



Short Pest Risk Analysis for *Platynota rostrana* and *Platynota stultana*

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NVWA, November 2017

Abstract

A short Pest Risk Analysis (PRA) was made for the leaf-roller moths *Platynota rostrana* and *P. stultana* following findings of these organisms on imported lots of plants for planting in the Netherlands and in the field in southern Spain, respectively. The PRA does not include a pathway-analysis but used information on pathways from PRAs made by the United Kingdom and Spain. The PRA assessed the potential impact of *P. rostrana* and *P. stultana* for the European Union (EU). *P. stultana* has been present in Spain for several years and it was assessed that both species can likely establish outdoors in southern parts of the EU. *P. stultana* can possibly also establish in commercial greenhouses in northern Europe while *P. rostrana* may not or at much lower population densities. The potential impact of *P. rostrana* and *P. stultana* was assessed "Minor" and "Medium" respectively in commercial crops with a medium uncertainty. In tropical greenhouse (e.g. botanical gardens, zoos,...), *P. rostrana* may have more impact. The potential environmental impact was assessed "Minimal" with medium uncertainty for both species. Risk reduction options were briefly evaluated. Visual inspections of plants for planting and plant products that may carry the species are not considered very effective because low infestation levels can easily be missed. Pesticide applications in the countries of origin can reduce the probability of association but can probably not fully guarantee pest freedom. The requirement of a pest free production place would provide higher safeguards than pest control and visual inspections at the level of commodity but can have a large impact on trade of plants and plant products from areas where the species are present.

Introduction

In 2012, the National Plant Protection Organisation of the Netherlands (NPPO-NL) received information that *Platynota stultana* (Lepidoptera: Tortricidae), originally an American species, was present in Spain and a short preliminary risk assessment (Quickscan) was made (NPPO-NL, 2012). The NPPO-NL decided not to take any statutory measures to prevent entry of *P. stultana* because the species could be spread in the European Union (EU) through various pathways including *Capsicum* fruit. EU internal trade of *Capsicum* fruit is not regulated and the probability of entry would, therefore, be difficult to reduce without changing the phytosanitary system in the EU, i.e. there are currently no plant passport requirements for internal trade of fruit (Council directive 2000/29/EC¹). In 2014, a larva of another *Platynota* species, *P. rostrana*, was intercepted on an

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

imported commodity of plants for planting originating in Costa Rica. This species was not known to be present in the European Union (EU). Based on a Quickscan, the NPPO decided to reject the consignment (NPPO-NL, 2014a). The species had previously been found on plants for planting originating in Costa Rica (two times on *Schefflera* and two times on *Dracaena*) but at that time no statutory action was taken because the species could not be identified. In June 2015, a few larvae of the species were found on plants for planting of *Dracaena* in a greenhouse growing ornamentals (Fig. 1). The plants had been imported from Costa Rica in April. An intensive spray schedule was initiated to ensure that the species would not become established. *Platynota rostrana* is not listed as a quarantine pest in the EU and a more detailed risk assessment was conducted to evaluate the risk of the species for the Netherlands and the entire EU and to compare its risk with that of *P. stultana*. A full Pest Risk Analysis (PRA) was not made because the United Kingdom (UK) had recently completed PRAs for both *Platynota* species for the UK, and Spain for *P. stultana* for the entire EU (Korycinska et al., 2014, 2015; TRAGSATEC, 2016). The present study focusses on the potential area of distribution and the potential impact of both species for the entire EU and briefly evaluates risk reduction options. The study was made to inform decision makers about the potential impact of both species and support decision making about the continuation or discontinuation of the current statutory status of *P. rostrana* in the Netherlands.



Fig. 1. *Platynota rostrana* on plants of *Dracaena* (© NPPO of the Netherlands, June 2015).

Methodology – rating levels for economic impact

In the present PRA, the potential economic impact of the species was rated according to a 5-level scale (Table 1) and the level of uncertainty at a 3-level scale (low, medium, high). Ratings were compared with those in the PRAs made by the UK (also using a 5-level scale) and Spain (using a 3-level scale according to the EPPO Decision-Support Scheme for an Express Pest Risk Analysis (EPPO, 2012)).

Table 1. Rating levels and guidance for the potential economic consequences.

