

Table S1. Vineyard details and dates of field sampling.

Vineyard	Grape variety	Longitude	Latitude	Sampling dates
Bar	Cabernet Sauvignon	33.13125	35.54787	2016: April 17, Jun 5, July 18
Margaliyot-Yigal	Merlot	33.20502	35.54054	2016: April 17, Jun 5, July 18 2017: March 30, June 8, July 28
Malkiya 2000	Cabernet Sauvignon	33.09989	35.53012	2016: April 17, Jun 5, July 18
Malkiya Ordea	Cabernet Sauvignon	33.09747	35.51299	2017: March 30, June 8, July 28 2018: April 3, June 11, August 2
Shiphon South	Cabernet Sauvignon	33.06485	35.76705	2017: April 27, June 14, July 31
Shiphon North	Merlot	33.07266	35.76997	2018: April 10, June 11, August 2

Table S2. Non-crop plant species in the vineyards. +: present in at least one of the surveys, -: absent from all plots, D- dominant species.

Family	Species	Herbicide	Ground cover
Amaranthaceae	<i>Amaranthus sp.</i>	+	+
	<i>Amaranthus albus</i>	+	+
	<i>Amaranthus blitoides</i>	+	+
	<i>Amaranthus blitum</i>	-	+
	<i>Amaranthus cruentus</i>	+	-
	<i>Amaranthus graecizans</i>	+	+
	<i>Amaranthus retroflexus</i>	+	+
Amaryllidaceae	<i>Allium sp.</i>	+	-
	<i>Allium pallens</i>	+	-
Anacardiaceae	<i>Pistacia atlantica</i>	+	+
	<i>Pistacia palaestina</i>	-	+
Apiaceae	<i>Ammi majus</i>	D	D
	<i>Bupleurum lancifolium</i>	+	-
	<i>Conium maculatum</i>	-	+
	<i>Daucus sp.</i>	+	-
	<i>Daucus carota</i>	+	+
	<i>Eryngium sp.</i>	+	-
	<i>Eryngium creticum</i>	+	-
	<i>Falcaria vulgaris</i>	+	+
	<i>Ferula sp.</i>	-	+
	<i>Ferula communis</i>	+	-
	<i>Foeniculum sp.</i>	D	-
	<i>Foeniculum vulgare</i>	+	-
	<i>Lagoecia cuminoides</i>	+	-
	<i>Ridolfia segetum</i>	+	-
	<i>Scandix pecten-veneris</i>	+	-
	<i>Synelcosciadium carmeli</i>	+	-
	<i>Tordylium sp.</i>	+	+
	<i>Tordylium trachycarpa</i>	+	+
	<i>Torilis sp.</i>	+	+
	<i>Torilis arvensis</i>	+	+
	<i>Torilis nodosa</i>	+	+
Araceae	<i>Arum sp.</i>	+	+
	<i>Arum palaestinum</i>	-	+
	<i>Eminium spiculatum</i>	+	-
Asclepiadaceae	<i>Cynanchum acutum</i>	+	-
Asparagaceae	<i>Asparagus sp.</i>	+	+
	<i>Asparagus aphyllus</i>	+	+
	<i>Bellevallia sp.</i>	+	+
	<i>Ornithogalum sp.</i>	-	+
	<i>Ornithogalum narbonense</i>	+	-
Asteraceae	<i>Anthemis sp.</i>	+	+
	<i>Anthemis bornmuelleri</i>	-	+
	<i>Calendula sp.</i>	-	D
	<i>Calendula arvensis</i>	+	+
	<i>Carduus argentatus</i>	+	+
	<i>Carthamus glaucus</i>	+	+
	<i>Carthamus tenuis</i>	-	+
	<i>Centaurea iberica</i>	+	+
	<i>Centaurea sp.</i>	+	+
	<i>Cichorium pumilum</i>	+	+
	<i>Conyza sp.</i>	D	+
	<i>Conyza bonariensis</i>	+	+
	<i>Conyza canadensis</i>	-	+
	<i>Crepis sp.</i>	-	+
	<i>Crepis aculeata</i>	-	+
	<i>Crepis aspera</i>	+	+

