

PROJECT FULL TITLE:
**DEVELOPMENT OF A NEW DIAGNOSTIC TOOL USING DNA BARCODING TO IDENTIFY
 QUARANTINE ORGANISMS IN SUPPORT OF PLANT HEALTH**

GRANT AGREEMENT NO.: (226482)

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List of selected arthropod Q-organisms

The species have been divided into two priority groups, these lists have been erected on the basis of the economic value of the Q-Arthropods, their availability and their habitat, trying to cover both Agriculture and forest pests.

The priority 1 list, contains 100 species for which 10 specimens sampled in at least two different localities. This list concerns 33 different families, 53 species are agriculture Q-organism and 47 species forest Q-organisms. The list include most Tephritidae (fruit flies), all Scolytidae, all Cerambycidae, all Spodoptera and most Agromyzidae species.

Priority 2 list contains all other Q-arthropods, for which we proposed to sampled 5 specimens. For the species and specimens from both lists, two loci will be sequenced (CO1 and ITS2).

List of Q-Arthropod, priority 1

Valid name	Order	Family	Q List	Habitat
Tetranychus evansi Baker & Pritchard	Acari	Tetranychidae	EPPO AL	Agriculture
Agrilus planipennis Fairmaire	Coleoptera	Buprestidae	A1	Forest
Anoplophora chinensis (Thomson)	Coleoptera	Cerambycidae	A2 2000/29/CE	Forest & Agriculture
Anoplophora glabripennis (Motschulsky)	Coleoptera	Cerambycidae	A1 2000/29/CE	Forest & Agriculture
Monochamus alternatus (Hope)	Coleoptera	Cerambycidae	A1 2000/29/CE	Forest
Monochamus carolinensis (Olivier)	Coleoptera	Cerambycidae	A1 2000/29/CE	Forest
Monochamus marmorator Kirby	Coleoptera	Cerambycidae	A1 2000/29/CE	Forest
Monochamus mutator LeConte	Coleoptera	Cerambycidae	A1 2000/29/CE	Forest
Monochamus nitens Bates	Coleoptera	Cerambycidae	A1 2000/29/CE	Forest
Monochamus notatus Drury	Coleoptera	Cerambycidae	A1 2000/29/CE	Forest
Monochamus obtusus Casey	Coleoptera	Cerambycidae	A1 2000/29/CE	Forest
Monochamus saltuarius (Gebler)	Coleoptera	Cerambycidae	A1 2000/29/CE	Forest
Monochamus scutellatus (Say)	Coleoptera	Cerambycidae	A1 2000/29/CE	Forest
Tetropium gracilicorne (Reitter)	Coleoptera	Cerambycidae	A2	Forest
Xylotrechus altaicus Gebler	Coleoptera	Cerambycidae	A2	Forest
Xylotrechus namanganensis Heyden	Coleoptera	Cerambycidae	A2	Forest
Diabrotica barberi Smith & Lawrence	Coleoptera	Chrysomelidae	A1 2000/29/CE	Agriculture
Diabrotica speciosa (Germar)	Coleoptera	Chrysomelidae	A1	Agriculture
Diabrotica u. undecimpunctata Mannerheim	Coleoptera	Chrysomelidae	A1 2000/29/CE	Agriculture
Diabrotica virgifera Le Conte	Coleoptera	Chrysomelidae	A2 2000/29/CE	Agriculture
Leptinotarsa decemlineata Say	Coleoptera	Chrysomelidae	A2 2000/29/CE	Agriculture
Gonipterus gibberus Boisduval	Coleoptera	Curculionidae	A1	Forest
Gonipterus scutellatus Gyllenhal	Coleoptera	Curculionidae	A2 2000/29/CE	Forest
Pissodes nemorensis Germar	Coleoptera	Curculionidae	A1 2000/29/CE	Forest
Pissodes strobi (Peck)	Coleoptera	Curculionidae	A1 2000/29/CE	Forest
Pissodes terminalis Hopping	Coleoptera	Curculionidae	A1 2000/29/CE	Forest
Rhynchophorus ferrugineus (Olivier)	Coleoptera	Curculionidae	A2	Ornamental
Rhynchophorus palmarum (L.)	Coleoptera	Curculionidae	A1	Ornamental