Rating level	Description
Minimal	No yield and/or quality losses are expected
Minor	Yield and/or quality losses are limited or The pest can easily be controlled at low costs (costs are lower than average to control pests in the crop)
Medium	Targeted measures are necessary to keep yield and and/or quality losses limited; crop protection costs are average for the control of pests in the crop
Major	Frequent or expensive measures are needed to keep losses limited; significant increase in crop protection costs or No effective measures are available and losses are relatively high as compared to losses by most other pests in the crop
Massive	Losses are still high after control measures have been implemented or No effective measures are available and losses are high or Losses are limited after control measures have been implemented but control costs are very high

Risk assessment

Potential area of establishment

Platynota rostrana

Outdoors

Korycinska et al. (2014) concluded that the organism is very unlikely to establish outdoors in the UK (with high confidence) based on the current area of distribution (southern USA, Central America, Caribbean, and warmer parts of South America). The organism has, however, also been reported from North Carolina and North Virginia (Lam et al., 2011) and Virginia has colder winters (plant hardiness zone "7" and a small part in the south-east "8") than a large part of the UK and the Netherlands (plant hardiness zone in NL is '8') (<http://planthardiness.ars.usda.gov/PHZMWeb/>; <https://www.houzz.com/europeZoneFinder>; last access 22 June 2017). The findings in Virginia may, however, concern transient populations. The organism might be regularly introduced into more northern states in the USA by e.g. trade of plants. In NL, UK and other northern European countries, summer temperatures will be less favourable for development of the species considering the lower number of degree days (threshold 10°C) as compared to Virginia (Fig. 2).

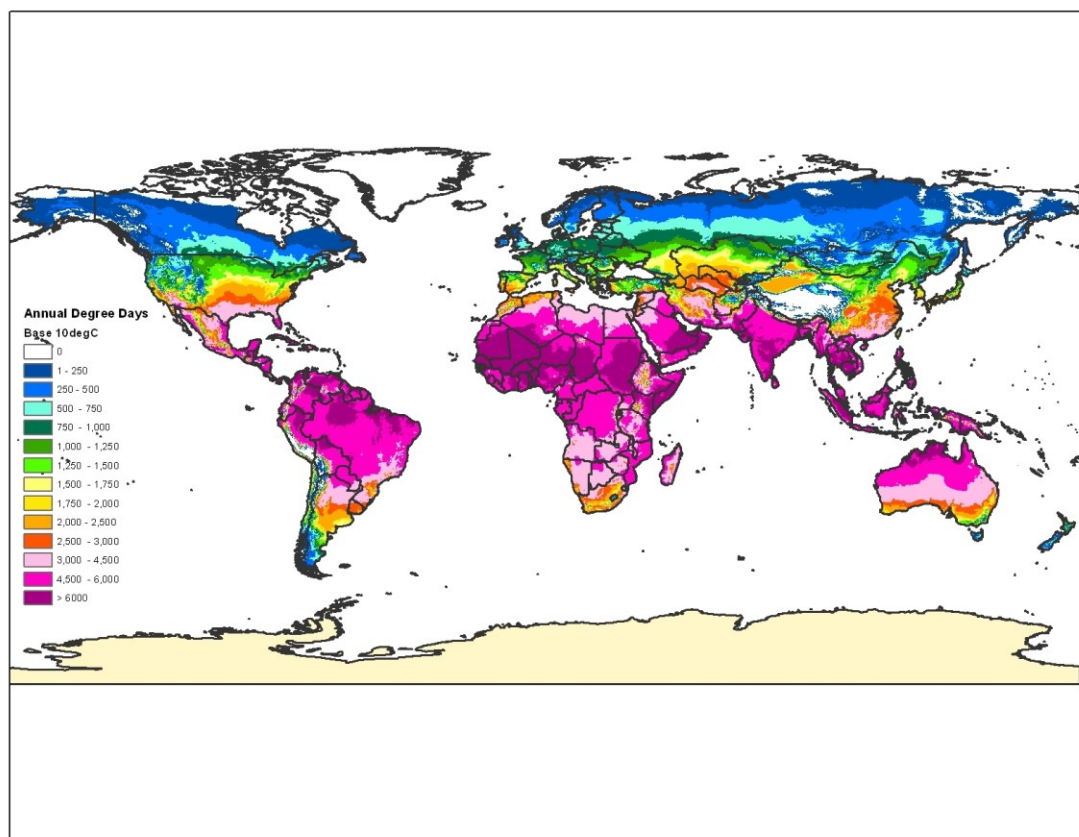


Fig. 2. World map of temperature accumulation (Degree Days) based on a threshold of 10°C using 1961-1990 monthly average maximum and minimum temperatures taken from the 10 minute latitude and longitude Climatic Research Unit database (New et al., 2002). Maps were kindly provided by R. Baker, FERA, and previously used in the EFSA-project Prima Phacie (Macleod et al., 2012). Similar maps based on the same information but with different degree day intervals were published in 2002 and 2012 (Baker, 2002; Eyre et al., 2012).

