

Table S1. Phytophagous arthropods that have been reported in quinoa fields in the world.

Order	Family	Species	Country
Orthoptera	Romaleidae	<i>Chromacris speciosa</i> (Thunberg)	Argentina
	Acrididae	<i>Dichroplus maculipennis</i> Blanchard	Argentina
		<i>Rhammatocerus pictus</i> (Bruner)	Argentina
	Gryllidae	<i>Gryllus assimilis</i> (Fabricius)	Bolivia
Hemiptera	Aleyrodidae	<i>Bemisia tabaci</i> (Gennadius)	Egypt
	Cicadellidae	<i>Anacuerna centrolinea</i> (Melichar)	Bolivia
		<i>Empoasca decipiens</i> (Paoli)	Egypt
		<i>Borogonalia impressifrons</i> (Signoret)	Bolivia
		<i>Macrosteles fascifrons</i> (Stål)	USA
		<i>Nesosteles neglectus</i> (DeLong & Davidson)	USA
		<i>Paratanus exitiosus</i> (Beamer)	Bolivia
		<i>Paratanus yusti</i> Young	Bolivia
		<i>Hayhurstia atriplicis</i> (Linnaeus)	USA
	Aphidae	<i>Aphis craccivora</i> Koch	Bolivia, Argentina, Egypt, USA
		<i>Aphis nasturtii</i> Kaltenbach	USA
		<i>Pemphigus (Pemphigus) populi-venais</i> Fitch	USA
		<i>Aphis favae</i> (Scopoli)	Northern Europe
		<i>Aphis gossypii</i> Glover	Egypt
		<i>Macrosiphum euphorbiae</i> (Thomas)	Bolivia, Perú
		<i>Myzus persicae</i> (Sulzer)	Bolivia, Perú
	Triozidae	<i>Heterotrioza chenopodii</i> Reuter	Argentina, Peru
	Pentatomidae	<i>Nezara viridula</i> Linnaeus	Argentina
		<i>Thyanta (Argosoma) patruelis</i> (Stål)	Argentina
		<i>Thyanta (Phacidium) aeruginosa</i> Berg	Argentina
		<i>Dichelops furcatus</i> (Fabricius)	Argentina
	Lygaeidae	<i>Nysius natalensis</i> Evans	South Africa
		<i>Nysius raphanus</i> Howard	USA
		<i>Nysius cymoides</i> (Spinola)	Italy
		<i>Nysius simulans</i> (Stål)	Peru, Argentina
	Coreidae	<i>Leptoglossus chilensis</i> (Spinola)	Argentina
	Rhopalidae	<i>Xenogenus picturatum</i> Berg	Argentina
		<i>Liorhyssus hyalinus</i> (Fabricius)	Argentina, Peru
	Miridae	<i>Atomoscelis modestus</i> (Van Duzee)	USA
		<i>Orthotylus flavosparsus</i> (Sahlberg)	Argentina
		<i>Orthotylus coagulatus</i> (Uhler)	USA
		<i>Lygus hesperus</i> Knight	USA
		<i>Lygus elisus</i> Van Duzee	USA
		<i>Lygus rugulipennis</i> Poppius	Northern Europe
Thysanoptera	Thripidae	<i>Thrips tabaci</i> Lindeman	USA
		<i>Frankliniella tuberosi</i> Moulton	USA
		<i>Frankliniella occidentalis</i> (Pergande)	Peru, USA
	Phlaeothripidae	<i>Haplothrips (Trybomiella) fiebrigi</i> Priesner	Argentina
Diptera	Agromyzidae	<i>Liriomyza huidobrensis</i> (Blanchard)	Peru, Bolivia
		<i>Liriomyza braziliensis</i> (Frost)	Peru
		<i>Amauromyza Karli</i> (Hendel)	USA
	Anthomyiidae	<i>Pegomya hyoscyami</i> (Meigen & Panzer)	USA
	Cecydomiidae	<i>Prodiplosis longifila</i> Gagné	Peru
Coleoptera	Curculionidae	<i>Athesapeuta dodonis</i> Pajni & Kohli	South Africa
		<i>Hypolixus haerens</i> (Boheman)	South Africa
		<i>Gasteroclisus cuneiformis</i> (Fahraeus)	South Africa