<i>Sternochetus mangiferae</i> Fabricius	Coleoptera	Curculionidae	A1 2000/29/CE	Agriculture
<i>Megaplatypus mutatus</i> (Chapuis)	Coleoptera	Platypodidae	A2	Forest
<i>Popillia japonica</i> Newman	Coleoptera	Scarabaeidae	A2 2000/29/CE	Agriculture & ornamental
<i>Dendroctonus pseudotsugae</i> Hopkins	Coleoptera	Scolytidae	A1	Forest
<i>Dendroctonus brevicornis</i> LeConte	Coleoptera	Scolytidae	A1	Forest
<i>Dendroctonus frontalis</i> Zimmermann	Coleoptera	Scolytidae	A1	Forest
<i>Dendroctonus micans</i> (Kugelann)	Coleoptera	Scolytidae	EPPO OP 2000/29/CE	Forest
<i>Dendroctonus ponderosae</i> Hopkins	Coleoptera	Scolytidae	A1	Forest
<i>Dendroctonus rufipennis</i> (Kirby)	Coleoptera	Scolytidae	A1	Forest
<i>Dryocoetes confusus</i> Swaine	Coleoptera	Scolytidae	A1	Forest
<i>Ips amitinus</i> (Eichhoff)	Coleoptera	Scolytidae	EPPO OP 2000/29/CE	Forest
<i>Ips calligraphus</i> (Germar)	Coleoptera	Scolytidae	A1	Forest
<i>Ips cembrae</i> (Heer)	Coleoptera	Scolytidae	EPPO OP 2000/29/CE	Forest
<i>Ips confusus</i> (LeConte)	Coleoptera	Scolytidae	A1	Forest
<i>Ips duplicatus</i> (Sahlberg)	Coleoptera	Scolytidae	EPPO OP 2000/29/CE	Forest
<i>Ips pini</i> (Say)	Coleoptera	Scolytidae	A1	Forest
<i>Ips sexdentatus</i> (Börner)	Coleoptera	Scolytidae	EPPO OP 2000/29/CE	Forest
<i>Ips subelongatus</i> Motschulsky	Coleoptera	Scolytidae	A2	Forest
<i>Ips typographus</i> Linnaeus	Coleoptera	Scolytidae	EPPO OP 2000/29/CE	Forest
<i>Scolytus schevyrewi</i> Semenov	Coleoptera	Scolytidae	EPPO AL	Forest
<i>Liriomyza huidobrensis</i> (Blanchard)	Diptera	Agromyzidae	A2 2000/29/CE	Agriculture
<i>Liriomyza sativae</i> Blanchard	Diptera	Agromyzidae	A2 2000/29/CE	Agriculture
<i>Liriomyza trifolii</i> (Burgess)	Diptera	Agromyzidae	A2 2000/29/CE	Agriculture
<i>Bactrocera cucumis</i> (French)	Diptera	Tephritidae	A1	Agriculture
<i>Bactrocera cucurbitae</i> Coquillett	Diptera	Tephritidae	A1	Agriculture
<i>Bactrocera dorsalis</i> (Hendel)	Diptera	Tephritidae	A1	Agriculture
<i>Bactrocera invadens</i> (Hendel)	Diptera	Tephritidae	EPPO AL	Agriculture
<i>Bactrocera minax</i> (Enderlein)	Diptera	Tephritidae	A1	Agriculture
<i>Bactrocera tryoni</i> (Froggatt)	Diptera	Tephritidae	A1	Agriculture
<i>Bactrocera tsuneonis</i> (Miyake)	Diptera	Tephritidae	A1	Agriculture
<i>Bactrocera zonata</i> (Saunders)	Diptera	Tephritidae	A1	Agriculture
<i>Ceratitis capitata</i> Wiedemann	Diptera	Tephritidae	A2	Agriculture
<i>Ceratitis cosyra</i> (Walker)	Diptera	Tephritidae	EPPO OP 2000/29/CE	Agriculture
<i>Ceratitis quinaria</i> (Bezzi)	Diptera	Tephritidae	EPPO OP	Agriculture
<i>Rhagoletis cingulata</i> (Loew)	Diptera	Tephritidae	A2 2000/29/CE	Agriculture
<i>Rhagoletis completa</i> Cresson	Diptera	Tephritidae	EPPO OP 2000/29/CE	Agriculture
<i>Rhagoletis fausta</i> (Osten-Sacken)	Diptera	Tephritidae	A1 2000/29/CE	Agriculture
<i>Rhagoletis indifferens</i> Curran	Diptera	Tephritidae	A1 2000/29/CE	Agriculture
<i>Rhagoletis pomonella</i> Walsh	Diptera	Tephritidae	A1 2000/29/CE	Agriculture
<i>Rhagoletis ribicola</i> Doane	Diptera	Tephritidae	EPPO OP 2000/29/CE	Agriculture
<i>Rhagoletis suavis</i> (Loew)	Diptera	Tephritidae	EPPO OP 2000/29/CE	Agriculture
<i>Aleurocanthus spiniferus</i> (Quaintance)	Hemiptera	Aleyrodidae	A1 2000/29/CE	Agriculture
<i>Toxoptera citricida</i> (Kirkaldy)	Hemiptera	Aphididae	A2 2000/29/CE	Agriculture
<i>Homalodisca coagulata</i> (Say)	Hemiptera	Cicadellidae	A1	Agriculture
<i>Parasaissetia nigra</i> (Nietner)	Hemiptera	Coccidae	EPPO OP	Agriculture
<i>Aonidiella citrina</i> (Coquillett)	Hemiptera	Diaspididae	EPPO OP	Agriculture
<i>Nysius huttoni</i> White	Hemiptera	Lygaeidae	EPPO AL	Agriculture
<i>Marchalina hellenica</i> Gennadius	Hemiptera	Margarodidae	EPPO AL	Forest
<i>Viteus vitifoliae</i> (Fitch)	Hemiptera	Phylloxeridae	A2 2000/29/CE	Agriculture
<i>Dryocosmus kuriphilus</i> Yasumatsu	Hymenoptera	Cynipidae	A2	Forest
<i>Gilpinia hercyniae</i> (Hartig)	Hymenoptera	Diprionidae	EPPO OP 2000/29/CE	Forest
<i>Leptocybe invasa</i> Fisher & LaSalle	Hymenoptera	Eulophidae	EPPO AL	Forest
<i>Cephalcia lariciphila</i> (Wachtl)	Hymenoptera	Pamphiliidae	EPPO OP 2000/29/CE	Forest
<i>Sirex ermak</i> Semenov-Tian-Shanskii	Hymenoptera	Siricidae	A2	Forest
<i>Paysandisia archon</i> (Burmeister)	Lepidoptera	Castniidae	A2	Ornamental
<i>Tecia solanivora</i> (Povolny)	Lepidoptera	Gelechiidae	A2	Agriculture
<i>Tuta absoluta</i> (Povolny)	Lepidoptera	Gelechiidae	A1	Agriculture
<i>Dendrolimus sibiricus</i> Chetverikov	Lepidoptera	Lasiocampidae	A2	Forest
<i>Dendrolimus superans</i> Butler	Lepidoptera	Lasiocampidae	A2	Forest