Protected cultivation

The findings of the organism on plants for planting of *Dracaena* and *Schefflera* from Costa Rica (see Introduction) indicate that the species can enter commercial greenhouses through import of plants for planting. Large volumes of plants for planting are being imported from Central America, especially Costa Rica (in 2016, the Netherlands imported approximately 940.000 and 28 million plants of *Schefflera* and *Dracaena* respectively from Costa Rica). Therefore, *P. rostrana* may have entered several times on ornamental plants in commercial greenhouses prior to the finding in 2015. In June 2015, the organism (3 larvae, one pupa and one pupal skin) was found in a commercial greenhouse in the Netherlands on *Dracaena* plants imported in April that year. The temperature in the greenhouse was on average approximately 20°C. The duration of the different life stages at 20°C is unknown but 7 weeks may be sufficient for development from egg to adult. Nava et al. (2006) found average developmental times of egg, larval and pupal stages of 8.5, 21.4 and 8.4 days respectively on an artificial diet at 25°C. However, there were no indications that the organism was actually breeding in the greenhouse. No moths were found in light traps. Not more than three caterpillars (medium stage instars), one pupa and one pupal skin (of an emerged adult) were found while the grower had not applied insecticides that are effective against larvae or adults of Lepidoptera. Therefore it is possible that the infestation resulted from a single egg batch that later developed into a few larvae and pupae. This observation and the lack of known outbreaks in commercial greenhouses despite several findings of the species at import suggest that the probability of establishment in commercial greenhouses is low. The climate and management conditions in a commercial greenhouse do not seem favourable for establishment (e.g. application of pesticides and a usually short period of time that plants stay in the greenhouse before being removed/sold).

A breeding population of the pest has been reported from a palm house in the UK probably introduced by import of infested palms from Florida (Hardwick, 1998). It was indicated that the species was "only found in the warmer more humid palm glasshouse, and not in the more temperate glasshouses" (Korycinska et al., 2014). Thus, the species can likely establish in warm humid non-commercial greenhouses but its establishment potential in more temperate commercial greenhouses remains uncertain.

Fruit vegetables *Solanum lycopersicum* (tomato) and *Capsicum annuum* (pepper) have been listed as host plants of *P. rostrana* (NPPO, 2012) but reports on damage on these crops have not been found although they are commonly grown in areas where the pest is present (e.g. Florida). The species is for example not listed by Webb et al. (2013) as a pest of tomato or pepper in Florida. For these reasons, high populations densities are not expected in these crops and the species may not be able to establish in tomato or pepper crops grown in greenhouses or only at low densities.

Conclusions

- *P. rostrana* can likely establish in southern Europe where other Lepidoptera species from (sub)tropical origin, like *Platynota stultana*, *Spodoptera littoralis* and *Helicoverpa armigera* have already established (e.g. TRAGSATEC, 2016; EFSA-PLH, 2015). It is unlikely to establish outdoors in northern Europe but the northern limit of the potential area of distribution is uncertain.
- *P. rostrana* may be able to establish in commercial greenhouses but the climate and management conditions do not seem favourable. Establishment in tropical greenhouses (e.g. in botanical gardens, zoos etc.) is more likely.

Platynota stultana

Outdoors

P. stultana originates from North America where it is known to be present in Mexico and the USA (Arizona, Texas, California, Hawaii) (Korycinska et al., 2015). Both TRAGSATEC (2016) and Korycinska et al. (2015) concluded that the species is unlikely to establish outdoors in northern parts of Europe. It has already established outdoors in southern Spain (Groenen & Baxeiras, 2013) but the northern limit of the potential area of distribution is uncertain.

