



Trial Testing the Efficacy of Mosquito Larvae Control Products

(Gan HaDarom – April 2009)

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Trial Objectives:

Comparison of the efficacy of Aquatain, Aquatain AMF and MLO in the control of mosquito larvae in water.

Materials and Method:

List of Products:

10 Oil (MLO) – 98.5% oil distillates

Aquatain – Liquid silicon

Aquatain AMF – Liquid silicon with added 2% Eucalyptus Oil and 2% Citronella Oil

List of Treatments:

No.	Preparation	Dosage (liter/ hectare)	Dosage (cc per sq. m.)	Dosage per Bucket – Approx. 0.1 mg (cc)
1	Control			
2	10 Oil	10	1	0.1
3	10 Oil	100	10	1
4	Aquatain AMF	2.0	0.2	0.02
5	Aquatain AMF	10	1	0.1
6	Aquatain AMF	50	5	0.5
7	Aquatain	10	1	0.1

Explanations for the Table:

1. No product applied.
2. Reduced dosage of 10 oil (with the aim of achieving incomplete control).
3. The recommended dosage for 10 Oil in Israel (the label recommends 50 – 100 liters per hectare).
4. A reduced dosage of AMF (with the aim of achieving incomplete control).
5. The recommended dosage of AMF is 10 liters per hectare.
6. A high dosage of AMF
7. A comparison between the Aquatain dosage and the AMF dosage.



Trial Timetable

On April 2, 2009, white buckets with a maximum volume of 12 liters were placed in the room. 10 liters of tap water and mosquito food were added to each bucket.

On April 3, 2009, 15 Stage 2 larvae of the species *Culex pipiens* were added to each bucket.

On April 4, 2009, the various products were added to each bucket as appropriate to the treatment under test.

On April 4, 6, 7, 9, 11 and 13, the number of living mosquito larvae and pupa in each bucket were counted.

Trial Regime

There were five replicates for each treatment and each replicate was a separate bucket. The trial room temperature was maintained at 21°C – 24°C

Results

Table 1: Mosquito Counts

Treatment	Average Number of Live Mosquitoes per Bucket (Days after Treatment Application)				
	0	2	3	5	
	4.4.09	6.4.09	7.4.09	9.4.09	
	All Stages	All Stages	All Stages	Larvae Stages 2 - 3	Larvae Stage 4
Control	15.0	13.8 a	13.6 b	3.4 a	8.8 a
10 Oil 10	15.0	5.2 c	4.6 b	2.4 a	0.0 b
10 Oil 100	15.0	4.2 c	3.6 b	1.6 a	0.0 b
Aquatain AMF 2.0	15.0	10.0 ab	9.8 b	5.0 a	4.2 ab
Aquatain AMF 10	15.0	8.2 b	6.6 b	4.8 a	0.0 a
Aquatain AMF 50	15.0	8.2 b	7.6 b	7.4 a	0.0 a
Aquatain 10	15.0	7.6 b	6.4 b	4.4 a	0.0 a

Treatments with the same letters are not differentiated statistically at a level of 0.05 according to SNK



Table 2: Mosquito Counts

Treatment	Average Number of Live Mosquitoes per Bucket (Days after Treatment Application)					
	7			9		
	April 11, 2009			April 13, 2009		
	Larvae Stages 2 - 3	Larvae Stage 4	Pupae	Larvae Stages 2 - 3	Larvae Stage 4	Pupae
Control	1.2 ab	5.6 a	4.8 a	0.2 b	4.6 a	6.4 a
10 Oil 10	1.8 ab	0.0 b	0.0b	1.0 ab	0.0 b	0.0 b
10 Oil 100	0.8	0.0 b	0.0 b	0.2	0.0 b	0.0 b
Aquatain AMF 2.0	2.8 ab	2.2 ab	2.2 ab	1.8 ab	2.0 ab	1.8 ab
Aquatain AMF 10	5.0 a	0.0 b	0.0 b	2.8 a	0.0 b	0.0 b
Aquatain AMF 50	4.4 a	0.0 b	0.0 b	2.6 a	0.0 b	0.0 b
Aquatain 10	3.0 ab	0.0 b	0.0 b	2.2 ab	0.0 b	0.0 b

Treatments with the same letters are not differentiated statistically at a level of 0.05 according to SNK

Table 3: The Appearance of the Water Surface on April 11, 2009

Treatment	Appearance of the Water Surface
Control	No layer whatsoever
10 Oil 10	Thin crust
10 Oil 100	Obvious, continuous crust
Aquatain AMF 2.0	Very thin crust
Aquatain AMF 10	Thin crust
Aquatain AMF 50	Thin crust with dispersed, exceptional drops
Aquatain 10	No visible crust

Treatments with the same letters are not differentiated statistically at a level of 0.05 according to SNK



Discussion and Conclusions

The mosquito population in the control buckets developed well from Stage 2 to pupae and later on, the adults hatched. By the end of the trial, after a period of nine days, there was a 25% death rate in the untreated buckets, which is a reasonable rate for laboratory experiments.

In the Aquatain AMF treatments using 10 and 50 liters per hectare, death rates reached over 80% and population development was completely halted.

The Aquatain AMF treatment using 2.0 liters per hectare was problematic. Three replicates gave results similar to the treatment using 10 liters per hectare and two gave results closer to the control results. It is likely that this was due to the fact that the quantity required for a single bucket was so small, while at the same time, the product's viscosity caused the large differences between the replicate results.

Results from the Aquatain 10 liters per hectare treatment were similar to the results for the Aquatain AMF 10 liter and 50 liter per hectare treatments. This product has low viscosity and is easy to use.

In general, Aquatain AMF at dosages of 10 liters and 50 liters per hectare had control efficiencies similar to that achieved by 10 Oil at dosages of 10 and 100 liters per hectare.

Within the context of this trial, the effects of the additives – Eucalyptus Oil and Citronella Oil as adult repellents were not examined.