<i>Cacyreus marshalli</i> Butler	Lepidoptera	Lycaenidae	A2	Ornamental
<i>Helicoverpa armigera</i> (Hübner)	Lepidoptera	Noctuidae	A2	Ornamental
<i>Spodoptera eridania</i> (Cramer)	Lepidoptera	Noctuidae	A1 2000/29/CE	Agriculture
<i>Spodoptera frugiperda</i> (Smith)	Lepidoptera	Noctuidae	A1 2000/29/CE	Agriculture
<i>Spodoptera littoralis</i> Boisduval	Lepidoptera	Noctuidae	A2 2000/29/CE	Agriculture
<i>Spodoptera litura</i> Fabricius	Lepidoptera	Noctuidae	A1 2000/29/CE	Agriculture
<i>Thaumetopoea pityocampa</i> (Denis & Schiffmuller)	Lepidoptera	Notodontidae	EPPO OP 2000/29/CE	Forest
<i>Acrobasis pyrivorella</i> (Matsumura)	Lepidoptera	Pyralidae	A2 2000/29/CE	Agriculture
<i>Opogona sacchari</i> (Bojer)	Lepidoptera	Tineidae	A2 2000/29/CE	Agriculture
<i>Cacoecimorpha pronubana</i> Hübner	Lepidoptera	Tortricidae	A2	Agriculture & ornamental
<i>Choristoneura fumiferana</i> (Clemens)	Lepidoptera	Tortricidae	A1 2000/29/CE	Forest
<i>Choristoneura occidentalis</i> Freeman	Lepidoptera	Tortricidae	A1 2000/29/CE	Forest
<i>Thrips palmi</i> Karny	Thysanoptera	Thripidae	A1 2000/29/CE	Agriculture