Protected cultivation

Korycinska et al. (2015) assessed the probability of establishment under protected condition as "Very likely" because of the findings in greenhouses in the USA for many decades. TRAGSATEC (2016) assessed the probability of establishment in protected cultivation as "High". These high ratings are supported by findings of the pest on *Capsicum* fruit originating in Spain that are produced under protected conditions. The NPPO-NL has found the species on *Capsicum* fruit from Spain four times despite the fact that fruit originating in the EU is not systematically inspected (the findings of the species on *Capsicum* fruit were in December 2012, December 2014, January 2015 and December 2015). The USDA has also found *P. stultana* on *Capsicum* fruit imported from Spain (J. Brown, personal communication, August 2012).

Conclusions

- *P. stultana* can likely establish in southern Europe and has established outdoors in southern Spain already. It is unlikely to establish outdoors in northern Europe but the northern limit of the potential area of distribution is uncertain.
- *P. stultana* can likely establish in commercial greenhouses but management conditions may limit population development.

Potential impact

Platynota rostrana

Impact in the current area of distribution

Relatively few records were found in literature of *P. rostrana*: 15 records using the search terms "platynota" AND "rostrana" in CABabstracts <1910 to 2017 Week 05>. A few publications report on damage caused by the species but they do not provide quantitative information on yield losses. Based on the low number of publications and the lack of quantitative information Korycinska et al. (2014) concluded (with low confidence) that the organism causes small impacts. Korycinska et al. (2014) refers to the same papers as NPPO-NL (2014a) that report on damage in citrus, coffee and banana.

Findings of the organism on ornamental plants (*Schefflera* and *Dracaena*) originating in Costa Rica (see Introduction) indicate that the organism feed on these plants but as far as known these species are not important pests on ornamental nurseries in Costa Rica. Hardwick (1998) reported, however, a severe infestation in a Palm house in the UK which was eradicated by insecticides and pruning (see also the chapter on 'Potential area of establishment').

Fruit vegetables *Capsicum annuum* (pepper) and *Solanum lycopersicum* (tomato) have been listed as host plants (NPPO, 2012) but reports on damage on these species have not been found although they are common crops in areas where the pest is present (e.g. Florida).

Environmental impacts have not been recorded for *P. rostrana* and the potential environmental impact is assessed to be "Minimal" with medium uncertainty.

Damage observed in the Netherlands

When the organism was found in the greenhouse in the Netherlands, three larvae were found and some cosmetic damage was observed (see the chapter on 'Potential area of establishment'). The grower did not mention any significant damage due to caterpillars in the crop; he had not used any

pesticides against caterpillars before statutory action was taken. In the past the species may have entered commercial greenhouse with import of ornamental plants several times because the pest had been found in the past on imported plants while no statutory action was taken (see Introduction). It is, therefore, concluded that the organism seems a minor pest for the commercial production of ornamentals in greenhouses: some cosmetic damage may occur, but the pest can easily be controlled or even eradicated by the grower with low costs (medium uncertainty). The flight capacity of *Platynota rostrana* is not known, but in general species of Tortricids fly over only relatively short distances. Therefore the organism is not expected to spread rapidly between greenhouses which also limits its potential impact.

Conclusion (potential impact in the EU)

Similar to the rating level ("Low") given by Korycinska et al. (2014) for the potential impact for the UK, we assess the potential impact of *P. rostrana* as "Minor" both for outdoor grown crops in southern EU and greenhouse crops in the whole EU with a "Medium" level of uncertainty ("Medium uncertainty" because the assessment is mainly based on the limited number of reports on damage and the observations in the Netherlands). In tropical greenhouse (e.g. botanical gardens, zoos,...), the species may have more impact. The potential environmental impact is assessed "Minimal" with medium uncertainty.

Platynota stultana

Impact in the current area of distribution

In general, more records were found in literature of *P. stultana* (91 records using the search terms "platynota" AND "rostrana" in CABAbstracts <1910 to 2017 Week 05>) than of *P. rostrana* (15 records). There are also more publications reporting on damage caused by *P. stultana* than by *P. rostrana*. Korycinska et al. (2014) gives an overview of damage by *P. stultana* reported on crops in the USA. Many of the reports are old which makes it difficult to assess the current impact. However, the species is still considered a pest of economic importance in the USA (Hoover & Biddinger, 2014; Korycinska et al., 2015).

Shortly after its introduction in Spain damage of *P. stultana* was reported in *Capsicum annum* (Anonymous, 2011). According to Tragsatec (2016), the current economic impact of the species is low in Spain: "the pest does not seem to cause any damage". Measures already applied against other pest may also be effective against *P. stultana*. However, the NPPO-NL has intercepted the species on *Capsicum* fruit from Spain several times (see the chapter on "Potential area of establishment").

