Netherlands Food and Consumer Product Safety Authority
Ministry of Economic Affairs

National Plant Protection Organization, the Netherlands

Quick scan number: QS. ENT-Potato-2013-08

	Quick scan date: 1 November 2013	
1	What is the scientific name (if possible up to species level + author, also include (sub)family and order) and English/common name of the organism? *Add picture of organism/damage if available and publication allowed*.	*Russelliana solanicola* Tuthill 1959 (Hemiptera: Homoptera: Psyllidae). English common name: The South American potato psyllid Dutch name: aardappelbladvlo; Spanish: Cigarrita Marrón  Adult, nymph, egg: © www.forestryimages.org This species has originally been described from *Datura* (Solanaceae) in Santa Eulalia and Arequipa, Peru.
2	What prompted this quick scan? *Organism detected in produce for import, export, in cultivation, nature, mentioned in publications, e.g. EPPO alert list, etc.*	Literature search: the psyllid *Russelliana solanicola* is a pest of potato and possibly other solanaceous crops, such as tomato, pepper and *Datura*. It is likely a vector for a plant virus in potatoes (strains SB26/29) (Ref 2, 5, 6) and would be the first psyllid species acting as a virus vector. This psyllid is a quarantine pest for the USA, but has not been intercepted yet (Ref. 4).
3	What is the (most likely) area of distribution?	South America: Argentina, Bolivia, Brazil Southeast (Minas Gerais; São Paulo), Chile (Valparaíso, Araucano), Peru, Uruguay (Ref. 1, 7, 8). Specimens from Brazil in Florida State Collection of Arthropods (Ref. 4). So far it is not known to occur outside of South America.
4	Has the organism been detected, sighted and/or has it established itself in nearby countries (DE, BE, LU, FR, UK) *Yes/no. If 'yes', provide details. No interceptions*	No

5	Does the organism cause any kind of plant damage in the current area of distribution and/or does the consignment demonstrate damage suspected to have been caused by this organism? *Yes/no + host plants + short explanation of symptoms.* *Please indicate also when the organism is otherwise harmful (e.g. predator, human/veterinary pathogen vector, etc.).*	Yes, on potatoes (*Solanum tuberosum*): "Potato yellows". It is thought to be a vector of a yet not fully identified virus (SB26/29) in potatoes (Ref. 1, 2, 6). It is also a potential vector of Potato Witches' Broom Phytoplasma (PWB, Ref. 9). Populations of tree jumping lice (psyllids) generally build up rapidly and hundreds of individuals can be found on one plant. Although the psyllid may excrete toxins into the host plant, and damage buds and young leaves, direct impact of damage by the psyllid itself without the virus is limited to the plant parts above soil. It is unlikely that *R. solanicola* itself infests potato tubers, or fruit of peppers and tomatoes (Ref. 6). Research has shown a strong relation between virus infected psyllids and potato yield reduction (6). In fields in Peru, the virus caused a yield reduction between 36 to more than 80% depending on the cultivar (Ref. 5). Plants primarily infected with this virus show a mosaic of different severities that at later stages may develop foliage deformation and in some varieties severe dwarfing or arrested growth. SB29 infected plants produce small, deformed, cracked tubers and yield is strongly reduced. Clones of SB29 infected tubers produce dwarfed or stunted growth of plants in the next generation (Ref. 5, 6). In Asteraceae (*Tagetes, Flaveria*) no stunted growth was observed. Damage occurred in potatoes (*Solanum tuberosum*) outdoors in a wide variety of genotypes tested (Ref. 6). Damage by *R. solanicola* vectoring viruses to other solanaceous crops, such as tomato and peppers and sweet pepper, is not known. In the Peruvian Andes *R. solanicola* is also associated with Potato Witches' Broom Phytoplasma (PWB) (L Salazar, 1997, personal communication in Ref. 9).
6	Indicate the (provisional) probability of establishment of the organism in the Netherlands regarding climate and ecology. a. In greenhouses (low, medium, high) b. Outdoors (low, medium, high) c. Otherwise (e.g. storage facilities, human environment) *Please illustrate with information/references*	The species was described from specimens originating from Santa Eulalia and Arequipa (Peru) about 1400 m above sea level (Ref. 1). Arequipa has a monthly average maximum temperature of 22^0C (average minimum at night: 5^0C). Preliminary field observations indicated that the occurrence of *R. solanicola* is permanent in commercial potato fields in all seasons at 500-1,500 meters above sea level (Majes, La Joya, Moquegua, Tacna valleys (dry desert climates, monthly average maximum of 16^0C (average minimum at night: 2^0C)) in southern Peru (Ref. 6). *R. solanicola* is also present in Cuzco (Ref. 10), with temperate, humid summers and mild frosts in winter. Establishment in the Netherlands is therefore considered possible: not only greenhouse conditions, but also the climate outdoors, matches well this species' requirements. a. outdoors, the establishment potential is considered medium to high; the climate in NL is mild, suitable for potato cropping, and could allow for survival, reproduction and population development of the psyllid. b. in greenhouses, the potential for establishment is high, because temperatures are usually around 20^0C and usually do not drop below 10^0C. Establishment potential of the psyllid is considered high for southern Europe, and would allow for seasonal influxes into northern Europe (especially relevant in case the psyllid would not be able to establish in northern Europe).