Family	Species	Herbicide	Ground cover
Asteraceae (continued)	<i>Crepis palaestina</i>	+	+
	<i>Crepis sancta</i>	+	+
	<i>Crepis syriaca</i>	+	-
	<i>Dittrichia viscosa</i>	-	+
	<i>Echinops sp.</i>	+	+
	<i>Hedypnois cretica</i>	-	+
	<i>Helminthotheca echiioides</i>	+	+
	<i>Lactuca sp.</i>	D	D
	<i>Lactuca saligna</i>	+	+
	<i>Lactuca serriola</i>	+	+
	<i>Leontodon tuberosa</i>	-	+
	<i>Notobasis syriaca</i>	-	+
	<i>Onopordum sp.</i>	-	+
	<i>Picris altissima</i>	+	D
	<i>Rhagadiolus stellatus</i>	-	+
	<i>Senecio vernalis</i>	-	+
	<i>Silybum marianum</i>	+	+
	<i>Sonchus oleraceus</i>	+	+
	<i>Tolpis virgata</i>	D	+
	<i>Tragopogon coelesyriacus</i>	+	+
	<i>Tragopogon longirostris</i>	+	+
	<i>Urospermum picroides</i>	+	+
	<i>Xanthium spinosum</i>	+	-
Boraginaceae	<i>Anchusa sp.</i>	+	-
	<i>Echium glomeratum</i>	+	-
	<i>Heliotropium sp.</i>	+	+
	<i>Heliotropium bovei</i>	+	+
Brassicaceae	<i>Capsella bursa-pastoris</i>	+	+
	<i>Fibigia clypeata</i>	+	+
	<i>Hirschfeldia incana</i>	-	+
	<i>Isatis lusitanica</i>	-	+
	<i>Ochthodium aegyptiacum</i>	+	+
	<i>Rapistrum rugosum</i>	-	+
	<i>Sinapis alba</i>	-	+
Capparaceae	<i>Sinapis arvensis</i>	-	+
	<i>Capparis sp.</i>	+	+
Caryophyllaceae	<i>Capparis spinosa</i>	-	+
	<i>Cerastium dubium</i>	-	+
	<i>Minuartia sp.</i>	-	+
	<i>Stelaria sp.</i>	+	+
	<i>Stellaria media</i>	-	+
	<i>Stellaria pallida</i>	-	+
Chenopodiaceae	<i>Chenopodium sp.</i>	D	-
	<i>Chenopodium album</i>	+	+
	<i>Chenopodium vulvaria</i>	+	+
	<i>Salsola sp.</i>	+	+
	<i>Salsola tragus</i>	+	+
Convolvulaceae	<i>Convolvulus sp.</i>	D	+
	<i>Convolvulus arvensis</i>	+	+
	<i>Convolvulus betonicifolius</i>	+	+
	<i>Convolvulus palaestinus</i>	+	-
Cucurbitaceae	<i>Echallium elaterium</i>	-	+
Cyperaceae	<i>Cyperus rotundus</i>	+	+
Dipsaceae	<i>Cephalaria joppensis</i>	+	+
	<i>Lomelosia palaestina</i>	+	-
	<i>Lomelosia prolifera</i>	+	-
Ephedraceae	<i>Ephedra sp.</i>	D	+
	<i>Ephedra foeminea</i>	+	-
Euphorbiaceae	<i>Chrozophora tinctoria</i>	+	+
	<i>Euphorbia sp.</i>	+	+