		<i>Neocleonus sannio</i> (Herbst, J.F.W.)	South Africa
		<i>Baris amaranthi</i> Marshall	South Africa
		<i>Cosmobaris americana</i> Casey	USA
	Chrysomelidae	<i>Acalymma demissa</i> Erichson	Bolivia
		<i>Calligrapha curvilinea</i> Stal	Bolivia
		<i>Cassida nebulosa</i> Linnaeus	Demark
		<i>Diabrotica speciosa</i> (Germar)	Bolivia
		<i>Diabrotica sicuanica</i> Bechyné	Peru
		<i>Chaetocnema concinna</i> (Marsham)	Europe
		<i>Chaetocnema tibialis</i> (Illiger)	Europe
		<i>Phyllotreta pusilla</i> Horn	USA
		<i>Epitrix subcrinita</i> (J. L. LeConte)	Southern Europe
		<i>Epitrix yanazara</i> Bech	Peru, Bolivia
	Meloidae	<i>Epicauta latitarsis</i> (Haag-Rutenberg)	Peru
		<i>Epicauta willei</i> Denier	Peru
		<i>Epicauta adspersa</i> Klug	Argentina
		<i>Epicauta atomaria</i> Germar	Argentina
	Melyridae	<i>Astylus subannulatus</i> Pic	Peru
	Silphidae	<i>Aclypea opaca</i> (Linnaeus)	Europe
Lepidoptera	Gelechiidae	<i>Eurysacca melanocampta</i> (Meyrick)	Bolivia, Perú
		<i>Eurysacca quinoae</i> Povolný	Bolivia, Perú
		<i>Eurysacca media</i> Povolný	Argentina
		<i>Scrobipalpa atriplicella</i> (Röslerstamm)	USA, Canada, Demark
	Geometridae	<i>Perizoma sordescens</i> Dognin	Bolivia
	Noctuidae	<i>Agrotis ipsilon</i> (Hufnagel)	Peru, Bolivia
		<i>Chloridea virescens</i> (Fabricius)	Peru, Bolivia
		<i>Dargida grammivora</i> Walker	Bolivia
		<i>Dargida acanthus</i> (Herrich-Schäffer)	Bolivia
		<i>Feltia experta</i> (Walker)	Bolivia, Peru
		<i>Helicoverpa quinoa</i> Pogue & Harp	Bolivia
		<i>Helicoverpa titicacae</i> Hardwick	Bolivia
		<i>Helicoverpa atacamae</i> Hardwick	Bolivia
		<i>Helicoverpa zea</i> (Boddie)	USA
		<i>Helicoverpa gelotopoeon</i> (Dyar)	Argentina
		<i>Peridroma saucia</i> (Hübner)	Bolivia
		<i>Mythimna unipuncta</i> (Haworth)	Bolivia
		<i>Rachiplusia nu</i> (Guenée)	Argentina
		<i>Trichoplusia ni</i> (Hübner)	USA
		<i>Syngrapha falcifera</i> (Kirby)	USA
		<i>Spodoptera frugiperda</i> (J. E. Smith)	Argentina, Peru, Bolivia
		<i>Spodoptera exigua</i> (Hübner)	USA
		<i>Spodoptera eridania</i> (Stoll)	Bolivia, Peru
		<i>Spodoptera ornithogalli</i> Guenée	USA
		<i>Spodoptera ochrea</i> (Hampson)	Peru
	Crambidae	<i>Herpetogramma bipunctalis</i> (Fabricius)	Peru
		<i>Spoladea recurvalis</i> (Fabricius)	Peru
		<i>Achyra bifidalis</i> (Fabricius)	Argentina
	Pyralidae	<i>Loxostege sticticalis</i> Linnaeus	USA
		<i>Nomophila indistinctalis</i> (Walker)	Peru
	Erebidae	<i>Spilosoma virginica</i> (Fabricius)	Argentina
Trombidiformes	Tetranychidae	<i>Tetranychus urticae</i> (Koch)	Argentina

Table S2. Predatory insects that have been reported in quinoa fields in the world.