AQIS (1999) assessed the economic importance and risk ("carried internally in fruit") for Australia as "High" referring to damage caused by the species in vineyards in California (USA).

Environmental impact have not been recorded in North America or Spain (Korycinska et al., 2015) and the potential environmental impact for the EU is assessed to be "Minimal" (medium uncertainty).

Conclusion (potential impact in the EU)

The potential impact of *P. stultana* for the UK and the EU was assessed "Medium with a medium confidence" and "High with a high uncertainty" by Korycinska et al. (2014) and TRAGSATEC (2016), respectively. In the current risk assessment, the potential economic impact of *P. stultana* for the entire EU is assessed "Medium" (Losses are limited after application of control measures) with a medium uncertainty. Depending on the crop, the pest may (partly) be controlled by crop protection measures already applied against other Lepidoptera species. In the Netherlands, control of Lepidoptera in *Capsicum* and other glasshouse crops can, however, be difficult in integrated control systems (also depending on the availability of selective insecticides) and introduction of *P. stultana* may lead to significant losses and/or increase of crop protection costs (uncertainty). The potential environmental impact for the EU is assessed "Minimal" (medium uncertainty).

Conclusions on establishment, impact and endangered area

P. stultana and *P. rostrana* can likely establish in the southern parts of the EU (*P. stultana* has already established in southern Spain). The northern limits of the potential area of distribution of both species is uncertain. In protected cultivation, *P. stultana* seems to have a larger potential area of distribution. *P. stultana* can possibly establish in commercial greenhouses in northern Europe while *P. rostrana* may not or at much lower population densities.

P. rostrana seems of little economic importance (medium uncertainty) and as such endangered areas² in the EU are difficult to indicate. Tropical greenhouses may be most at risk.

The potential impact of *P. stultana* is assessed to be higher than of *P. rostrana* both for crops grown outdoors in southern EU as for crops grown under protected cultivation in the entire EU. Both species are present in the USA but factsheets reporting on plant pest have only been found for *P. stultana* (e.g. Kerns et al., 2015; Hasey & Steenwyk, 2014).

P. stultana is known as a pest of various crops grown outdoors and under protected cultivation. Its impact may, however, be limited by crop protection measures already taken against other Lepidoptera. The species can establish outdoors in southern parts of the EU and those areas will be most at risk.

Risk reduction options (brief evaluation of options)

Platynota rostrana

The main pathway is plants for planting of ornamental species (Korycinska et al., 2014). Visual inspections cannot guarantee pest freedom of a consignment (e.g. Liebhold et al., 2012). Regulated Lepidoptera species have been found several times on imported plants in glasshouses in the Netherlands and these infestations had most likely been missed during import inspections. Especially eggs will be difficult to detect also because inspectors cannot examine each plant intensively (consignments can contain many thousands plants). Pesticide applications in the countries of origin will reduce the probability of association but are likely not 100% effective because pesticides are not (very) effective against eggs and pupae and the species may re-infest the plants from the surroundings especially in areas where the pest is established outdoors. The requirement of a pest free production place (e.g. complete physical protection) would provide higher safeguards but can have a large impact on trade of plants from areas where the species is present (*Dracaena* plants are currently grown outdoors). Such strict requirements may not be in proportion to the low risk posed by this species also in comparison to other regulated Lepidoptera pests. The species is assessed to pose a lower phytosanitary risk than *Helicoverpa armigera*, *Spodoptera littoralis*, *S. litura*, *S. eridania* and *S. frugiperda*, that are regulated in the EU (Annex I or II of Council directive 2000/29/EC) but for which plants for planting are not required to originate from a pest free production place.

Platynota stultana

The species is present in the EU but has a limited distribution. It has a wide host range and can enter and spread by multiple pathways including plants for planting and produce including *Capsicum* fruit (Korycinska et al., 2015; NPPO-NL, 2012). Tragsatec (2016) evaluated several options for the pathways plants for planting and produce, respectively. Many of the pathways are currently not regulated and measures will likely increase the costs of EU internal trade (e.g. plant passport requirements for *Capsicum* fruit).

² Endangered area: "An area where ecological factors favour the establishment of a pest whose presence in the area will result in economically important loss" (FAO, 2010)

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