Department for Environment Food & Rural Affairs

Rapid Pest Risk Analysis (PRA) for:

Chrysodeixis eriosoma

DRAFT November 2014

Stage 1: Initiation

1. What is the name of the pest?

Chrysodeixis eriosoma Doubleday. Common names: green semi-looper, greenlooper

Special notes on taxonomy

Chrysodeixis eriosoma is generally considered to be morphologically identical to C. chalcites, though some reports state that the adults of two species can be distinguished by the silver “y” markings on the wings that show differences between the two species (EPPO 2001). The two may actually be sibling species. Sibling species is a term applied to species that are morphologically identical but geographically isolated (Stamos 2003). The range of *C. eriosoma* is tropical and subtropical regions of eastern Asia and the Pacific islands, as well as Australia and New Zealand. References to *C. chalcites* from this area are likely to be *C. eriosoma*. Chrysodeixis chalcites is a Palaearctic species. Outbreaks of *C. chalcites* under glass in North America were initially thought to be *C. eriosoma* but genetic analysis showed them to be *C. chalcites*, and the species may also be separated by their sex pheromones (Lafontaine & Schmidt 2013).

2. What initiated this rapid PRA?

The pest was subject to a PRA in 1997 after two larvae were intercepted on planting material imported from Australia (MacLeod 1997). It was included in the UK Plant Health Risk Register and identified as a priority to update the PRA to see if Phytosanitary measures were justified.

3. What is the PRA area?

The PRA area is the United Kingdom of Great Britain and Northern Ireland.

Stage 2: Risk Assessment

4. What is the pest's status in the EC Plant Health Directive (Council Directive 2000/29/EC[1]) and in the lists of EPPO[2]?

This pest is not listed in the EC Plant Health Directive and is not recommended for regulation as a quarantine pest by EPPO. It is not currently on the EPPO Alert list, however it did appear on the list between 2000 and 2007, but it was removed as it was considered that a sufficient alert had been given (EPPO 2007).

5. What is the pest's current geographical distribution?

The distribution is summarised in Table 1 and taken from EPPO (2007). Within New Zealand it is common from Blenheim (42°S) northwards with sporadic recording south of Christchurch (T.E.R:R.A.I.N 2014). In addition to the countries listed in Oceania in Table 1, *C. eriosoma* is described as present throughout the Pacific to Hawaii and Easter Island (Bailey 2007). It is known to be present on many isolated Pacific islands such as the Cook Islands (McCormack 2007) and Norfolk Island (Holloway 1977), and is probably distributed widely throughout the Pacific. The distribution within Australia is described as "throughout northern and eastern Australia as far south as central NSW" (New South Wales) (Bailey 2007) and Common's *Moths of Australia* (1990) describes *C. eriosoma* as only occurring as far south as New South Wales. There are also records from Tasmania (Hardy *et al.* 1982, Semmens et al 1992, State of Tasmania 2014). Hardy 1982 is the first reference to *C. eriosoma* as a pest in Tasmania; no other references to possible larval damage have been reported since perhaps suggesting that breeding of *C. eriosoma* in Tasmania is a rare occurrence.

Two males were caught in a light trap in 2006, the first record of this pest in Pakistan, but it is unclear if the pest is established there or if they were migrating males (Kamuluddin and Kamuluddin 2012).

There are also some records of *C. eriosoma* in Europe. The NPPO of Israel reported an interception of a single larva of *C. eriosoma* on orchids originating from the Netherlands (EPPO 2001); however it is not known if the orchids were produced in the Netherlands or

[1] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2000L0029:20100113:EN:PDF

[2] https://www.eppo.int/QUARANTINE/quarantine.htm

merely exported to Israel from there. The European species *C. chalcites* is established in Dutch protected cultivation (Collins *et al.* 2014), so populations of the very closely related *C. eriosoma* could go unnoticed. In Germany, larvae were found in a park in Sachsen Anhalt, in association with unspecified imported plants (EPPO 2004). This appears to have been within a purpose built butterfly house, rather than outdoors, on plants imported from Indonesia (Heinicke 2002). As of 2006 its status in Germany is classified by EPPO as absent, pest no longer present (EPPO 2014).