7	If the organism would become established in the Netherlands, what kind of damage would it likely cause ? *Indicate whether damage is expected to be comparable or different to that in area of present distribution : see question 5.*	Psyllids without pathogens may damage plant parts above soil, but the economic impact is considered low. When vectoring a virus such as SB 26/29, establishment of the *R. solanicola* may result in small and deformed tubers and yield losses in potato. Damage by *R. solanicola* vectoring viruses to other solanaceous crops, such as tomato and peppers and sweet pepper, is not known.
8	Which commercially grown host plants are present and which host plants are present in the natural environment in the Netherlands? *If establishment is restricted to greenhouse climate, list only host plants in greenhouses.*	Potato (*Solanum tuberosum*) is a host; *R. solanicola* has also been found on some other Solanaceaous species, e.g. tomato (*Solanum lycopersicum*), pepper (*Capsicum* sp.) and *Datura*, but it is unknown if the pest can reproduce on these species (Ref 1, 6, 7). Chávez et al. (Ref. 6) also found *R. solanicola* on some Asteraceae, e.g. *Tagetes patula* (French Marigold) and *T. minuta* (Southern Cone Marigold), aka "afrikaantjes" and the halophyte *Flaveria bidentis* (coastal plain yellowtops). In the Netherlands, potato is grown outdoors. Tomato, pepper and *Datura* are grown in glasshouses. *Tagetes* spp. are annual plants, present in parcs and gardens during summer and are also used in agriculture to control nematodes (*Pratylenchus penetrans*).
9	Provide a provisional estimation of type and probable amount of direct and indirect economic damage (e.g. lower quality, lower production, export restrictions, threat to biodiversity, etc.) likely to occur if the organism would become established?	Yield reduction, loss of tuber quality (small, deformed, cracked tubers) and export restrictions. SB29 infested tubers produce dwarf or stunted growth in plants of the next generation (Ref. 5, 6).
10	What are the possibilities of spreading, either by natural dispersal or human activity?	After introduction, *R. solanicola* can sustain and/or reproduce on a variety of solanaceaous and asteraceous host plants (Ref. 6). Spreading can take place by natural dispersal in the direct environment or by transport of plants infested with the pest.
11	In what manner could the organism enter the Netherlands? *Mention pathways*.	Entry is possible through import of fruits of Solanaceae and plants for planting (not potato tubers), The probability of entry seems, however, low because import of plants for planting of Solanaceae from South America is restricted (only permitted under very strict conditions). There is some import of fruits of Solanaceae (e.g. Capsicum fruit and aubergine) but the probability of association of the pest with these fruits is highly uncertain. Import of plants for planting of (certain species of) Asteraceae may also be a potential pathway.
12	Has the organism been detected on/in a product (cut flowers, fruit…) destined for the consumer market? *If "no", please go to question 14*	Not yet in NL or EU.
13	If the organism has been found on/in product other than plants for planting (e.g. cut flowers, fruit, vegetables), are there any risks of introduction and establishment in crop areas and/or natural environment in the Netherlands?	Not relevant (not intercepted or found on end produce). However, end produce is considered a potential pathway of the pest (see #11).

