back to the lab; sorting and identifying the adults' sampled by HLC, labelling, preserving the samples, charging the batteries **(all experts, 4 groups of trainees)**
19:00-19:30	Registering the adults' mortality 24 h after the treatment (Group 2)

Week two for trainees and trainers

Monday, 20 September 2021

Time	Activity
09:00 - 10:00	Three Morning lectures (trainees)
10:00 - 13:00	Travel to the sampling sites; collecting the nets from BG and EVS, larval sampling at already identified and sampled breeding sites **(all experts, 4 groups of trainees)**
13:00-14:30	**Lunch break**
14:30-17:00	Sorting and identifying samples from the BG and EVS; replacing the batteries. Setting up the BG and EVS at chosen places **(all experts, 4 groups of trainees)**
17:00-18:00	HLC collection **(all experts, 4 groups of trainees)**
18:00-20:00	Travel back to the lab, sorting and identifying the adults' sampled by HLC, labelling, preserving the samples, charging the batteries **(all experts, 4 groups of trainees)**

Tuesday, 21 September 2021

Time	Activity
09:00 - 10:00	Three Morning lectures (trainees)
09:30 - 13:00	Travel to the sampling sites, collecting the nets from BG and EVS. Identification of the samples, data quality control **(last day for Groups 1, 3, and 4)**
13:00-14:30	**Lunch break**
14:30-17:00	Sorting and identifying samples from the BG and EVS **(Group 2 –setting up the BG and EVS traps)**
17:00-18:00	HLC collection, rotation of people and sampling time **(Group 2)**

Time	Activity
18:00-20:00	Travel back to the lab, sorting and identifying the adults' sampled by HLC, labelling, preserving the samples, charging the batteries **(all experts, 4 groups of trainees)**

Wednesday, 22 September 2021

Time	Activity
09:00 - 10:00	Three Morning lectures (trainees)
10:00 - 13:00	Data analysis, identification of the samples, data quality control, presenting the results**. Group 2** travels to the sampling sites, collecting the nets from BG and EVS **(last day for Group 2)**.
13:00-14:30	**Lunch break**
14:30-17:00	Data analysis, identification of the samples, data quality control presenting the results, **t**ravel to the sampling sites.
16:00-18:00	Demonstration of Flight Test Device by Tragsa, trainees involved
18:00-19:00	HLC collection **(Plot 3).** Identifying and sorting the adults' sampled.

Thursday, 23 September 2021

Time	Activity
09:00 - 09:30	Three Morning lectures (trainees)
09:30 - 11:00	Presentation of group leaders, discussion with trainers and PCO representatives
11:00 - 13:00	Round table limitations and opportunities for improvement of AIM control
13:00-14:30	**Lunch break**
14:30-18:00	Droplets size measuring and analysis
17:00-18:00	HLC collection **(Plot 3)**
18:00-19:00	Travel back to the lab, identifying and sorting the adults' sample by HLC.

Friday, 24 September 2021

Time	Activity
Open meeting with scientists, technicians, managers, decision-makers and politicians of the Region	
09:00 - 11:00	Local experience in control of AIM (3-4 speeches, including some experiences with Wolbachia detection that we are currently implementing in the city, etc.)
11:00-11:30	**Coffee break**
11:30-13:30	Good practices, summary and the results of the training: (some of trainers promote Q&A, models of public tenders for PCO's)
14:00-16:00	**Lunch**
16:00-	Finally free afternoon