Table 1: Distribution of *Chrysodeixis eriosoma*

North America:	Absent
Central America:	Absent
South America:	Absent
Europe:	Absent
Africa:	Absent
Asia:	Brunei, Cambodia, China, India, Indonesia, Japan, Korea, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam and Asian parts of Russia
Oceania:	Australia, Fiji, New Zealand, Papua New Guinea, Tongo, USA (Hawaii)

6. Is the pest established or transient, or suspected to be established/transient in the UK/PRA Area?

The pest is not established in the UK. The related and morphologically identical *C. chalcites* is likely to be established under protection, and also arrives as a natural migrant (Collins *et al.* 2014). There have been three interceptions of *C. eriosoma* between 1997-2014. In 1997 two live larvae were intercepted in cuttings of *Tobouchina* (a tropical ornamental) originating from Australia. In 2011 it was found on imported basil (*Ocimum basillicum*) from Vietnam and in 2012 associated with the aquatic plant *Lindernia* imported from Singapore.

7. What are the pest's natural and experimental host plants; of these, which are of economic and/or environmental importance in the UK/PRA area?

The larvae are extremely polyphagous, though it has been stated that they have a preference for hosts from the Solanaceae and Asteraceae (Roberts 1979). In India it is noted as a pest of chickpea, cabbage, cauliflower, tomato and potato (Tripathi & Shari

1992). It is also considered a pest of tomatoes “and many other greenhouse crops” in New Zealand (Martin & Workman 1986).

A list of recorded hosts in New Zealand was compiled by Roberts, 1979 and is as follows: *Abelmoschus esculentus* (Hibiscus), *Acacia, Agreratum* (whiteweed), *Acanthus mollis* (bear’s breeches), *Alcea rosea* (hollyhock), *Amaranthus hybridus* (smooth amaranth), *Armoracia rusticana* (horseradish), *Arthropodium cirrhatum* (New Zealand rock lily), *Aster, Beta vulgaris* (beets), *Borago officinalis* (borage), *Brachyglottis repanda* (rangiora), *Brassica oleracea* (cabbage, cauliflower), *Brassica rapa* (turnip), *Buddleia davidii* (buddleia), *Capsicum annum* (pepper), *Carica papaya* (papaya)*, Chenopodium album, Chrysanthemum, Cirsium vulgare* (Spear thistle), *Citrullus lanatus* (watermelon), *Cucumis melo* (muskmelon), *Cucumis sativus* (cucumber), *Curcubita pepo* (pumpkin), *Cyphomandra betacea* (tree tomato), *Dahlia, Datura x candida, Dianthus caryophyllus* (carnation), *Digitalis purpurea* (foxglove), *Echium vulgare* (viper’s bugloss), *Fatsia japonica* paper plant), *Helianthus annuus* (sunflower), *Ipomoea acuminate* (morning glory), *Ipomoea batatas* (sweet potato), *Jacobaea maritima* (silver ragwort), *Lactuca sativa* (lettuce), *Medicargo sativa* (lucerne), *Melissa officinalis* (lemon balm), *Mentha* (mint), *Myosotidium hortensia* (Chatham Island lilies), *Myosotis* (forget-me-nots), *Nicotiana tabacum* (tobacco), *Ocimum basilicum* (basil), *Origanum majorana* (marjoram), *Passiflora* (passion flower), *Pelagonium* (geranium), *Persicaria maculosa* (lady’s thumb), *Phaseolus* (beans), *Physalis peruviana* (Cape gooseberry), *Pisum sativum* (peas), *Plantago* (plantain), *Plectranthus scutellarioides* (painted nettles), *Raphanus sativus* (radish), *Rheum rhabarbarum* (rhubarb), *Roldana petasitis* (velvet groundsel), *Salvia* (sage), *Solanum aviculare* (poroporo), *Solanum lycopersicum* (tomato), *Solanum mauritianum* (woolly nightshade), *Solanum melongena* (aubergine), *Solanum nigrum* (black nightshade), *Solanum tuberosum* (potato), *Solanum wendlandii* (blue potato vine), *Symphytum* (comfrey), *Tecomanthe speciosa* (three kings vine),*Thapsus* (great mullein), *Thymus vulgaris* (thyme), *Thunbergia alata* (black-eyed Susan vine), *Urtica* (nettles), *Verbascum, Viola* (violets) and *Zea mays* (maize).

Many of the recorded hosts are either grown as crops in the UK, or are native species.

8. What pathways provide opportunities for the pest to enter and transfer to a suitable host and what is the likelihood of entering the UK/PRA area?