Order	Family	Species	Type of prey
Dermaptera	Labiduridae	<i>Labidura riparia</i> (Pallas)	Insects that inhabit the soil surfave
Hemiptera	Miridae	<i>Rhinacloa spp.</i>	eggs and small larvae of lepidopterans, small arthropods such as thrips, aphids and mites.
	Anthocoridae	<i>Orius insidiosus</i> (Say)	
		<i>Orius tristicolor</i> (White)	
		<i>Paratriphleps laeviusculus</i> Champion	
	Berythidae	<i>Metacanthus tenellus</i> Stål	
	Geocoridae	<i>Geocoris</i> sp.	
	Nabidae	<i>Nabis punctipennis</i> Blanchard	larvae of lepidopterans
		<i>Nabis argentinus</i> Meyer-Dür	
	Pentatomidae	<i>Podisus chilensis</i> (Spinola)	
		<i>Podisus nigrispinus</i> (Dallas)	
Neuroptera	Chrysopidae	<i>Chrysoperla externa</i> (Hagen)	Aphids and other soft-bodied insects such as thrips, eggs and small larvae of lepidopterans.
		<i>Chrysoperla</i> sp.	
	Hemerobiidae	<i>Symphorobius</i> sp.	
		<i>Hemerobius</i> sp.	
Coleoptera	Carabidae	<i>Calosoma argentinensis</i> Csiki	Insects that inhabit the soil surfave such as crickets, larvae and pupae of cutworms of the genus <i>Agrotis</i> , <i>Feltia</i> , <i>Peridroma</i> , and those larvae that descend from the plant to the soil to pupate, such as <i>Chrysodeixis includens</i> , <i>Spodoptera</i> spp., <i>Chloridea</i> spp. and <i>Copitarsia</i> spp
		<i>Bemdidium</i> sp.	
		<i>Stenolophus plebejus</i> Dejean	
		<i>Chlaenius sericeus</i> (Forster)	
		<i>Chlaenius</i> sp.	
		<i>Amara</i> sp.	
		<i>Pterostichus</i> sp.	
		<i>Notiobia</i> sp.	
		<i>Blennidus peruvianus</i> (Dejean)	
		<i>Tetracha chilensis</i> (Laporte)	
		<i>Tetragonoderus</i> sp.	
	Coccinellidae	<i>Cycloneda sanguinea</i> (L.)	Aphids and thrips
		<i>Hippodamia convergens</i> Guerin	
		<i>Scymnus</i> sp.	
		<i>Eriopis connexa connexa</i> (Germar)	
		<i>Paraneda gutticollis</i> Mulsant	
		<i>Harmonia axyridis</i> (Pallas)	
		<i>Hiperaspis festiva</i> Mulsant	
		<i>Coccinella ancoralis</i> Germar	
		<i>Olla v-nigrun</i> (Mulsant)	
Diptera	Syrphidae	<i>Allograpta exotica</i> Wiedemann	Aphids
		<i>Allograpta piurana</i> Shanon	
		<i>Pseudodoros clavatus</i> (Fabricius)	
		<i>Syrphus shorae</i> Fluke	
		<i>Toxomerus</i> sp.	
	Dolichopodidae	<i>Condyllostylus quadricolor</i> (Walker)	Small insects such as adults of leafmining flies and mites

Table S3. Parasitoids of common pests of quinoa

Order	Family	Species	Host
Diptera	Tachinidae	<i>Gonia peruviana</i> Townsend	Agrotis spp.
		<i>Gonia pallens</i> Wiedemann	
		<i>Gonia</i> sp.	<i>Chloridea virescens</i> (Fabricius)
		<i>Archytas marmoratus</i> (Townsend)	Agrotis spp., <i>Spodoptera</i> spp., <i>Chloridea virescens</i> (Fabricius)
		<i>Linnaemya comta</i> (Fallén)	Agrotis spp.
		<i>Prosopochaeta fidelis</i> (Reinhard)	
		<i>Prosopochaeta setosa</i> (Townsend)	<i>Copitarsia</i> spp.
		<i>Velardemyia ica</i> Valencia	Agrotis spp.
		<i>Winthemia reliqua</i> Cortés & Campos)	Agrotis spp., <i>Spodoptera</i> spp.
		<i>Eucelatoria australis</i> Townsend	<i>Spodoptera</i> spp., <i>Chloridea virescens</i> (Fabricius)
		<i>Protogoniops</i> sp.	<i>Spodoptera</i> spp.
		<i>Eucelatoria digitata</i> Sabrosky	<i>Chrysodeixis includens</i> Walker, <i>Chloridea virescens</i> (Fabricius)
		<i>Voria ruralis</i> (Fallén)	<i>Chrysodeixis includens</i> Walker
		<i>Lespesia</i> sp.	
		<i>Hemilydella fasciata</i> Townsend	<i>Chloridea virescens</i> (Fabricius)
		<i>Euphorocera peruviana</i> Townsed	<i>Chloridea virescens</i> (Fabricius), <i>Copitarsia</i> spp.
		<i>Patelloa similis</i> (Townsend)	<i>Copitarsia</i> spp.
		<i>Incamyia</i> sp.	
		<i>Winthemia</i> sp.	
		<i>Dolichostoma arequipae</i> (Townsend)	
		<i>Peletería robusta</i> (Wiedemann)	
		<i>Phytomyptera</i> sp.	<i>Eurysacca quinoae</i> Povolný, <i>Eurysacca melanocampta</i> (Meyrick)
Hymenoptera	Ichneumonidae	<i>Enicospilus</i> sp.	Agrotis spp., <i>Chloridea virescens</i> (Fabricius)
		<i>Enicospilus merdarius</i> (Gravenhorst)	<i>Spodoptera</i> spp.
		<i>Ophion</i> sp.	Agrotis spp.
		<i>Coccygomimus</i> sp.	
		<i>Campoletis flavicincta</i> (Ashmead)	<i>Spodoptera</i> spp., <i>Chloridea virescens</i> (Fabricius)
		<i>Campoletis curvicauda</i> (Lopez Cristobal)	<i>Spodoptera</i> spp.
		<i>Hyposoter</i> sp.	<i>Copitarsia</i> spp.
		<i>Netelia sayi</i> (Cushman)	
		<i>Diadegma</i> sp.	<i>Eurysacca quinoae</i> Povolný, <i>Eurysacca melanocampta</i> (Meyrick)
	Braconidae	<i>Chelonus</i> sp.	Agrotis spp.
		<i>Meteorus chilensis</i> Porter	
		<i>Cotesia marginiventris</i> (Cresson)	<i>Spodoptera</i> spp.
		<i>Chelonus insularis</i> Cresson	
		<i>Rogas</i> sp.	
		<i>Opius</i> sp.	<i>Liriomyza huidobrensis</i> (Blanchard)
		<i>Phaetrotoma scabriventris</i> (Nixon)	
		<i>Aphidius matricariae</i> Haliday	<i>Myzus persicae</i> (Sulzer), <i>Macrosiphum euphorbiae</i> (Thomas)
		<i>Aphidius colemani</i> Viereck	
		<i>Aphidius smithi</i> Sharma & Subba Rao	
		<i>Aphidius rosae</i> Haliday	
		<i>Aphidius</i> sp.	