Family	Species	Herbicide	Ground cover
	<i>Euphorbia aleppica</i>	+	-
	<i>Euphorbia chamaesyce</i>	-	+
	<i>Euphorbia falcata</i>	+	-
	<i>Euphorbia hirsuta</i>	-	+
	<i>Euphorbia prostrata</i>	+	+
	<i>Euphorbia serpens</i>	+	+
	<i>Mercurialis annua</i>	+	+
Fabaceae	<i>Alhagi graecorum</i>	+	-
	<i>Astragalus hamosus</i>	+	+
	<i>Medicago sp.</i>	+	+
	<i>Medicago blanchiana</i>	+	-
	<i>Medicago constricta</i>	+	-
	<i>Medicago granadensis</i>	-	+
	<i>Medicago monspeliaca</i>	+	-
	<i>Medicago orbicularis</i>	+	+
	<i>Medicago polymorpha</i>	+	-
	<i>Medicago scutellata</i>	+	-
	<i>Onobrychis sp.</i>	+	+
	<i>Onobrychis squarrosa</i>	+	+
	<i>Ononis sp.</i>	+	+
	<i>Ononis pubescens</i>	+	+
	<i>Ononis spinosa</i>	+	+
	<i>Ononis viscosa</i>	+	+
	<i>Prosopis sp.</i>	-	D
	<i>Prosopis farcta</i>	+	+
	<i>Scorpiurus sp.</i>	+	+
	<i>Scorpiurus muricatus</i>	+	+
	<i>Tetragonolobus palaestinus</i>	-	+
	<i>Trifolium sp.</i>	+	+
	<i>Trifolium argutum</i>	-	+
	<i>Trifolium glanduliferum</i>	-	+
	<i>Trifolium pauciflorum</i>	+	-
	<i>Trifolium pilulare</i>	+	+
	<i>Trifolium purpureum</i>	+	+
	<i>Trifolium spumosum</i>	+	+
	<i>Trigonella sp.</i>	-	+
	<i>Vicia sp.</i>	+	+
	<i>Vicia sativa</i>	+	-
Fabaceae (continued)	<i>Vicia palaestina</i>	+	-
	<i>Vicia peregrina</i>	+	+
	<i>Quercus sp.</i>	+	+
	<i>Quercus boissieri</i>	+	+
	<i>Quercus calliprinos</i>	+	+
	<i>Quercus ithaburensis</i>	+	+
Fumariaceae	<i>Fumaria densiflora</i>	-	+
Geraniaceae	<i>Erodium sp.</i>	+	D
	<i>Erodium acauale</i>	-	+
	<i>Erodium malacoides</i>	+	+
	<i>Erodium moschatum</i>	+	+
	<i>Geranium dissectum</i>	+	-
	<i>Geranium molle</i>	+	+
	<i>Geranium robertianum</i>	+	+
	<i>Geranium rotundifolium</i>	+	+
Hypericaceae	<i>Hypericum triquetrifolium</i>	+	+
Lamiaceae	<i>Lamium amplexicaule</i>	+	+
	<i>Moluccella laevis</i>	+	-
Malvaceae	<i>Alcea sp.</i>	-	+
	<i>Alcea acaulis</i>	+	-
	<i>Alcea dissecta</i>	+	-
	<i>Lavatera cretica</i>	+	+
	<i>Malva sp.</i>	+	+