14	Additional remarks	A revision of some psyllid families that includes most of species within the genus *Russelliana* and including all those present on Solanaceae can be found in Burckhardt (1987) (Ref 7.)
15	References: Websites have been accessed on August 23rd, 2013	1. Tuthill LD (1959) Los Psyllidae del Perú Central (Insecta: Homoptera). Revista Peruana de Entomologia Africola Sociedad Entomologia Agricola del Peru, 2(2): 1-27. 2. Tenorio J, Chuquillanqui C, Garcia A, Guillén M, Chavez R, Salazar LF (2003) Sintomatología y efecto en el rendimiento de papa de un nuevo virus transmitido por el psílido *Russelliana solanicola*. Fitopatología 38: 32–36. 3. Ouvrard D (2013) Psyl'list - an online database dedicated to jumping plant lice. http://rameau.snv.jussieu.fr/psyllist/ 4. Halbert SE & Munyaneza JE (2012) Potato psyllids and associated pathogens: A diagnostic aid. Florida Department of Agriculture & Consumer Services, Division of Plant Industry. http://www.fsca-dpi.org/Homoptera_Hemiptera/Potato_psyllids_and_associated_pathogens.pdf 5. Salazar LF (2006) Emerging and re-emerging potato diseases in the Andes. Potato Research, 49: 43-47. 6. Chávez R; Salazar L; Upadhya M; Chujoy E; Cabello R; Garcia A; Linares J (2003) The occurrence of genetic resistance and susceptibility to the new potato virus SB-29 among tetraploide potato populations (*Solanum tuberosum* L., 2n = 4x = 48 AAAA) in an arid agroecosystem. IDESIA (Chile) 21(1): 9-22. http://146.83.108.153/did/IDESIA%2021-1/21%20-%201%20-%20CAP1.pdf 7. Burckhardt D (1987) Jumping plant lice (Homoptera: Psylloidea) of the temperate neo tropical region Part 1: Psyllidae (subfamilies Aphalarinae, Rhinocolinae, and Aphaloidinae). Zoological Journal of the Linnean Society, 89: 299-392. (*Russelliana* on pp. 365-392) 8. Burckhardt D & Queiroz DL (2012) Checklist and comments on the jumping plant-lice (Hemiptera: Psylloidea) from Brazil. Zootaxa 3571: 26-48. 9. Jeffries, CJ (2006) Potato. FAO/IPGRI Technical guidelines for the safe movement of germplasm 19: 1-117. http://pdf.usaid.gov/pdf_docs/PNACJ008.pdf 10. Tuthill LD (1964) Conocimientes adicionales sobre los Psyllidae (Homoptera) del Perù. Revista Peruana de Entomologia Agricola 7: 25-32.
16	**Conclusions**	This Quick scan concerns the psyllid species *Russelliana solanicola,* a potato pest in South America. *R. solanicola* poses especially a risk as a vector of a yet not fully identified virus (SB26/29) in potatoes reported from South America (a Quick scan has also been prepared for the virus). The probability of introduction of both the vector and the virus seems currently low. Import of plants for planting of Solanaceae is prohibited in the EU. The probability of introduction will be higher if the pest reproduces on more species than potato. Fruits of tomato and *Capsicum* are for example imported but it is uncertain if *R. solanicola* reproduces on these crops. The host plant status of Asteraceae is also uncertain.
17	**Follow-up measures**	No specific measures; emergency measures will be considered in case of a finding (the probability of introduction seems currently low). A full PRA can be made when more information becomes available about the pest.