Interception data for *C. eriosoma* provides information on the pathways the pest may travel on. Though morphologically identical to *C. chalcites*, the geographic origin of the consignment should enable a distinction to be made between the two species. However this is not always guaranteed, and reports of *C. chalcites* on material of Asian or Australasian in origin or *C. eriosoma* in Africa do occur. Furthermore, material from 3rd countries may enter the EU at one port before being re-exported, complicating the origin of the material for the intercepting country. Thus there is uncertainty associated with all reports of *C. chalcites* and *C. eriosoma* interceptions.

Fruit or Vegetables

Chrysodeixis eriosoma could be associated with fruit or vegetables. It has previously been intercepted by the UK on basil from Thailand. The USA has intercepted *C. eriosoma* on tomatoes originating from New Zealand, but in a risk assessment for peppers from New Zealand it was noted the larvae are usually surface feeders and unlikely to be associated with the fruits (Ogden & Podleckis 2000). Produce is also a pathway that provides very little opportunity of transfer to suitable hosts, and thus entry via produce is rated as unlikely with medium confidence.

Cut Flowers or Branches

Chrysodeixis eriosoma could be associated with the foliage of cut flowers or branches imported into the UK for use in bouquets or other ornamental purposes.

Chrysodeixis eriosoma is a quarantine pest for California where it has been intercepted numerous times on plant products (often originating from Hawaii). For example, in 2007 there were 20 interceptions of *C. eriosoma* on cut flowers in Los Angeles County alone (County of Los Angeles 2007). Israel intercepted a single larva on cut flowers of orchids originating from the Netherlands (EPPO 2001). Sweden has also intercepted *C. eriosoma* on orchids (Gustafsson 2014).

It is evident that *C. eriosoma* can travel along this pathway, but, despite regular interceptions in California, the pest has never established there. However in Africa and Europe, *C. eriosoma* could be introduced in association with cut flowers and populations may not be detected due to their similarity with the native *C. chalcites.* The larvae are not highly mobile, reducing their ability to transfer to a suitable host from products such cut flowers which have a short shelf life. Larvae can reach up to 40mm in length (Queensland Government 2010), and so can be detected during routine inspections. The closely related *C. chalcites* has been regularly intercepted by the PHSI in England and Wales (Collins *et al.* 2014). Pupae can be found within thin, white silken cocoons often attached to the underside of a leaf or hidden within the folded edges of the leaf, but should still be detectable during routine inspections. Eggs are laid on the underside of leaves, and are pale yellow in colour – these will be more difficult to detect during routine inspections. Infested foliage that is disposed of outside (in compost heaps etc.) or imported into the UK and repackaged at production sites, could provide a transfer opportunity for larvae or adults that emerge from pupae.

Due to its polyphagous nature, the UK imports large amounts of cut flowers that *C. eriosoma* could be associated with. It has been noted as one of the most common invertebrate pests of cut flower production in the Philippines, being found at production sites for orchids, roses, Chrysanthemums and *Anthurium* (Briones & Robles 2005). The pest was also present in cut flower production of *Gypsophila* and roses in New Zealand (Dymock & Holder 1996). There is a significant trade in cut flowers from *C. eriosoma's* current distribution, with average imports of approximately 1600 tonnes of *Chrysanthemum* cut flowers a year from Oceanic countries into the UK (Eurostat data 2008-2012). Some

hosts of *C. eriosoma* will require phytosanitary certificates if entering from 3rd countries, including orchids, carnations, *Gypsophilia,* geranium and roses, reducing the likelihood of entry on these controlled commodities. Entry on cut flowers is rated as moderately likely, with medium confidence, as it is unknown how much of this material is sent for repackaging at production sites in the UK which could provide the pest with transfer opportunities. There is also the possibility of confusion with *C. chalcites*, so interceptions may actually be under reported.

Plants for Planting

The vast number of recorded hosts of *C. eriosoma* means there are a significant number of plants for planting with which the pest could be associated. All planting material from 3rd countries requires a phytosanitary certificate. As described for the cut flowers pathway, larvae are large enough that they could be detected during routine inspections. Pupae hidden within folds in the leaves and eggs laid on the underside of leaves and these may be more difficult to detect.

The UK has previously intercepted *C. eriosoma* twice on planting material: on cuttings of *Tobouchina* originating from Australia and on the aquatic plant *Lindernia* from Singapore. It should be noted that these interceptions were 15 years apart; perhaps indicating that the pest is not regularly associated with planting material in trade. In 1996 the Dutch notified a finding of *C. chalcites* on *Haemodoraceae* intended for planting. Given that the plants originated from Australia this is likely to be *C. eriosoma*. However this identification also indicates that some countries may not be differentiating between *C. chalcites* and *C. eriosoma*, and thus interceptions are under reported.