List of Q-Arthropod, priority 2

Valid name	Order	Family	Q lists	Habitat
<i>Acleris gloverana</i> (Walsingham)	Lepidoptera	Tortricidae	A1 2000/29/CE	Forest
<i>Acleris variana</i> (Ferne)	Lepidoptera	Tortricidae	A1 2000/29/CE	Forest
<i>Aculops fuchsiae</i> Keifer	Prostigmata	Eriophyidae	A2	Ornamental
<i>Aeolesthes sarta</i> (Solsky, 1871)	Coleoptera	Cerambycidae	A2	Forest & Agriculture
<i>Aleurocanthus woglumi</i> Ashby	Hemiptera	Aleyrodidae	A1 2000/29/CE	Agriculture
<i>Anastrepha obliqua</i> (Macquart)	Diptera	Tephritidae		
<i>Anastrepha fraterculus</i> Wiedmann	Diptera	Tephritidae		
<i>Anastrepha ludens</i> (Loew)	Diptera	Tephritidae		
<i>Anastrepha suspensa</i> Loew	Diptera	Tephritidae		
<i>Anthonomus bisignifer</i> Schenkling	Coleoptera	Curculionidae		
<i>Anthonomus eugenii</i> Cano	Coleoptera	Curculionidae		
<i>Anthonomus grandis</i> Boheman	Coleoptera	Curculionidae		
<i>Anthonomus quadrigibbus</i> Say	Coleoptera	Curculionidae		
<i>Anthonomus signatus</i> Say	Coleoptera	Curculionidae		
<i>Arrhenodes minutus</i> (Drury)	Coleoptera	Brentidae		
<i>Aschistonyx eppoi</i> Inouye	Diptera	Cecidomyiidae		
<i>Aulacaspis yasumatsui</i> Takagi	Hemiptera	Diaspididae		
<i>Bemisia tabaci</i> (Gennadius) & biotype B	Hemiptera	Aleyrodidae		
<i>Blitopertha orientalis</i> (Waterhouse)	Coleoptera	Scarabaeidae		
<i>Carneiocephala fulgida</i> Nottingham	Hemiptera	Cicadellidae		
<i>Carposina niponensis</i> (Walsingham)	Lepidoptera	Carposinidae		
<i>Ceralitiis rosa</i> Karsch	Diptera	Tephritidae		
<i>Choristoneura conflictana</i> (Walker)	Lepidoptera	Tortricidae		
<i>Choristoneura rosaceana</i> (Harris)	Lepidoptera	Tortricidae		
<i>Circulifer tenellus</i> (Baker)	Hemiptera	Cicadellidae		
<i>Conotrachelus nenuphar</i> (Herbst)	Coleoptera	Curculionidae		
<i>Ctenarytaina spatulata</i> Taylor	Hemiptera	Psyllidae		
<i>Cydia inopinata</i> (Heinrich)	Lepidoptera	Tortricidae		
<i>Cydia packardi</i> (Zeller)	Lepidoptera	Tortricidae		
<i>Cydia prunivora</i> (Walsh)	Lepidoptera	Tortricidae		
<i>Dacus ciliatus</i> Loew	Diptera	Tephritidae		
<i>Dendroctonus adjunctus</i> Blandford	Coleoptera	Scolytidae		
<i>Diaphania perspectalis</i> (Walker)	Lepidoptera	Pyralidae		
<i>Diaphorina citri</i> Kuwayana	Hemiptera	Psyllidae		
<i>Diocalandra frumentii</i> (F.)	Coleoptera	Curculionidae		
<i>Draeculacephala minerva</i> Ball	Hemiptera	Cicadellidae		
<i>Eotetranychus lewisi</i> (McGregor)	Prostigmata	Tetranychidae		
<i>Epitrix cucumeris</i> (Harris)	Coleoptera	Chrysomelidae		
<i>Epitrix tuberis</i> Gentner	Coleoptera	Chrysomelidae		
<i>Erschoviella musculana</i> Ershov	Lepidoptera	Noctuidae		
<i>Euphranta canadensis</i> (Loew)	Diptera	Tephritidae		