		<i>Lysiphlebus testaceipes</i> (Cresson)	<i>Eurysacca quinoae</i> Povolný, <i>Eurysacca melanocampta</i> (Meyrick)
		<i>Praon volucre</i> (Haliday)	
		<i>Meteorus</i> sp.	
		<i>Apanteles</i> sp.	
		<i>Deleboea</i>	
	Scelionidae	<i>Telenomus remus</i> (Nixon)	<i>Spodoptera</i> spp.
	Encyrtidae	<i>Copidosoma truncatellum</i> (Dalman)	<i>Chrysodeixis includens</i> Walker
		<i>Copidosoma gelechiae</i> Howard	<i>Eurysacca quinoae</i> Povolný, <i>Eurysacca melanocampta</i> (Meyrick)
	Platygasteridae	<i>Synopeas</i> sp.	<i>Prodiplosis longifila</i> Gagné
	Eulophidae	<i>Euplectrus platyhypenae</i> Howard	<i>Chrysodeixis includens</i> Walker, <i>Copitarsia</i> spp.
		<i>Closterocerus cinctipennis</i> Ashmead	<i>Liriomyza huidobrensis</i> (Blanchard)
		<i>Chrysocharis flacilla</i> (Walker)	
		<i>Chrysocharis</i> sp.	
		<i>Derostenus</i> sp.	
		<i>Diglyphus websteri</i> (Crawford)	
		<i>Diglyphus begini</i> (Ashmead)	
		<i>Zagrammosoma multilineatum</i> (Ashmead)	
		<i>Agromyzophagus</i> sp.	
	Pteromalidae	<i>Halticoptera arduine</i> (Walker)	
		<i>Halticoptera</i> sp.	

Table S4. Bioinsecticides used on quinoa pests

Bioinsecticide	Quinoa Pest controlled
<i>Bacillus thuringiensis</i> var <i>kurstaki</i>	<i>Spodoptera eridania</i> <i>Spodoptera frugiperda</i> <i>Chloridea virescens</i> <i>Eurysacca melanocampta</i> <i>Chrysodeixis includens</i> <i>Spoladea recurvalis</i> <i>Thrips tabaci</i>
<i>Bacillus thuringiensis</i> var <i>aizawai</i>	<i>Spodoptera frugiperda</i> <i>Copitarsia corruda</i>
Spinosad	<i>Spodoptera frugiperda</i> <i>Spodoptera eridania</i> <i>Copitarsia corruda</i> <i>Chloridea virescens</i> <i>Chrysodeixis includens</i> <i>Frankliniella occidentalis</i>
Tetraethyl silicate	<i>Frankliniella occidentalis</i>