Chrysodeixis eriosoma does not seem to be associated as often with planting material as with other pathways, and entry on this pathway is rated as unlikely with medium confidence, due to the possibility of confusion with *C. chalcites*.

Fruit or vegetables	Very unlikely	☐	Unlikely	☑	Moderately likely	☐	Likely	☐	Very likely	☐
Confidence	High Confidence	☐	Medium Confidence	☑	Low Confidence	☐				

Cut flowers or branches	Very unlikely	☐	Unlikely	☐	Moderately likely	☑	Likely	☐	Very likely	☐
Confidence	High Confidence	☐	Medium Confidence	☑	Low Confidence	☐				

Plants for planting	Very unlikely	☐	Unlikely	☑	Moderately likely	☐	Likely	☐	Very likely ☐
Confidence	High Confidence	☐	Medium Confidence	☑	Low Confidence	☐			

9. How likely is the pest to establish outdoors or under protection in the UK/PRA area?

The current distribution of *C. eriosoma* indicates that it is unlikely to establish outdoors in the UK. In New Zealand, it rarely occurs further south than Christchurch and into those regions that have similar climates to the UK. Since it is highly polyphagous and a known long distance migrant (Gregg *et al.* 1993), it is assumed that the current range in New Zealand is limited by climate. Conversely, the pest has been recorded as present in Tasmania (Hardy et al 1982, Semmens et al 1992, State of Tasmania 2014) which has a similar climate to the UK. Records do not indicate if findings in Tasmania refer to adults or larvae. However, in a study on the migration strategies of noctuid pests in Australia, it was noted that *Chrysodeixis* spp. were absent from southern Australia in winter months (Farrow & McDonald 1987). Thus records in Tasmania could be transient summer populations that have migrated from the mainland, and the pest may not be present all year round. This would fit with the fact there are only limited reports of *C. eriosoma* as a pest in Tasmania (Hardy et al. 1982), and the fact that several sources do not refer to Tasmania as part of the range of *C. eriosoma,* perhaps indicating breeding may occur only rarely on the island. There are no data on the specific temperature development requirements for *C. eriosoma*. The adults are not reported as being capable of diapausing, and adults have been trapped all year round in the Auckland area of New Zealand with the exception of August (Allan 1987). Larvae have also been recorded year round in Auckland, and the same study also noted that, although 5 to 7 generations a year occur in Auckland, this was significantly reduced in colder parts of the country (Roberts 1979).

Establishment outdoors in the UK is rated as very unlikely, though with medium confidence due to a lack of data concerning the temperature development requirements for *C. eriosoma* and the need for more clarity about the populations of this pest in Tasmania, a region with a similar climate to the UK.

Chrysodeixis eriosoma is a known pest of protected cultivation of vegetable crops such as tomatoes, particularly in New Zealand where studies have been undertaken to manage it using IPM (Martin & Workman 1986). It should be noted that in studies to assess the effectiveness of the biological control agent *Bacillus thuringiensis* the authors cultivated a large natural infestation of *C. eriosoma* by leaving side vents permanently open allowing for entry of the moth from outside (the test site was on North Island, where the pest is

present outdoors), as well as deliberately infesting the glasshouse (Martin & Workman 1986). It is unclear how successful populations are at perpetuating within protected cultivation, as the only firm records under glass in New Zealand were in areas where *C. eriosoma* was also established outdoors. There seem to be fewer records of *C. eriosoma* as a glasshouse pest than the related *C. chalcites*, which has a known history of invading protected cultivation in northern Europe and North America (Collins *et al.* 2014). However given the similarity between the two species, and the fact it is recorded as a glasshouse pest, *C. eriosoma* is rated as very likely to establish under protection with medium confidence.

If establishment occurs under glass, then it is possible adults could move out of protected cultivation over the summer months and transient populations may occur on outdoor crops.

Outdoors	Very unlikely	☐	Unlikely	☐	Moderately likely	☐	Likely	☐	Very likely	☐
Confidence	High Confidence	☐	Medium Confidence	☑	Low Confidence	☐				
Under Protection	Very unlikely	☐	Unlikely	☐	Moderately likely	☐	Likely	☐	Very likely	☑
Confidence	High Confidence	☐	Medium Confidence	☑	Low Confidence	☐				

10. If the pest needs a vector, is it present in the UK/PRA area?

No vector is required, *C. eriosoma* is a free living organism.