Family	Species	Herbicide	Ground cover
	<i>Malva nicaeensis</i>	+	+
	<i>Malva parviflora</i>	-	+
Onagraceae	<i>Epilobium sp.</i>	+	-
	<i>Epilobium parviflorum</i>	-	+
Orobanchaceae	<i>Orobanche crenata</i>	-	+
Papaveraceae	<i>Papaver umbonatum</i>	-	+
Plumbaginaceae	<i>Plumbago europaea</i>	+	-
Pinaceae	<i>Pinus spp</i>	+	-
Poaceae	<i>Alopecurus sp.</i>	+	-
	<i>Avena sp.</i>	-	+
	<i>Avena barbata</i>	-	+
	<i>Avena sterilis</i>	-	+
	<i>Brachypodium distachyon</i>	-	+
	<i>Bromus sp.</i>	+	D
	<i>Bromus fasciculatus</i>	+	+
	<i>Bromus japonicus</i>	-	+
Poaceae (continued)	<i>Bromus madritensis</i>	-	+
	<i>Bromus scoparius</i>	-	+
	<i>Catapodium rigidum</i>	-	+
	<i>Cynodon dactylon</i>	+	+
	<i>Hordeum sp.</i>	D	D
	<i>Hordeum bulbosum</i>	+	-
	<i>Hordeum glaucum</i>	+	+
	<i>Hordeum spontaneum</i>	+	+
	<i>Lamarckia aurea</i>	-	-
	<i>Lolium perenne</i>	+	-
	<i>Lolium rigidum</i>	+	+
	<i>Setaria adhaerens</i>	+	+
	<i>Sorghum sp.</i>	D	D
	<i>Sorghum halepense</i>	+	+
	<i>Vulpia myuros</i>	+	+
Polygonaceae	<i>Polygonum sp.</i>	D	D
	<i>Polygonum arenastrum</i>	+	+
	<i>Polygonum equisetiforme</i>	+	+
	<i>Rumex sp.</i>	-	+
	<i>Rumex pulcher</i>	+	+
Portulacaceae	<i>Portulaca oleracea</i>	+	+
Primulaceae	<i>Anagallis arvensis</i>	-	+
Ranunculaceae	<i>Adonis microcarpa</i>	+	-
	<i>Anemone coronaria</i>	+	-
	<i>Ranunculus sp.</i>	+	+
	<i>Ranunculus scandicinus</i>	-	+
Rhamnaceae	<i>Rhamnus alaternus L.</i>	-	+
	<i>Rhamnus lycioides</i>	+	-
Rosaceae	<i>Crataegus sp.</i>	+	-
Rubiaceae	<i>Galium sp.</i>	-	+
	<i>Galium aparine</i>	-	+
	<i>Galium murale</i>	-	+
	<i>Rubia tenuifolia</i>	-	+
	<i>Sherardia arvensis</i>	+	+
Santalaceae	<i>Osyris alba</i>	+	+
Scrophulariaceae	<i>Verbascum sp.</i>	+	-
	<i>Veronica sp.</i>	-	+
Smilacaceae	<i>Smilax aspera</i>	-	+
Solanaceae	<i>Solanum villosum</i>	-	+
Solanaceae (continued)	<i>Solanum elaeagnifolium</i>	-	+
Xanthorrhoeaceae	<i>Asphodeline lutea</i>	+	+
Zygophyllaceae	<i>Tribulus terrestris</i>	+	+

Table S3. Agrochemicals (fungicides (F), insecticides (I) and adjuvants (A)) applied to the experimental plots (H – herbicide plot, GC – ground cover plot).

Year	Vineyard	Plot (Treatment)	Application date		Commercial name	Purpose
2016	Bar	H	April	3	Karathane Star	F
		H	April	3	Keep	F
		GC	April	11	Keep	F
		H	April	15	Kod Kod	I
		GC	April	17	Kod Kod	I
		H	April	18	Keep	F
		H	April	18	Sheriff Super	F
		GC	April	24	BB5	A
		GC	April	26	Bayfidan	F
		GC	May	17	Sulphur	F
2017	Yigal	Herbicide	April	1	Keep	F
		GC+H	April	1	Sheriff Super	F
		Ground cover	April	17	Keep	F
	Malkiya 2000	GC+H	July	9	Tarsip	I
		Herbicide	May	9	Domak combi	F
		Ground cover	May	10	Domak combi	F
		GC+H	May	24	Durivo	I
		GC+H	May	24	Skipper	F
	Ordea	GC+H	April	16	Karathane Star	F
		GC+H	April	16	Keep	F
		GC+H	April	29	Talius	F
		GC+H	July	3	Tarsip	I
		GC+H	June	16	Heliogrofit	F
		GC+H	June	16	Karathane Star	F
		GC+H	May	12	Domark Combi	F
		GC+H	May	23	Durivo	I
		GC+H	May	23	Skipper	F
	Shiphon North	GC+H	April	20	Athlete	F
		GC+H	April	20	Keep	F
		GC+H	April	20	Sheriff Super	F
		GC+H	August	6	Denim	I
		GC+H	July	30	Teppeki	I
		GC+H	June	12	Karthane Star	F
		GC+H	June	12	Keep	F
		GC+H	May	3	Cordon	F
		GC+H	May	3	Vivando	F
		GC+H	May	17	Cordon	F
		GC+H	May	17	Talius	F
		GC+H	May	29	Koala	F
		GC+H	May	29	Netz	F
	Shiphon South	GC+H	April	18	Athlete	F
		GC+H	April	18	Keep	F
		GC+H	April	18	Sheriff Super	F
		GC+H	August	13	BB5	A
		GC+H	August	13	Movento	I
		GC+H	June	2	Gofrativ 80	F
		GC+H	June	11	Koala	F
		GC+H	June	11	Netz	F
		GC+H	June	29	BB5	A
		GC+H	June	29	Movento	I
		GC+H	May	3	Cordon	F
		GC+H	May	3	Vivando	F
2018	Malkiya 2000	GC+H	May	16	Cordon	F
		GC+H	May	16	Talius	F
		GC+H	April	22	Dommarc Combi	F
		GC+H	April	22	Cannon	F
		GC+H	May	6	Talius	F
		GC+H	May	21	Sheriff Super	F

