

Figure S1

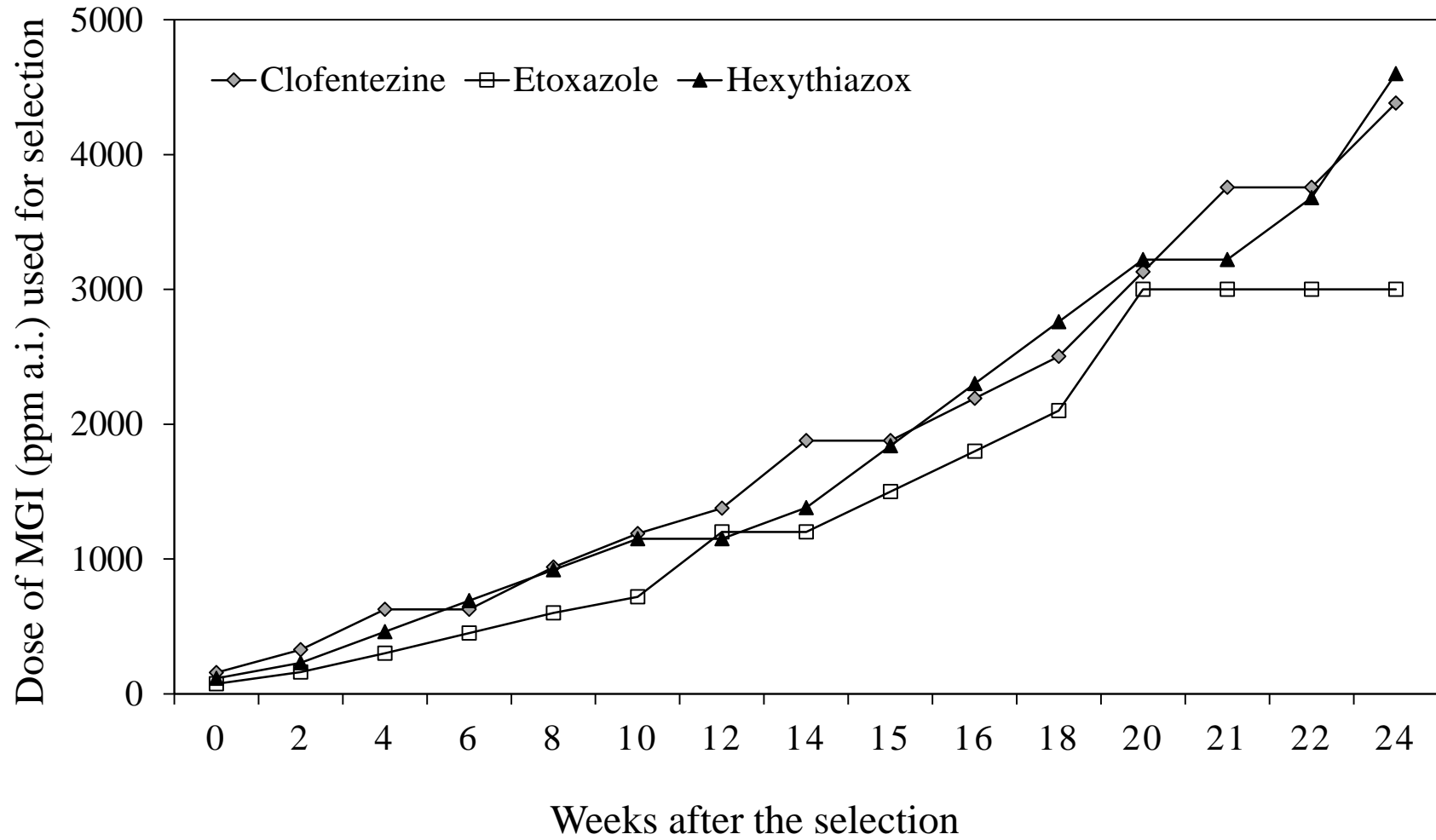


Table S1. *T. urticae* populations collected from hop fields used in this study.

Site (hop yard)	Collection date	Acaricide history
Prosser 1	July 24, 2015	Vigilant (4SC) Bifenazate /Ultror (Spirotetramat) June 13, 2015
		Kanemite (Acequinocyl)/Savey(Hexythiazox)/Dipel(<i>Bacillus thuringiensis</i> , subsp. kurstaki)July 13, 2015
Prosser 2	July 28, 2015	Kanemite (Acequinocyl)/Envidor (Spirodiclofen)/Vigilant (Bifenazate), Savey(Hexythiazox)
Mabton	July 21, 2015	Vigilant(Bifenazate)/Ultror (Spirotetramat) July 17, 2015
		Kanemite (Acequinocyl)/Dipel (<i>Bacillus thuringiensis</i> , subsp. kurstaki) July 21, 2015
Moxee	July 17, 2015	Zeal (Etoxazole)/Ultror (Spirotetramat) July 20, 2015

Table S2. Active ingredient, trade name, manufacturer, formulation and concentration of acaricides used in this study.

Active ingredient	Trade name	Manufacturer	% a.i. and formulation	Field dose for Hop (ppm a.i.)	IRAC group
Clofentezine	Apollo®	Company of Adama group	5 SC	626	MGI 10A
Etoxazole	Zeal®	Valent U.S.A. Corporation	72 WP	300	MGI 10B
Hexythiazox	Savey®	Gowan Company	50 DF	460	MGI 10A
Abamectin	Epimek®	Syngenta Crop Protection, Inc	2 EC	23	GluCl Channel modulator, 6
Bifenazate	Acramite®	Chemtura Corporation	50 WS	899	MC _{iii} ETI, 20D
Bifenthrin	Bifenture®	United Phosphorus, Inc.	25.1 EC	120	Na Channel modulator, 3A

Table S3. Response of eggs laid by susceptible *T. urticae* gravid females topically exposed to clofentezine, etoxazole, or hexythiazox.

Acaricide	Treatment arena	n	LC₅₀ (ppm) (95% CI)¹	Slope ± SE	χ² (df)
Clofentezine	Sprayed arena	978	13.2 (8.4-29.5) ^a	1.2 ± 0.1	54.0 (16)
	Unsprayed arena	1701	974.0 (212.7-1289.0) ^b	1.2 ± 0.1	35.4 (16)
Etoxazole	Sprayed arena	694	1.4 (0.8-1.9) ^a	1.2 ± 0.2	30.0 (22)
	Unsprayed arena	954	48.0 (17.8-236.2) ^b	1.0 ± 0.1	103.4 (22)
Hexythiazox	Sprayed arena	335	2.0 (1.6-2.5) ^a	2.4 ± 0.3	19.6 (19)
	Unsprayed arena	555	23.9 (14.1-43.4) ^b	1.4 ± 0.1	51.6 (19)

¹95% confidence interval, toxicity of acaricide is considered significant difference when the 95% CI fail to overlap

Table S4. Acaricide resistance ratios in field-collected *T. urticae* population and three ovicidal acaricide-selected populations.

Treatment	Clofentezine		Etoxazole		Hexythiazox	
	Prosser 1	Prosser 1-CS	Prosser 1	Prosser 1-ES	Prosser 1	Prosser 1-HS
Acaricide alone	9.3	101.3	22.4	182.9	1.1	102.7
Acaricide + PBO	6.1	5.1	2.0	12.1	2.5	7.7
Acaricide + TPP	3.0	4.1	11.6	13.6	0.6	3.5
Acaricide + DEM	20.6	122.5	8.6	42.6	0.8	94.5
Acaricide + VER	4.7	37.3	8.0	52.1	0.5	139.5