11. How quickly could the pest spread in the UK/PRA area?

Chrysodeixis eriosoma is a known long distance migrant (Farrow & McDonald 1987, Gregg *et al.* 1993). However natural spread in the UK will be limited by an unsuitable climate which means the moth is very unlikely to be able to overwinter outdoors in the UK. Adults have been shown in New Zealand to enter protected cultivation via side vents (Martin & Workman 1986), so populations could move between greenhouse sites in the UK by natural movement, but this relies on the pest locating such sites and vents being left open overnight. Natural spread in the UK is rated as at moderate pace, with medium confidence.

If larvae or pupae become associated with planting material at nurseries sites they could be dispersed rapidly across the UK. Spread in trade is rated as quickly, with medium confidence.

Natural Spread	Very slowly	☐	Slowly	☐	Moderate pace	☑	Quickly	☐	Very quickly	☐
Confidence	High Confidence	☐	Medium Confidence	☑	Low Confidence	☐				

With trade	Very slowly	☐	Slowly	☐	Moderate pace	☐	Quickly	☑	Very quickly	☐
Confidence	High Confidence	☐	Medium Confidence	☑	Low Confidence	☐				

12. What is the pest's economic, environmental and social impact within its existing distribution?

In the northern parts of New Zealand, *C. eriosoma* is a noted pest of field crops and protected cultivation with Roberts (1979) describing it as one of New Zealand's most serious horticultural pests. Parasitoids of the larvae were deliberately introduced into New Zealand to help control the pest (Walker *et al.* 2004). In one study it was noted as one of the most common pests of soybean production, causing 15% defoliation; however this did not lead to any significant reductions in seed yield, with populations in the field being lower than those found to be necessary to cause economic damage (Cameron *et al.* 1986).

In Sri Lanka it is described as one of the most important pests of cabbage and other brassica crops (Perera *et al.* 2000). First and second instars of larvae fed on the lower epidermis of cabbage leaves, later instars created patches on more mature leaves and severe infestations led to the entire leaf lamina being destroyed (Wickramatileke *et al.* 2000). Similar damage is described as occurring in various legume crops in Australia, and larvae are also noted as attacking the flowers and developing pods of azuki, navy and mung beans (Queensland Government 2010). Within Australia it is described as a "moderate, widespread and regular" pest, with impacts depending on the crop attacked (Bailey 2007).

A lack of recent publications on the impacts of *C. eriosoma* indicates this pest may be being successfully controlled by the industry. It is known to have several natural enemies in New Zealand (Glare *et al.* 1993, Walker *et al.* 2004), which could aid in keeping population levels under control. Though in the past it may have been a pest of more significance, current evidence suggests *C. eriosoma* has medium impacts with medium confidence due to a lack of recent publications concerning the pest.

Impacts	Very small	☐	Small	☐	Medium	☑	Large	☐	Very large	☐
Confidence	High Confidence	☐	Medium Confidence	☑	Low Confidence	☐				

13. What is the pest's potential to cause economic, environmental and social impacts in the UK/PRA area?

It is very unlikely that *C. eriosoma* will cause greater impacts in the UK than the related pest *C. chalcites*, whose potential economic impacts were rated as medium (Collins *et al.* 2014). Natural enemies that help control *C. chalcites* populations are also likely to attack *C. eriosoma*. Some known natural enemies of *C. eriosoma* are present in the UK. Strains of the entopathogenic fungi *Metarhuzium antisopilae* were found to be naturally infecting larvae of *C. eriosoma* in Sri Lanka and provided effective control of young larvae in laboratory studies (Wickramatileke *et al.* 2000). This fungus is recorded as present in the UK, including as a pathogen of caterpillars (Kirk & Cooper 2009). Also present is *Nomuraea rileyi*, a fungal pathogen of *C. eriosoma* in New Zealand (Glare *et al.* 1993). The current IPM practices that are employed against similar pests in protected cultivation are also likely to reduce the impacts of *C. eriosoma*.

Climate in the UK is considered to limit the potential impacts of the pest outdoors, with establishment rated as very unlikely. Transient summer populations that move out of glasshouses may cause limited damage in field crops, but this has not been recorded with *C. chalcites* which also arrives in the UK as a natural migrant.

Economic impacts are rated as medium, with medium confidence, due to uncertainty over the ability of *C. eriosoma* to establish and cause damage in field crops in the UK. There are no recorded environmental or social impacts of *C. eriosoma* in its current distribution, so these impacts are rated as very small with high confidence.