<i>Euphranta japonica</i> (Ito)	Diptera	Tephritidae
<i>Euletranychus orientalis</i> Klein	Prostigmata	Tetranychidae
<i>Frankliniella occidentalis</i> (Pergande)	Thysanoptera	Thripidae
<i>Gnathotrichus sulcatus</i> (LeConte)	Coleoptera	Scolytidae
<i>Graphocephala atropunctata</i> (Signoret)	Hemiptera	Cicadellidae
<i>Helicoverpa zea</i> (Boddie)	Lepidoptera	Noctuidae
<i>Hesperophanes campestris</i> Faldermann	Coleoptera	Cerambycidae
<i>Heteronychus arator</i> F.	Coleoptera	Scarabaeidae
<i>Hishimonus phycitis</i> (Distant)	Hemiptera	Cicadellidae
<i>Ips hauseri</i> (Reitter)	Coleoptera	Scolytidae
<i>Ips lecontei</i> Swaine	Coleoptera	Scolytidae
<i>Ips plastographus</i> (LeConte)	Coleoptera	Scolytidae
<i>Lepidosaphes ussuriensis</i> (Borchsenius)	Hemiptera	Diaspididae
<i>Limonium californicus</i> (Mannerheim)	Coleoptera	Elateridae
<i>Liriomyza bryoniae</i> (Kaltenbach)	Diptera	Agromyzidae
<i>Lissorhoptrus oryzophilus</i> Kuschel	Coleoptera	Curculionidae
<i>Listronotus bonariensis</i> (Kuschell)	Coleoptera	Curculionidae
<i>Lopholeucaspis japonica</i> (Cockerell)	Hemiptera	Diaspididae
<i>Lygus lineolaris</i> (Palisot de Beauvois)	Hemiptera	Miridae
<i>Lymantria mathura</i> Moore	Lepidoptera	Lymantriidae
<i>Maconellicoccus hirsutus</i> (Green)	Hemiptera	Pseudococcidae
<i>Malacosoma americanum</i> F.	Lepidoptera	Lasiocampidae
<i>Malacosoma dissitria</i> Hübner	Lepidoptera	Lasiocampidae
<i>Malacosoma parallela</i> Staudinger	Lepidoptera	Lasiocampidae
<i>Margarodes prieskaensis</i> (Jakubski)	Hemiptera	Margarodidae
<i>Margarodes vitis</i> (Phillipi)	Hemiptera	Margarodidae
<i>Margarodes vredendalensis</i> de Klerk	Hemiptera	Margarodidae
<i>Melanotus communis</i> (Gyllenhal)	Coleoptera	Elateridae
<i>Metamasius hemipterus</i> L.	Coleoptera	Curculionidae
<i>Monochamus titillator</i> (F.)	Coleoptera	Cerambycidae
<i>Myndus crudus</i> Van Duzee	Hemiptera	Cixiidae
<i>Naupactus leucoloma</i> Boheman	Coleoptera	Curculionidae
<i>Nemorimyza maculosa</i> (Malloch)	Diptera	Agromyzidae
<i>Neoaleturus haematoceps</i> (Mulsant & Rey)	Hemiptera	Cicadellidae
<i>Neoceratitis cyanescens</i> (Bezzi)	Diptera	Tephritidae
<i>Oligonychus perditus</i> Pritchard & Baker	Prostigmata	Tetranychidae
<i>Oligonychus perseae</i> Tuttle, Baker & Abbatiello	Prostigmata	Tetranychidae
<i>Orgyia pseudotsugata</i> (McDunnough)	Lepidoptera	Lymantriidae
<i>Phaedon brassicae</i> Baly	Coleoptera	Chrysomelidae
<i>Premnotypes latithorax</i> (Pierce)	Coleoptera	Curculionidae
<i>Premnotypes suturicallus</i> Kuschel	Coleoptera	Curculionidae
<i>Premnotypes vorax</i> (Hustache)	Coleoptera	Curculionidae
<i>Pseudopityophthorus minutissimus</i> (Zimmermann)	Coleoptera	Scolytidae
<i>Pseudopityophthorus pruinosus</i> Eichhoff	Coleoptera	Scolytidae
<i>Quadraspidiolus perniciosus</i> (Comstock)	Hemiptera	Diaspididae
<i>Raoiella indica</i> Hirst	Acari	Tenuipalpidae
<i>Rhagoletis mendax</i> Curran	Diptera	Tephritidae
<i>Rhizoecus hibisci</i> Kawai & Takagi	Hemiptera	Pseudococcidae
<i>Scaphoideus luteolus</i> Van Duzee	Hemiptera	Cicadellidae
<i>Scirtothrips aurantii</i> Faure	Thysanoptera	Thripidae
<i>Scirtothrips citri</i> (Moulton)	Thysanoptera	Thripidae
<i>Scirtothrips dorsalis</i> Hood	Thysanoptera	Thripidae
<i>Scolytus morawitzi</i> (Semenov)	Coleoptera	Scolytidae
<i>Strobilomya viaria</i> (Hockett)	Diptera	Anthomyiidae
<i>Trioza erytraeae</i> (del Guercio)	Hemiptera	Trioziidae
<i>Trogoderma granarium</i> Everts	Coleoptera	Dermeestidae