Year	Vineyard	Plot (Treatment)	Application date		Commercial name	Purpose
2018	Ordea	GC+H	May	21	Avaunt	I
		GC+H	June	3	Luna	F
		GC+H	July	9	Tarsip	I
		GC+H	May	24	Luna	F
		GC+H	May	24	Avaunt	I
		GC+H	June	9	Sulphur	F
		GC+H	June	9	Netz	F
		GC+H	June	20	Vivando	F
		GC+H	June	20	Sulphur	F
		GC+H	Aug	23	Spartha	I
	Shiphon North	GC+H	April	3	Sheriff Super	F
		GC+H	April	3	Athlete	F
		GC+H	April	15	Talius	F
		GC+H	April	15	Acrobat	F
		GC+H	May	10	Luna	F
		GC+H	May	10	Keep Athlete	F
		GC+H	May	22	Keep	F
		GC+H	May	22	Karathane Star	F
		GC+H	May	29	Teppeki	I
		GC+H	May	29	Cannon	I
		GC+H	June	8	Teppeki	I
		GC+H	June	11	Sulphur	I
		GC+H	July	5	Keep Athlete	I
		GC+H	July	25	Keep	I
	Shiphon North (continued)	GC+H	July	25	Armada	I
		GC+H	Aug	12	Denim	I
	Shiphon South	GC+H	April	3	Sheriff Super	F
		GC+H	April	3	Athlete	F
		GC+H	April	15	Talius	F
		GC+H	April	15	Acrobat	F
		GC+H	April	29	Vivando	F
		GC+H	April	29	Orvago	F
		GC+H	May	10	Luna	F
		GC+H	May	10	Keep Athlete	F
		GC+H	May	23	Netz	F
		GC+H	May	23	Koala	F
		GC+H	May	30	Sulphur	F
		GC+H	June	10	Talius	I
		GC+H	June	10	Keep Athlete	I
		GC+H	June	18	1+2+3	I
		GC+H	August	19	Spartha	I

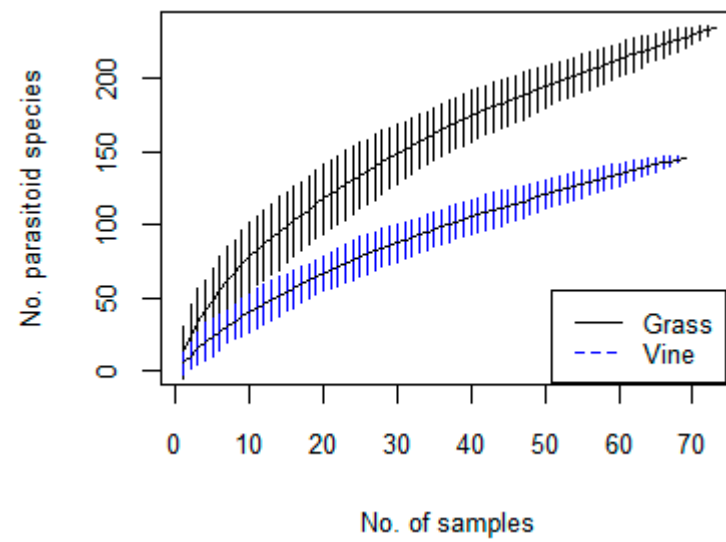


Figure S1. The cumulative number of parasitoid species in the grass and vine habitats, with associated confidence intervals.