Economic Impacts	Very small	☐	Small	☐	Medium	☑	Large	☐	Very large ☐
Confidence	High Confidence	☐	Medium Confidence	☑	Low Confidence	☐			
Environ - mental Impacts	Very small	☑	Small	☐	Medium	☐	Large	☐	Very large ☐
Confidence	High Confidence	☑	Medium Confidence	☐	Low Confidence	☐			
Social Impacts	Very small	☑	Small	☐	Medium	☐	Large	☐	Very large ☐
Confidence	High Confidence	☑	Medium Confidence	☐	Low Confidence	☐			

14. What is the pest's potential as a vector of plant pathogens?

There are no records of *C. eriosoma* acting as a vector of plant pathogens.

15. What is the area endangered by the pest?

The pest is only likely to establish under protection, and given its polyphagous nature, total protected cultivation in the UK is at risk.

Stage 3: Pest Risk Management

16. What are the risk management options for the UK/PRA area?

Exclusion

Exclusion is complicated by the fact that the pest is very difficult to distinguish from *C. chalcites*, a pest the UK does not take statutory action on, though when the origin of the material is known the two can be distinguished. However 3rd country imports may enter the UK via other Member States, complicating the tracing of commodities. Current interception records indicate it is not moving as regularly in trade as the related *C. chalcites.* Awareness raising could be considered with importers of cut flowers or herbs and leafy vegetables that *C. eriosoma* may be associated with, with particular emphasis being placed on the potential for transfer of the pest at sites where packing and production are closely linked.

Eradication and Containment

Populations of *C. eriosoma* could become established in protected cultivation in the UK unnoticed, due to the morphologically similar pest *C. chalcites* being already present in several glasshouses.

If small populations under protection were detected, eradication may be possible by application of appropriate foliar pesticides to target larval stages, as described in the control section. Transient populations outdoors are very unlikely to survive the winter.

Chrysodeixis species are believed to enter glasshouses via vents (Cameron *et al.* 2009, Jacobson 2008) and thus growers free from *C. eriosoma* could help prevent entry into their crops by closing vents at night or by applying screens.

Control

Current IPM programmes in glasshouses would be likely to offer adequate control of *C. eriosoma*, as they do for *C. chalcites* currently (Collins *et al.* 2014). Both *C. eriosoma* and *C. chalcites* can be controlled with sprays of the biocontrol agent *Bacillus thuringiensis* (Jacobson 2008, Martin & Workman 1986). Foliar pesticides effective against related Lepidoptera could also provide a measure of control. For example pyrethoids and the

insect growth regulator cyromazine have been used on protected crops in Europe for control of *C. chalcites* (Collins et al 2014).

17. Summary and conclusions of the rapid PRA

Provide an overall summary and conclusions and then short text on each section:

This rapid PRA shows that *C. eriosoma* is a pest with confused taxonomy, possibly a sibling species of *C. chalcites* which is established in a limited number of UK protected cultivation sites. The pest is very unlikely to have greater impacts than *C. chalcites*.

Risk of entry

Unlikely on produce and plants for planting, but moderately likely on cut flowers and branches – especially those packaged at production sites in the UK.

Risk of establishment

Chrysodeixis eriosoma is very unlikely to establish outdoors in the UK, though with medium confidence due to uncertainty about the life cycle of the pest in Tasmania. Establishment is very likely under protection, as it is a known glasshouse pest.

Economic, environmental and social impact

Impacts are likely to be similar to those caused by *C. chalcites* and other similar pests. Potential economic impacts are therefore rated as medium. Environmental and social impacts are rated as very small.

Endangered area

Total protected cultivation in the UK.

Risk management options

Exclusion and eradication are complicated by its similarity to *C. chalcites*, a pest that the UK does not take statutory action against. Control could be achieved via IPM programmes used for similar Lepidoptera pests.

Key uncertainties and topics that would benefit from further investigation

The taxonomy of *C. eriosoma* and *C. chalcites* remains a source of major uncertainty.

18. Is there a need for a detailed PRA or for a more detailed analysis of particular sections of the PRA? If yes, select the PRA area (UK or EU) and the PRA scheme (UK or EPPO) to be used.

No	✓				
Yes		PRA area: UK or EU		PRA scheme: UK or EPPO	

19. Images of the pest

Adult *C. eriosoma*. Copyright Landcare Research.

20. Given the information assembled within the time scale required, is statutory action considered appropriate / justified?

[*For completion by the Plant Health Risk Group*] *(put a tick in the box)*

Yes Statutory action		No Statutory action	✓

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